

DECEMBER 17, 1881.

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

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A FRIGHTFUL accident was reported from Vienna just as our issue of last week was placed in the hands of the binder. The Ring Theatre, a large structure situated in the newer portion of the city, took fire at seven o'clock in the evening, just before the commencement of the performance, from defective electric apparatus. The flames burst out so furiously, probably from the burning scenery, that a panic seized the employees, and the iron screen provided to separate the stage from the auditorium was not lowered. The strong draught produced by the ventilating shaft over the central chandelier seems, as in so many similar cases, to have drawn the fire directly into the auditorium, and in a few minutes the ceiling and roof were burned through. Almost at the beginning of the conflagration the gas went out, and the passages, choked by the struggling crowd, were left in darkness, only to be illumined a moment later by the flames which burst into them, cutting off all retreat. Out of two thousand persons in the building, only a very few reached a place of safety by the ordinary exits; some sixty or seventy were rescued by means of ladders raised to the upper windows, or were caught in cloths held for them by the crowd below, but at the present writing about eleven hundred men, women and children are believed to have perished. This awful catastrophe is the more startling, inasmuch as Vienna is of all the great European cities the one where incombustible building is the most in vogue. The private houses are marvels of solidity, and a conflagration such as this, which surpasses anything ever witnessed in our inflammable American towns, must have seemed absolutely incomprehensible to the lookers-on.

LATER accounts only add to the distressing character of the occurrence. It appears that in Vienna, as elsewhere, the laws prescribe that special exits shall be provided in all theatres, to be unlocked in case of fire, and that oil lamps shall be kept always burning, to illuminate the building after the turning off of the gas, which is made imperative on the first outbreak of fire. Firemen are also required to be stationed on the stage during each performance, and a wire-gauze curtain is demanded as an essential part of the fittings of the stage. In a certain way all these regulations were complied with; the special doors were there, but the locks had become rusty through long disuse, and they could not be opened, or the keys were found corroded and useless; the lamps were in their places, but since the first few weeks after the passage of the precautionary ordinance they had not been lighted; the firemen were at their posts, but fled in a panic at the sudden rush of the flames, one of them even jumping from the flies to the stage in his terror; the curtain was in place, but the man who had charge of it abandoned his post at the first alarm. The decorations of the theatre were of light wood-work and papier-mâché, and as soon as the fire had penetrated the canvas drop-curtain, the whole interior blazed up like tinder. The passages and stairways were very narrow, so that they became choked immediately, but even if they had been free it would have been impossible to save more

than a small portion of the audience, on account of the spread of the smoke and fumes, which, it is said, in five minutes left no one alive in the theatre.

SINCE the fall of two houses on the corner of Grand Street and South Fifth Avenue, New York, the inspectors of the Building Bureau have been busy in examining other structures reported to be in a dangerous condition, and in providing for their proper repair. Up to the present time no less than one hundred and sixty-seven buildings have been reported as unsafe; the occupants have been warned to leave the premises, and the owners summoned to tear them down at once, while the police have been instructed to keep a strict watch upon them, so as to give timely warning to the public in case of impending catastrophe. In addition to all these, one hundred and sixty-four other buildings have been pronounced seriously out of repair, and the owners have been notified to put them in order. That such a number of unsafe structures should have been allowed to exist so long under the very eyes of the efficient New York Building Bureau is rather remarkable, but it is possible that the Department feels itself without authority to act except upon complaint by unofficial persons. As a rule, the edicts of the Bureau have been promptly complied with, but a few owners have questioned the judgment of the examiners, and have demanded the survey provided by law as an appeal. The majority of the condemned houses are of comparatively recent construction, built, as certain New York contractors know how to build them, with the sole object of holding together long enough for a sale to be effected; but some are found among the decayed rookeries of the older portions of the city. It is somewhat startling to learn that one in every five hundred of the buildings in New York is liable at any moment to fall upon the heads of its occupants; but if this is really so, no one can do otherwise than applaud the sudden energy of the Bureau in dealing with such cases.

THE Broadway Underground Railway project is undergoing a formidable trial before the Commissioners who are to pass upon the petition of the company for leave to commence the construction of the line. A large number of experts have testified that in their opinion the work would cause serious injury to the buildings on either side of the street, while civil engineers and gas-light superintendents believe that it would be impossible to suspend or otherwise support the gas and water mains safely during the construction of the tunnel. One witness, however, Mr. R. L. Darragh, considered that it was practicable to build a tunnel line, although not on the system proposed by the company. A portion of the testimony taken related to the traffic through the streets, and witnesses were found who had actually counted the number of persons and vehicles who passed each way past the corner of Broadway and Walker Streets, one of the most crowded portions of the avenue, between a quarter past seven in the morning and half-past six in the evening of a single day. The season in which the count was made, an important element, is not stated, but the day may perhaps be taken as a fair average of the year. On the west side the number of foot passengers was thirty thousand three hundred and fifty, and on the east side twenty-one thousand seven hundred and sixty, while five thousand seven hundred and eleven vehicles passed up town, and four thousand nine hundred and ninety-eight passed down town. As the hours included in the count comprise only a portion of the business day, a large addition to these numbers must be made to give the actual amount of the traffic.

THE wooden model for the base and pedestal of the statue of Washington intended to stand upon the steps of the Sub-Treasury in New York was set in position last week, and the Committee of the Chamber of Commerce, after some study, decided that the best proportion would be obtained by making the base or sub-plinth fourteen feet square, and seven feet high, while the pedestal should be four and one-half feet square and five and one-half feet high. The statue will be thirteen feet in height, and its feet are to stand on the very slab of marble on which Washington himself stood at his inauguration. This slab was carefully preserved when the ancient Federal Hall, the scene of the ceremony, was demolished, and is now at the Bellevue Hospital, awaiting the singular fate in store for it. Twenty-nine thousand dollars have been subscribed for the statue, and thirteen thousand more will be needed. Each sub-

scriber will be requested to sign his or her name to a parchment roll which is to be placed in a cavity under the base of the statue, and this device for securing immortality will probably prove enticing to many persons. The position of the statue is so imposing that it can hardly fail of a certain effect, but it is impossible to predict whether it will be quite satisfactory.

THE suspension bridge over the East River between New York and Brooklyn is so far completed that easy communication is made between the two towers on the opposite side of the stream, and persons can walk from end to end on a level, instead of climbing the perilous cycloidal curve of the main cables. All the floor beams of the main span are hung in place, and a wooden planking laid upon them, and the beams of the two land spans will be put in at once. The trusses, which will form also the partitions between the carriage-ways, the foot-walks and the railways, are to be laid next, and within a year the whole will be completed. The carriage roads are to occupy the outside of the bridge, with the two railway tracks between, and the promenade will be carried above the space between the tracks, some fifteen feet in width. As our readers will remember, the engineer of the bridge, Mr. Roebling, refused his sanction to any scheme for conveying locomotives or loaded trains across the bridge, but single Pullman cars and elevated railway trains will be admitted. Whether the traffic over this great viaduct will ever repay even the interest on the vast sum which it has cost is very doubtful, but it is none the less a most remarkable and interesting work.

AN incident in the history of a New York family has served to explain a matter which many persons have found interesting, but incomprehensible. General Sickles, lately Minister of the United States to Spain, returned not long ago from a four months' trip to Europe, and although his house had been closed during the whole period, he found a bill awaiting him from the gas company for four thousand feet of gas which had been consumed in his absence. Suspecting, very naturally, that some mistake had been made, he refused to pay the bill, and when the gas company sent men to enforce its demands by taking out the meter, he was obliged to obtain an injunction from a court to restrain them. The solution of the mystery is given by a correspondent of the *Indianapolis News*, who suggests that as all gas-meters are constructed to register only a flow of gas in one direction, without noting a back flow, if such should occur, anything which occasioned a variation of pressure in the mains would alternately force gas through the meter into the house pipes, and then, when the pressure was relieved, would allow it to return again to the mains, moving the index of the meter forward at each successive impulse, without any corresponding consumption at the burners, and without any return of the index upon the retreat of the gas to the street pipes. During the manufacture of the gas the pressure in the pipes is for some reason varied, while at night the closing of the theatres or other places which consume large quantities of gas is indicated at a considerable distance in every direction by a sudden increase of pressure and flaring of the house jets which still remain lighted. From all these causes it is probable that house meters usually register a larger quantity of gas than actually passes through them, and the remedy suggested by the correspondent of the *News*, that the gas should be shut off at its entrance into the building, beyond the meter, whenever it is to be for some time out of use, is worthy of being remembered.

THE remarks of President Street in his annual address before the Royal Institute of British Architects contain some suggestions concerning the question of the purposes and uses of the Institute which may be read with profit in this country as well as in England. There, as here, some of the best men in the profession remain aloof from the principal association of their fellows, through an idea, in many cases, that the Institute concerns itself chiefly with questions of professional etiquette, practice and charges, and little, or not at all, with the artistic side of architecture; while the younger ones prefer the active work and democratic constitution of the Architectural Association and similar organizations to what they imagine to be the solemn discussions of the graver body. Thus the efforts and resources of intelligent and ambitious architects are divided, and each severed portion of the profession suffers by its isolation from the rest. Probably no individual finds the discussions of the Institute quite to his mind, but if each one would do his part by en-

deavoring to fill the hiatus which he himself perceives to exist, the compass of professional tastes and capacity would soon be so amply filled as to leave nothing to be desired. The young and ambitious man, by making the Institute the confidant of his aspirations, would attract others to it of like disposition, and a circle of kindred spirits would be formed within the larger body, helping it, and helped by it, instead of being, as is now often the case, isolated from it, or even disaffected toward it; while those who have already reached a secure position might well feel it a duty to their fellows to lend the distinction which they have acquired by an honorable and useful career for the purpose of increasing the influence of those who have, in joining the principal professional body, made public declaration of a desire to follow their example.

THE Euphrates Valley Railroad, which has been talked about for many years, has, it is said, been actually undertaken by a well-known promoter of public enterprises, who is supposed to be secretly supported by the German or Russian Government. The necessary concessions have already been obtained, and nothing remains but to secure funds for carrying the project into execution. The English, who are more interested than any other nation in a road whose principal value would lie in the fact that it formed the shortest and quickest route to India, will probably not be over-pleased to have its construction undertaken by foreigners, and it is quite likely that Baron Strousberg counts on having a large portion of his stock bought in England in the same way, and for the same reason, that the Beaconsfield government purchased an important interest in the Suez Canal Company. As at present projected, the western terminus of the new railway will be at the mouth of the River Orontes, on the Mediterranean, near the ancient port of Seleucia, and the line will extend eastward by way of Antioch and Aleppo, until it reaches the Euphrates at Beles, about a thousand miles from its mouth as the river runs, but less than eight hundred in a direct line; thence continuing parallel with the general course of the stream to Grane, at the head of the Persian Gulf. The length of the journey over this route from London by way of Brindisi, Antioch, Grane, and the Persian Gulf to Bombay is estimated at fourteen and a half days. By the Suez Canal it is now from twenty to twenty-two days, and by the Cape of Good Hope something over one hundred days. Moreover, the voyage from Suez, down the Red Sea to Aden, is as renowned for its discomfort, and even danger, as that through the Persian Gulf is for the opposite qualities, while the railway transit from the wild scenery of Taurus, and Anti-Taurus, down the most famous valley in the world, between Assyria on one side and Carchemish on the other, within sight of Babylon, Nineveh, Bagdad, and Bassora, would possess an extraordinary charm.

WE are very much gratified to learn that the *Sanitary Engineer*, a journal which must already be familiar to a large portion of our readers, is henceforth to be issued weekly instead of fortnightly. It is but four years since this excellent periodical was first published, under the name of *The Plumber*, a monthly. Very soon the high character of its articles, and the vigor with which it was edited, attracted the attention of professional and intelligent readers of all classes, and the title of *The Plumber* was gradually dropped, to be replaced by the more comprehensive one of *The Sanitary Engineer*. Under this name it soon became advisable to issue the paper twice monthly, and the further change, to a weekly edition, shows the popularity which it has attained. Every architect, we think, has had occasion of late years to remark the growing intelligence of his clients in matters of sanitary work. The so-called "mysteries" of plumbing, which once appeared absolutely incomprehensible to the mind of the layman, have disappeared, and nearly all persons of education have at least some understanding of what is desirable in the design and construction of drainage works. In this most wholesome movement of public thought the *Sanitary Engineer* has played a very important part, not only by its energy in calling attention to matters which needed correction, but by the technical knowledge and skill with which it treated of the remedies. Without the latter characteristic, the former would have been of little avail, and it is no small praise to say that to the intelligence and honesty which led its manager to secure first the respect of the plumbers, before claiming the attention of the public, its continued popularity and usefulness is largely due.

A TRIP ABROAD.

It has been my good fortune, during the past summer, to have spent a few weeks among the buildings of the Old World, and I think that a record of my experiences may not be without interest and benefit to many of the profession, especially the younger members and those who imagine that such a trip is necessarily expensive, and who wait until they have some \$600, \$700, or perhaps \$1,000 before they adventure. By the time they are ready and feel able to go the engagements of business have become so urgent that the trip is put off and perhaps never undertaken. When I detail what I saw, the time I gave, and the total amount expended, I hope some faint-hearted ones will pluck up courage, take the trip, and inform themselves by personal contact and sight of wherein consists the elegance and beauty or, it may be, the deformity, ugliness, and inharmonious proportions of the buildings of which we have all heard so much, the prospect of seeing which gave an impetus to our first architectural efforts.

It is unnecessary for me to enter at all into a history or chronology of the buildings that crossed my path. Every architect knows them, when they were supposed to have been erected and by whom, or if he does not, he should inform himself before he visits them. Knowledge of this kind adds an untold amount to the enjoyment one has and the information one obtains. We, of necessity, in the course of architectural study and reading form opinions as to the effect of buildings, and it is in correcting and enlarging these that the great benefit of foreign travel for an architect consists, besides the gaining of new impressions as a nucleus for future study and thought.

As a starting-point I may be allowed to say that a well-formed plan of travel is of the utmost value for the saving of both time and money. Lay out, many months ahead if you can, where you intend to go and what you intend to see, and use every spare moment in the meantime for filling your mind with what others have written about these things. You will thus not feel hurried, and will in every sense be better prepared to enjoy what you do see. A settled course adhered to is infinitely better than roaming heedlessly about, caught by every old familiar name, or being led astray by every tourist who will say that if you have not seen so-and-so you have missed the best place of all.

I was fortunate in possessing a friend who, consenting to accompany me and being of my views, allowed me to arrange the trip as best suited myself. I state this because two can, of course, travel, especially in Europe, somewhat more cheaply together than if they travelled separately.

After ten days of ocean monotony we were glad when at midnight, on the night of July 17, after considerable beating about in a fog, we sighted the light on Ennistraul. The daylight revealed to us the rugged coast of Northern Ireland, varied here and there by slopes of the vivid green for which the island is so famous. Gradually the Mulls of Cantyre and Arran came into view, and the well-built light-houses and substantial thatched cottages, with here and there a massive building of dark stone, gave us an idea of what was to follow. There is nothing that more delights an architect in his travels in the Old World than the sturdy character of the buildings he sees. None of the flimsy wooden constructions with 2" x 4" studs and 2" x 8" joists meet us there, but the houses are either of stone, solid hard-wood, or stuccoed in a manner that seems to stand, probably because the plaster has a sufficient key. Buildings of every sort appear as if built to last.

We arrived at Greenock about mid-day, and safely landed on British soil. We here took the cars at once, and before long the tall brick chimneys of the manufactories around Glasgow came into view, and, presto! after diving through a close tunnel or two we were in the second city of the United Kingdom. Glasgow has grown immensely of late years, the increased depth of the Clyde, a work done at great cost, having made it the great northern port of Great Britain.

Our first walk was to the Cathedral, and being the first time-honored one we had ever seen, we entered with all the enthusiasm of novices. Mr. Ferguson, in his History of Architecture, and other writers had prepared me for what I was to see about the building itself, but the beautiful glass with which the windows are filled was indeed a surprise. It was most of it recently painted at Munich, at a cost of something like \$500,000. Perhaps the best colored and most satisfactory window in every way is one of St. John the Baptist in the crypt. Although the peculiar sparkle of the old glass is lacking, yet it is, as a whole, a most creditable production for to-day. The Cathedral is well situated on elevated ground, overlooking the Necropolis, and the effect of its old mouldering weather-beaten walls and rather massive construction is not to be forgotten. It is comparatively small, but the view from the rear looking through the whole extent of the church is very fine, and some of the vaulting of the crypt is especially good. Although the twilight lingers so long in Scotland that one can go on almost indefinitely with sight-seeing, yet our stomachs began to give us notice that supper-time was near, and this, with the prospect of good, wide, and reasonably long beds, drew us back to our hotel, passing on our way many massive buildings on every side. Very little ornamentation of exteriors seems to be attempted, even in the new part of the city, but the proportions are generally good and the whole pleasing.

The next morning we took an early train for an excursion through Lochs Lomond and Katrine and the Trosachs. After a passing glance at old Dumbarton Castle, sitting upon its historic rock, we arrived at Loch Lomond and enjoyed a day among the scenes over which Scott has thrown such a halo of romance. The buildings one passes on this trip accord marvellously well with their surroundings. The round corner-turrets, known to the world generally as "pepper-boxes," although almost always out of place in our nineteenth-century architecture, have here all the beauty incident to truthfulness of construction. They peep up on every hand in Scotland, and take one back to the days when they were so often used. At the little resorts all along the lakes, patronized by tourists and health-seekers, are many well-designed and substantial little buildings. One I specially recall where wide chamfered corners of the lower story were worked up into a square second story, all of solid stone. I had looked forward to seeing a ruined castle on Ellen's isle, but unless I am much mistaken, there is no trace of habitation. The undergrowth along the shore is, however, so thick that nothing can be seen beyond. Occasionally one of the old dismantled watch-towers could be seen peeping out from among the foliage on the higher rocks, and added its tribute to the enchantment of the scene. At the Trosachs there is an excellent and well-situated frame hotel, where we lunched. About five o'clock in the evening we climbed the steep streets of Stirling and passed beneath the portcullis within the massive walls of the castle. Some of the details on the chapels, — the gargoyles, etc., are very good, and the view cannot be surpassed in Scotland, perhaps not in all the world.

It was too late when we arrived at Edinburgh to see much, but the next day (July 20) we were early afoot. After presenting our letter of credit at the Bank of Scotland, we visited the classic-looking National Gallery, and thence to the castle, where we spent a couple of hours among its many wonders. Passing along the High Street with its houses many (sometimes ten and twelve) stories high, we presently came to John Knox's house, a very picturesque frame structure, with a curious entrance-porch and door. We did not go in, but made the best of our way to Holyrood. The mass of buildings composing this palace is rather disappointing on close inspection, but the *ensemble* from a hill on the way to Arthur's Seat is very fine. Only a few of the apartments are open to the public, the remainder being used for a few weeks every year as a Royal residence, but these few contain the relics of Queen Mary, and reminders of her love. Her sleeping-room is small, and her supper-room hardly larger than one of our modern bath-rooms, and with miserable access. The doors and windows have very plain mouldings and finish, worn with age and much handling. Exceedingly good tapestry adorns the walls. After viewing the world-renowned blood-stains one has less difficulty in belief than doubt. The ruined abbey next claimed our attention. The east window was undergoing repair, the tracery falling rapidly to decay. What remains of the walls and columns is very interesting. It must have been an imposing and beautiful structure in the days of its glory. The Scott Monument, a prominent feature of Edinburgh, we all know. Its elevation on steps increases greatly its effect. The Parliament Houses are well worth a visit. The building contains an excellent library, and the hall has a splendid roof. I may mention that here was the only place in public in the Old World that we got ice-water. The unfinished National Monument on Calton Hill is seen from every part of Edinburgh, and is the record of a false step made in the direction of improvement. Its row of classic columns supporting an entablature looks like a ruin out of place among its Gothic and modern surroundings. The new Cathedral at Edinburgh is a very fine specimen of modern Gothic. Like all the works of Sir Gilbert Scott that I saw, it shows both on the exterior and interior a refined taste and a perfect feeling of wherein consists the beauty of Gothic architecture. His masses are always well managed, and his details are of the best and harmoniously placed. The stall-work of the Cathedral is exceedingly good.

The following day (July 21) we left for Melrose by a very early train and arrived in the ruined abbey before the dew was off the grass. As a ruin it is very perfect and exceedingly well preserved, and the morning sun and clear atmosphere brought out every point of detail. The unevenness of the westernmost nave arch as seen from the inside is very peculiar, and gives one an idea of how very careless the old builders were about symmetry. We returned to Edinburgh about mid-day, and left at once for Liverpool, where we arrived late the same evening.

The next morning we roamed for a few hours about Liverpool, visiting first of all St. George's Hall, in which I was greatly interested on account of its excellent acoustic qualities. Directly opposite is the Lime Street Station Hotel, on the whole a very well designed building by Mr. Waterhouse, but with the unfortunate pepper-boxes cropping out at the corners of the main tower. We then went to the Municipal Offices, an interesting set of modern buildings, and the old Exchange. Still, taking it all in all, Liverpool does not repay long lingering. We have too many good modern buildings in our own country to wish to spend much time on those abroad, and what with rain and mud and repaving, we were only too glad to take train for Chester, where we arrived about 12 o'clock. In this old town one feels as if transported back hundreds of years. Everything seems aged, and one's tread resounds on stones that Roman legions marched over some years before Christ. The

Cathedral was our first point of attack, and although comparatively small it well repays a visit. There is beauty in its details, many of them crumbled almost beyond recognition. Much has been done in the way of repairs, but much more needs to be done, and the day we were there Dean Howson was conducting the Duke of Westminster around, no doubt with some such end in view. The stalls of the Cathedral are wonderful specimens of carved wood-work, and well worth careful study. The Roman masonry of the old walls still seems to be as good as when built. Every one, I suppose, has heard of "the Rows." The architraves are, many of them, tremendous, and have sunk by their own weight. Here one sees what the old half-timbered work really was. Some of the buildings recently erected, the Grosvenor Hotel, for example, have been designed somewhat on the model of the Rows with open arcades and overhanging stories, and are in keeping with their surroundings.

The succeeding day we went to Warwick, and changed cars for Stratford. Here we soon recognized the house supposed to have been the birthplace of Shakespeare. The fireplaces are glorious, but the rooms are very low, and, if not careful, one hits one's head against the beams which cross from eave to eave. Not far off is the church where the poet lies buried, a very fair example of parish-church Gothic. From there we went to New Place, wandered about the Park, and viewed the comparatively modern and well-kept house where the latter days of Shakespeare are supposed to have been spent. We returned to Warwick and before dark took a short walk among the antiquities of the old town.

The next day (July 24) being Sunday, we went to Leamington and attended service in the parish church. Taking train, we were landed shortly after mid-day in Coventry, where we spent a couple of hours viewing the three very graceful spires which are seen clustered together from all the surrounding country. We reached Rugby in time for a ramble through the play-ground before chapel service. This chapel is a recent erection, designed by Mr. Butterfield, and although a very good example, both inside and out, of the correct use of bricks, is cold and disappointing. It has the form of a Latin cross with very short arms for both transepts and choir. By taking a wrong train at the station we were whisked off to Tamworth, a place of no great interest, although it possesses a castle, but arrived back at Kenilworth on the morning of the 25th, at about half past eight. We walked at once to the castle. In the gate-keeper's house are collected quite a number of capitals of columns and other odds and ends of the building which would otherwise have gone to decay. The ruins themselves are most interesting, perhaps as perfect as any to be found. The walls of Caesar's tower are in some places ten feet thick and over, a solid defense against assault and decay. The access to the gallery of the dining-hall is by steps, some of them worn almost to an angle of forty-five degrees by the feet of many visitors. The fireplaces, large enough to roast an ox whole, and the tracery of some of the windows still remain in position. The lovely greensward in front of the castle, and further on the view of the forest where the beauty and rank of England once wandered, form a picture that it is hard to tear one's self away from.

The walk from Kenilworth to Warwick, through the garden spot of England, is exceedingly beautiful. After leaving the dirty little town of Kenilworth you come at once into the open, richly diversified by hawthorn hedges, well-trimmed fields, and thatched hay-rieks, with here and there a moss-covered church and many interesting stone dwellings. On this walk, in glancing through an opening in a lofty and well-trimmed grove is to be seen the residence of the Percy family, Guy's Cliff. Through the kindness of the superintendent of the place, whom we met accidentally, we were taken all over it and shown the gardens, the plain and unpretending stuccoed dwelling, the stables, and the view from the cliff, from whence the name. Soon the tower of St. Mary's, Warwick, appeared in view, and before long we had passed under the West Gate, a beautiful old specimen of mediæval architecture, and were inside of it. The beauty of the Beauchamp chapel, the uniqueness of the building and some exquisite vaulting well repay a visit. A very peculiar confessional built in the thickness of the wall between the chancel and the chapel is worth study. We then visited the castle: entering by a wide road between immense masses of rock we soon reached the walls, and spent some time among the many treasures of art therein contained. The state rooms, some eight or ten *en suite*, are well lighted and decorated in excellent colors, in some rooms bright, in some again quite dark, while rich designs in fresco fill the spaces between the ceiling ribs.

Before I close this paper I must notice in short order the hotels. In Glasgow, Edinburgh, Liverpool, and other places there are what are called temperance hotels, where can be procured excellent accommodations at reasonable rates; the beds are always neat and clean, and the meals well served. In the smaller towns, I would advise those who are travelling *en garçon* to patronize the small and quiet hotels in preference to the "swell" ones. At such as "The Globe" at Warwick, and "The Blossoms" at Chester, one has a good chance of meeting the people of the country, and their quaintness and oldness of look and construction is very attractive. Throughout our journey as well for our pockets' sake as for our satisfaction we always sought lodgings of this stamp, and in not one single case had we cause to regret our choice.

T. BUCKLER GHEQUIER.

THE THIRD COMPETITION IN DESIGNS FOR CHRISTMAS CARDS, NEW YORK.

THIS competition, unfortunately for those who take an interest in minor works of art, has not been more interesting than its predecessors. It has furnished Mr. Prang with a few very good though not striking cards; but it has not shown any advance in the work of the average contributor. There were a thousand drawings exhibited, most of them intolerably bad — unimaginably bad except to those who had inspected previous shows of like character. The choice of the public — who this time voted the rewards instead of a committee — was practically restricted within the limits of not more than a dozen competitors. And while the prize cards will make a better show than those of the first year, they will not prove, I think, as effective or as novel as those recently issued — the results of the competition of last spring.

There was a double number of prizes given on this occasion. Two sets of four each, aggregating no less than four thousand dollars. One set was given in accordance with the votes of artists, critics and other supposed authorities. The other set was chosen by the voice of the general public visiting the rooms. A curious commentary upon the oft-repeated dictum that the public and the artist class never agree upon works of art is to be found in the fact that both the first prizes fell to the same card, a design by Miss Dora Wheeler. It well deserved the preference given it above all its neighbors, for it was the only drawing that was at all novel in conception, the only one, indeed, that revealed a fresh "idea" of any kind. It showed the figures of a Madonna and Child standing in a glory which filled the upper left-hand corner of the card. In the lower right-hand corner was a segment of a dark disk, intended apparently to suggest the earth, and on this were the figures of a poor woman and her children, gazing in awe and delight upon the heavenly apparition. Two sides of the design showed a border of opalescent tints which emphasized and completed the color of the delicately graduated glory surrounding the Madonna's form. In composition, in color, and in the expression of sentiment the work was charming, and some slight carelessness in the drawing was not sufficiently apparent to mar the good effect. The double reward given to Miss Wheeler seems to meet with general approval, and, indeed, the fact could not well be otherwise.

The second and third "artists' prizes" fell to the same competitor, Miss Humphreys of Boston. Her drawings were beautifully executed little aquarelles, admirable from a technical point of view and certain to result in agreeable, though not very novel or striking cards. One showed a child with reddish hair watching by the corner of a fireplace. The other bore the figure of an angel with a palm-branch and a dove. The remaining prize in this set was given to a drawing by Mr. Fredericks, showing a child with toys.

The "popular" vote gave its second reward to Mr. Walter Satterlee for a design with a group of "waits" and cherubs singing outside a window and children's faces seen through the panes; its third to Mr. Dielman for a design with a Christmas tree and children feeding sparrows; and its fourth to Miss Florence Tabor for a drawing that suggested the popular Kate Greenaway influence. The central panel bore three figures seen through a fall of snow, which were graceful and pretty though not faultlessly drawn. The border of this card was exceptionally good and the color was delicate and nice throughout.

Among the other exhibits few were worthy of even passing examination. A head of Santa Claus, however, attracted much attention, as showing a clever, practised hand. It was modelled in relief upon the card-board and colored to look like bronze. If the expression of the face had been more like that of the amiable saint and less like that of Mephistopheles it might have a great chance of success. As it stood, however, it was perhaps the cleverest bit of artistic manipulation in the room. Another novel and beautifully executed design showed a panel in imitation of metal work in several colors. This panel was turned up at one corner revealing a little landscape with the figures of a Holy Family delicately touched in with white. It was a little stiff in line and a little too "severe" in style to suit the popular eye, perhaps, but it was original and thoroughly artistic, and, I think, merited one of the rewards obtained by less excellent things. Further than this there was hardly a design among the whole ten hundred that the most charitably disposed could call successful. It is needless to say there was nothing in the whole contribution so clever as Mr. Vedder's figures just offered to the buying public, the fruit of last spring's competition, or so dainty in workmanship and color as Mr. Coleman's pretty bit of still life.

M. G. VAN RENSSELAER.

OUR VERNACULAR ARCHITECTURE.

MR. STREET's speech to the Royal Institute of British Architects was a bold as well as a thoughtful one, and thoroughly creditable to him, as one of the chiefs of his profession, but it fails to convince us. We admire and applaud, without being satisfied that the speaker has touched the root of the great evil he denounces, or has suggested a practicable remedy. By a felicitous though unscrupulous little clutch, Mr. Street has appropriated a word from the terminology of the philologists, and calls the art of building without professional or scientific help, "vernacular architecture." "Indigenous architecture" would be nearer the truth, but "vernacular"

awakens a more correct association of ideas. The infinite mass of English house architecture is, Mr. Street says, "vernacular,"—is due to the builder and the mason and the carpenter and the plasterer, all laboring by rule of thumb, and without any scientific or artistic supervision of any sort. Street after street is run up without any architect, till there are entire quarters large enough, if they only had histories, to be called cities, in the construction of which no trained professional has ever been consulted. The builders, who vary from great contractors, with science at their command, to little bricklayers working with borrowed capital, build them as they choose and can. Such building is almost invariably very bad, and this, says Mr. Street, must, in some degree at all events, be the fault of the trained profession. Architects cannot, as the law now stands, force builders to consult them; but they ought, by their example, to have taught the builders, to have given them ideas and an ideal, to have raised in them a general opinion which would have made departure from the first principles of good architecture as discreditable as in many trades bad work is. Sound notions, in fact, ought to have filtered down from the profession to the trade, if the profession had done its duty, for they did once filter down. "Vernacular" architecture is no new thing; it must always have existed, and did exist; it is the badness of such architecture which is the novelty. A century ago, the English builder frequently built without help, but he had learned his trade from men who had been trained by the architects of that day; and his ideal, therefore, was a simple, solid building, entirely devoid of ornament, but full of utility, and certain to endure. Now builders build houses so thin that every word is heard through all walls, and so weak that the inmates rock in their beds when the wind blows high, and spend all their spare money on "so-called ornaments to the stucco fronts only of the houses, which are costly to put up, costly to keep in repair, and hideous in their ghastly unfitness for their place. They have compe keystones, ornamental railings and balconies, a few lumps of terra-cotta, elegant cornices and window-dressings, and highly suggestive chimney-pots." That is, Mr. Street thinks, the fault of architects, for if the builders who use their aid were trained to solidity, drilled into it through never seeing anything else, they would, in their turn, train other and smaller men in the same idea, till adequate solidity was accepted as a *sine qua non*, as the builder's necessity, as a quality the absence of which would be held unworkmanlike and discreditable. Builders would be cut by builders for scamped work, as officers are cut by officers for ungentlemanly conduct.

Nothing could be sounder or more beneficial than such a speech, and we only wish Mr. Street could preach a course of sermons upon that text to all the builders of England; but we fear he would only make them wretched, without permanently amending their behavior. If bad art and bad work and ugly ornament constitute badness, builders are very often bad; but there is an involuntary element in their badness, for which Mr. Street scarcely makes sufficient allowance. They can, if they like, abstain from stealing gravel—a direct theft, for which we hope yet to see a builder or two in Portland Prison—they can supply the seasoned materials they say they supply, and they can build perfect drains, instead of laying down, as they often do, pipes without connections to them; but whether they can build solidly may be doubted. They themselves say they cannot—that the conditions now imposed by circumstances are too numerous and too inexorable, and that to demand solid building from them is to demand that they cease to build altogether; and they have a colorable case. All possible circumstances which could induce a decent builder to build houses so weak that they rock in a storm, appear to have arrived in this country together. In the first place, the freeholders of the soil, who have the first word in the matter, do not ask builders to build well, but almost insist, as a condition of employment, that they shall build badly. The freeholder of the last century, anxious for profit on his city estate, either sold the land to the builder altogether, or granted him a long lease at a comparatively moderate quit-rent, and under a well-understood, though tacit agreement, that the lease would be renewed at a moderate, or at all events, endurable rate of increase. The great Cavendish property, the present "Portland Estate," was all treated in this way, and for more than a century tenants were treated with a rare lenity and consideration on all questions of renewal. The builder, therefore, with a hundred years of tenancy to sell, besides a possible perpetuity, had every inducement to build solidly, and look to his purchaser for such profit as he expected; while the purchaser expected solidity, as much as he would have done had the house been freehold. Expenditure on the house might be scamped in places, but the "shell," the walls, and the beams, and the doorways were sure to be intended to last the century, and, as a matter of fact, have lasted, as witness Harley Street. Now, the free-holder especially, in the suburbs, possessed with the idea of a rapidly-increasing income, refuses long leases, picks out builders content with short terms, and very often succeeds in finding men who will "put up" houses, and even large houses, on leases of thirty-five years. It is hardly in human nature to build with true solidity on such a tenure as that, and the difficulty of doing it without heavy loss has been increased by other causes. All building materials have largely increased in price, not only brick, but timber, more especially timber for beams, and most especially timber for beams of more than a certain solidity. Then resource has been had to poor timber-work, cut by machine, and manufactured or imported wholesale, while the price of all labor has increased enormously, till the effect of the triple process has,

speaking roughly, been to alter completely the old proportionate cost of solidity and thinness. If the wall is doubled in thickness, and the beams are doubled in strength, and the doorways and windows are doubled in durability, the cost is not doubled, but tripled to the builder, who has to pay not only for more material and for more labor, but for material of a kind that grows scarcer, and more labor at a higher price; while he loses, as against his rivals, by the whole cheapness of the machine-made and imported rubbish. At the same time, he does not find that he can recoup himself in his prices. Wealth has increased, no doubt, quite as fast as the cost of materials, but not the wealth of the classes he builds for, much less their inclination to spend that wealth in purchasing solidity for a few years by a sacrifice of their capital. They would give double money to be housed forever in solid buildings, but they will not give it to be housed a little more comfortably for only thirty-five years, in the middle of which they will probably be desirous to move further afield. Among the classes living on earnings, the pressure of rent is so severely felt, that as they cannot buy freeholds, they insist on keeping rent down, and it is kept down by the sacrifice of solidity, which they do not greatly value; which the builder, with his short lease, greatly dreads and which the freeholder who never spends anything, but makes the next leaseholder do all repairs, cares nothing whatever about. As to the compe messes, and stucco window-dressings, and ornamented chimneys, the fault lies with the public which will have them, though it knows perfectly well all the while that the cost of ornamentation must be taken out of the cost of what is properly "building."

Suppose, under these circumstances, that Mr. Street's sound and wholesome advice were successful, and that the builders were gradually convinced that solidity was indispensable, what would be the result? Clearly, either that the new houses would cost exceedingly much more, to the despair of tenants, who would declare that they could not pay such rents, and would not lock up capitals in premises; or that building would stop, and the people would crowd together into the existing dwellings. That process is going on now to an enormous extent, particularly in the solid streets of the third rank, the houses in which are slowly parcelled out in floors, occupied by two or even three families, under an agreement which leaves one of them still the nominal owner of the house. That is not a good system, but it is one which, if houses are all to be solid, would very soon receive an immense impetus, till London gradually assumed the characteristics of a Continental capital. The remedy, we fear, is not in rating the builders, who will obey orders, like any other tradesmen, and build solidly, if they are only paid, but in a sweeping away of settlements which will allow owners either to sell sites, or to agree to the Scotch device of perpetual leases. The Scotch, who, except in Glasgow, are not cramped for room, and who have stubborn ideas of economy, will not build on a lease for less than perpetuity, and consequently their houses are for the most part fairly solid. Till we can get this change, there will be little improvement, and even then another will be required, which Mr. Street will probably not like. Architects are not bad people, and most of them have some artistic feeling, but still they are human beings, and while they are paid by a percentage they will never be heartily desirous of securing cheap solidity. They like the solidity well enough but they like also to be paid; and a house which costs £10,000, costs the architect no more time or energy than a house which costs £5,000, while the architect's honorarium is very nearly double. Let the architect contract to supervise the builder as the builder contracts to construct the house, and his temptation will be steadily towards the cheap solidity which will ultimately make his name. As it is, the more the private customer spends, the better it is for the architect; while the builder, who ought to employ him always, is afraid of the cost.—*The Spectator*.

PRACTICAL SCIENCE IN ENGLAND AND ABROAD.

THE industrial energy of the United States affords an example which may be advantageously followed in Europe. It is a matter of some wonder to those of us who can remember the railway-system in its cradle, and who are personally aware of the immense start which, five-and-twenty years ago, the forges, the factories, and the railways of England had and held over those of Continental Europe, to see how the spirit of enterprise has spread its wings from our shores. It is to Berlin that one great electrician goes to carry first into practical effect his electric railway. It is from the Alps that the first practical experience, so precious to a mining people like ourselves, in mechanical rock-cutting, and in the application of compressed air to the purposes of mining, is to be derived. And now, in that last new development of the doctrine of the convertibility of the physical forces,—lighting by dynamic energy,—we find ourselves at a distance behind the United States such as must be measured rather in fractions of a century than in portions of a year.

A glance at the map of the United States, with its straight lines of demarcation, so different from those afforded by either the political or the physical geography of the older world, may serve to impress the imagination with a sense of the rapidity with which scientific invention is carried into practical use in America. From Albany to Great Salt Lake is a distance of 38° of longitude. From New York to New Orleans is a distance of 12° of latitude; Akron (in Ohio), Wabash (in Indiana), Denver (in Colorado), lie wider apart than do Paris, Brussels, and Berlin. From each of these distant points, in one single, and, so to speak, casual, letter from an American interested in

the progress of electricity, comes the same story. We regard with a mixture of pride and wonder the few experimental steps which, chiefly at the risk of French, and partly of English speculators, have been taken towards lighting parts of London and some other towns by electricity. Neither in England nor on the Continent have there yet been established general lighting stations, to supply electric light after the fashion of gas-works. In the United States, we are told, "no considerable city is without such an institution." At Salt Lake City an arc-light company has for some months supplied electric light to miscellaneous customers. In Denver, Colorado, a city of 35,000 inhabitants, above 200 arc-lights are supplied to shops, hotels, etc., by a company; the light in each case being furnished at from 20 per cent to 30 per cent below the price of gas, as well as being much greater in quantity. The Salt Lake company is said to have been the first in the world to supply electric light in direct competition with gas. The returns to the proprietors are lucrative in each case.

The subject is attacked in America precisely as, thirty or forty years ago, the manufacture of gas was introduced into our smaller towns. A local company is formed, which, of course, has the advantage of the experience attained up to the latest hour. A concession from the patentees of the system chosen is arranged for. Ground is bought, buildings are erected, and engines, boilers, dynamo-machines, and the whole light-producing apparatus are purchased and erected. Powerful engines are employed, with fly-wheels weighing from eight to ten tons, in order to have steadiness and uniformity of motion, the absence of which is evinced by that flitting, firefly-like pulsation of light with which we have become familiar on the banks of the Thames. We have not heard of the application of water-power to the service, but of its adaptability near some of the great rivers of America there can be no doubt. Wires are conducted either under or over the streets, to be tapped where required, in the same manner as gas-mains. Automatic contrivances, for the purpose of turning light on and off at pleasure, are supplied with the lamps, which are visited and kept in order by the servants of the company. The result appears to be the advance of electric lighting all along the line.

The use of masts or towers of the height of 200 feet for the lighting of squares and streets is becoming general. The city of Denver is lighted from lofty towers, and for the price formerly paid for gas four times the area is now lighted by electricity. In the city of Albany 300 electric lights, placed on alternate blocks, have replaced some 2,000 gas and oil lamps. Akron, in Ohio, is lighted from towers; and Wabash, Ohio, by four lights on the steeple of the Court House. In New York there are competing companies, one of which is now supplying 1,000 lights to shops, and is providing for 4,000 more. Most original of all is the application of this source of illumination at New Orleans. In the fever-haunted delta of the Mississippi the comparative coolness of the night is now selected for running the races of the Jockey Club by the light of electricity.

The tariff of the American light companies charges a fixed annual sum for electro-motive power, according to the number of hours for which it is supplied. The companies provide and maintain the lamps; the consumers supply their own carbons. The average price is about 30*l.* per annum for a 2,000-candle light, which is equal to 125 gas-lights of 16 candles each. A shop requiring twenty gas-burners would be better lighted by an arc-light of the strength of 100 gas-jets. In giving this—the electric light companies' statement—it must, however, be remembered that for many purposes number and nearness of lights will be more important than actual quantity of light radiated from a single point. As to this, however, we can only oppose scientific scepticism to actual practice. The Americans seem to have found out, in spite of the inconvenience of single points of illumination, that they are on the right track.

We are not writing with the view of recommending our readers hastily to subscribe for any new project of electric light companies, such as we may fairly anticipate will make its appearance in sequel to the above account. But still less do we recommend negligence of the subject. In case of the matter attracting that attention which it seems to us to deserve, we recommend those who take an interest in it not to be satisfied with mere second-hand reports, however brilliant and exact. In point of fact, experience would say, "The more brilliant they are, the less are they to be accepted without proof." What seems to us desirable is the appointment of some steady, cautious, intelligent engineer to visit the American electric-light cities as an English commissioner; to see for himself the mode of lighting; to measure the intensity of the light as it comes to the eye; to ascertain the prices, not of the electric light only, but of gas, coal, and other matters with which it has to co-operate and to compete. An impartial and exhaustive report on the electric lighting of the cities of the United States would be a professional paper of such importance that we hope it will not first emerge from the hands of a volunteer or the agent of a speculation. — *The Builder*.

THE ILLUSTRATIONS.

ARTISTS' CLUB-HOUSE, DRESDEN, GERMANY. MESSRS. R. W. ELTZNER AND A. HAUSCHILD, ARCHITECTS.

THE accompanying design for the "Artists' Club-House" in Dresden received the first prize in the competition held last year, and all the plans are ready for immediate use.

The building is to be beautifully situated on the river Elbe, and was presented by the late King of Saxony to the Society; but many

difficulties arose which have prevented the carrying out of the plans for the present. When the ground was examined, it was found to contain the ruins of an old fort, which would cost a great deal of money to remove, and the Society will wait for some years for an increase of the capital which it received ten years ago by contributions from the domestic artists, at the conclusion of a lottery. The intention of the Society was to have a home for the members to the number of four hundred and twenty persons, and still to accommodate a number of sister clubs, which could be strictly separate if desired.

The restaurant in the first floor is not to be used by the club members only, but is for outside customers, for the profit of the house; all the other rooms on the floor are for the exclusive use of the club. The rooms on second floor are arranged for the use of other clubs; the hall at any time can be used for the exhibition of artists' works, or concerts, performances, balls, or other entertainments; and the rooms can be opened so as to afford a grand promenade through them and the corridors, and a fine view from the latter over the staircase to the promenaders from the second floor to first floor. All the rooms together are able to accommodate about one thousand persons. Between first and second floors is the entresol, at the south side of the building. In this is a large waiting-room, and on both sides of it the toilet-rooms for ladies and gentlemen. The large kitchen, the cellars for wine, beer, etc., the furnaces, and engine (gas-motor) for ventilation, are in the basement, while the third floor is occupied by the manager, janitor, and other rooms. All rooms on the north side are heated by hot air; the rooms on south side by hot water. The object in heating by two systems is that rooms on the north side are in constant use, and those on the south side occasionally. It was much easier to heat by hot water than to bring the hot air from the furnaces on the north side to south.

The club-house is to be built of yellow and white sandstone. All inside walls are to be constructed of brick, and some of them are to have the appearance of marble. On the southeast side of the building is the entrance for carriages, and the rest of the ground, with the view of river Elbe, is to be used as a concert-garden, ten-pin alley, etc.

The exact cost of building is estimated at \$45,000, foundation free from obstruction and without the figures outside and the fresco-painting inside; cost of furniture, \$10,000.

COMPETITIVE DESIGN FOR A HOTEL BILLIARD-ROOM.

THE DISPOSAL OF REFUSE IN THE CITY OF LONDON.

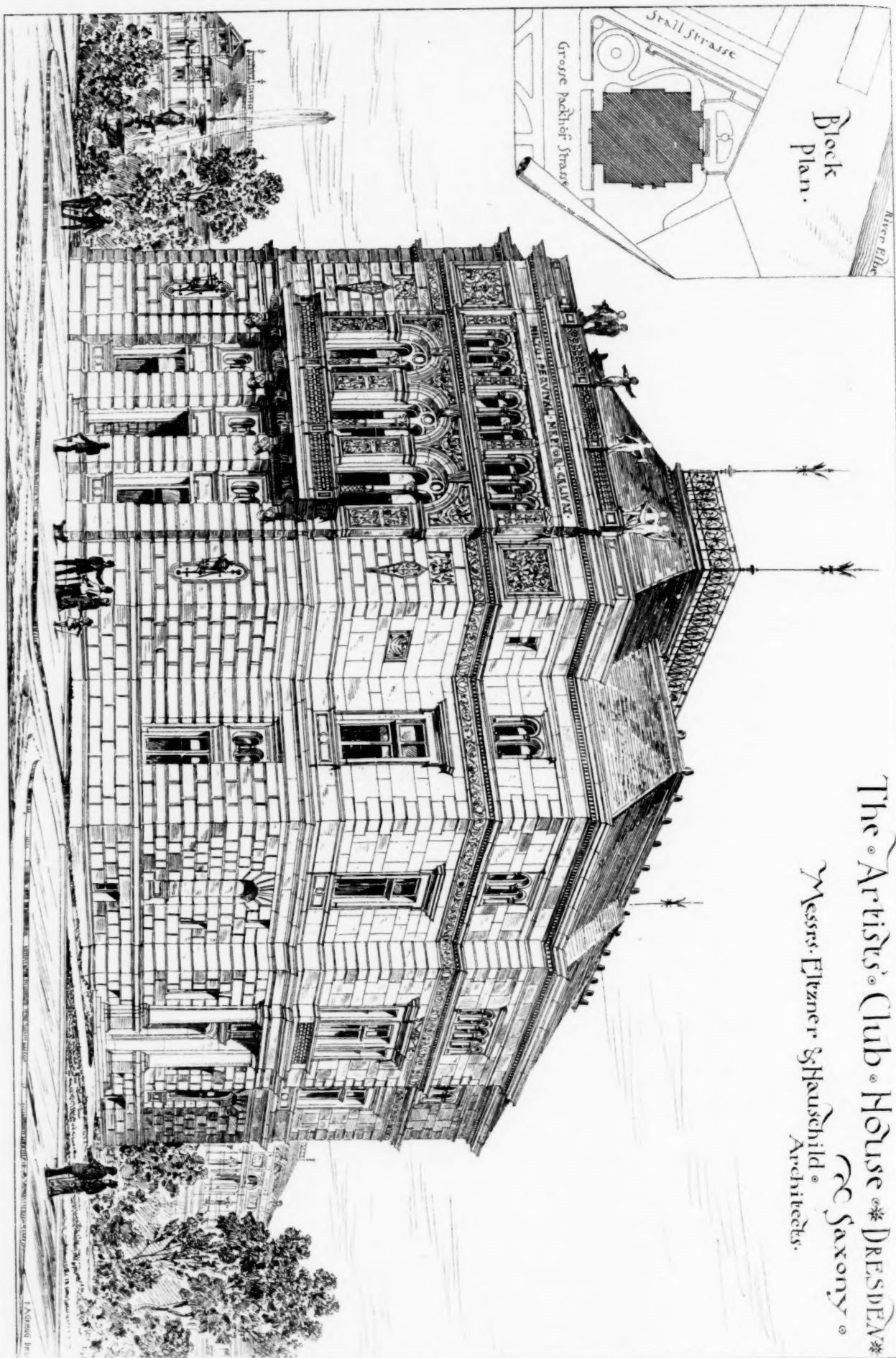
A REPORT on the disposal of refuse from the city, with special reference to effecting it by the apparatus of Messrs. Manlove, Allott, Fryer and Co., engineers, of Nottingham, was presented to a Committee of the City Commissioners of Sewers on the 11th inst., by Col. Haywood, their surveyor. The refuse may be broadly divided into five classes: (1) house refuse; (2) trade refuse; (3) market refuse (animal and vegetable); (4) street-sweepings; and (5) condemned meat. All except the last class of refuse are now carted to Lett's Wharf, on the south side of Waterloo Bridge. There, the house and some of the trade refuse is forked over and sorted; leather, iron, glass, crockery, and certain other materials, are separated from the ashes, and sold to various dealers; the ashes and breeze are sifted and sold to brickmakers. All these materials are with the exception of a trifling quantity of vegetable refuse, generally dry. Their removal from the wharf is made daily. The street-sweepings and the animal and vegetable refuse removed from the markets and from the premises of large traders are got rid of together; the market refuse is at once mixed with the sweepings when they are dry, or nearly so, and shot from the carts into barges which are always lying at the wharf ready to receive them. Barges leave with this material daily. The street-sweepings, when in large quantities and in a state of slop, are not at all times shot into the barges, but are thrown down on to the wharf and mixed with straw and dry materials; the water rapidly drains away from them, and the residue is then mixed with street-sweepings, stable manure, or other drier matter having manurial value, is cast into the barges and taken away by agriculturists, who purchase it. No materials liable to decompose or be offensive are removed from the wharf through the public streets; old iron, tin, lead, glass, leather, paper, and a few other hard materials alone are carted away, and of these not more than a load or two leave the wharf daily. All materials are, as a rule sold, and with some gain: under exigencies some may have to be given away, and on very exceptional occasions the commission may even have paid for getting rid of portions of them. On the wharf is a chimney shaft, 120 feet high, attached to a furnace, in which are burnt baskets, matting, shavings, dry leaves, and various kinds of refuse worth nothing for sale, and injurious to the sale of the street-sweepings and market refuse if mixed with them. No registers of the weights of materials received at the wharf has been kept, but the numbers of loads brought into the yard have been recorded under the general heads of Dust and Sweepings, the first including all trade and house refuse, and the latter all street-sweepings and slop, a load roughly representing a ton of material. Last year, 1880, there were dealt with 31,161 loads of "dust," and 30,078 tons of sweepings, in all, 61,239 tons, and the quantity increases annually. The average of receipts and costs for the four years, 1877-80 has been: Receipts, by sale of ma-

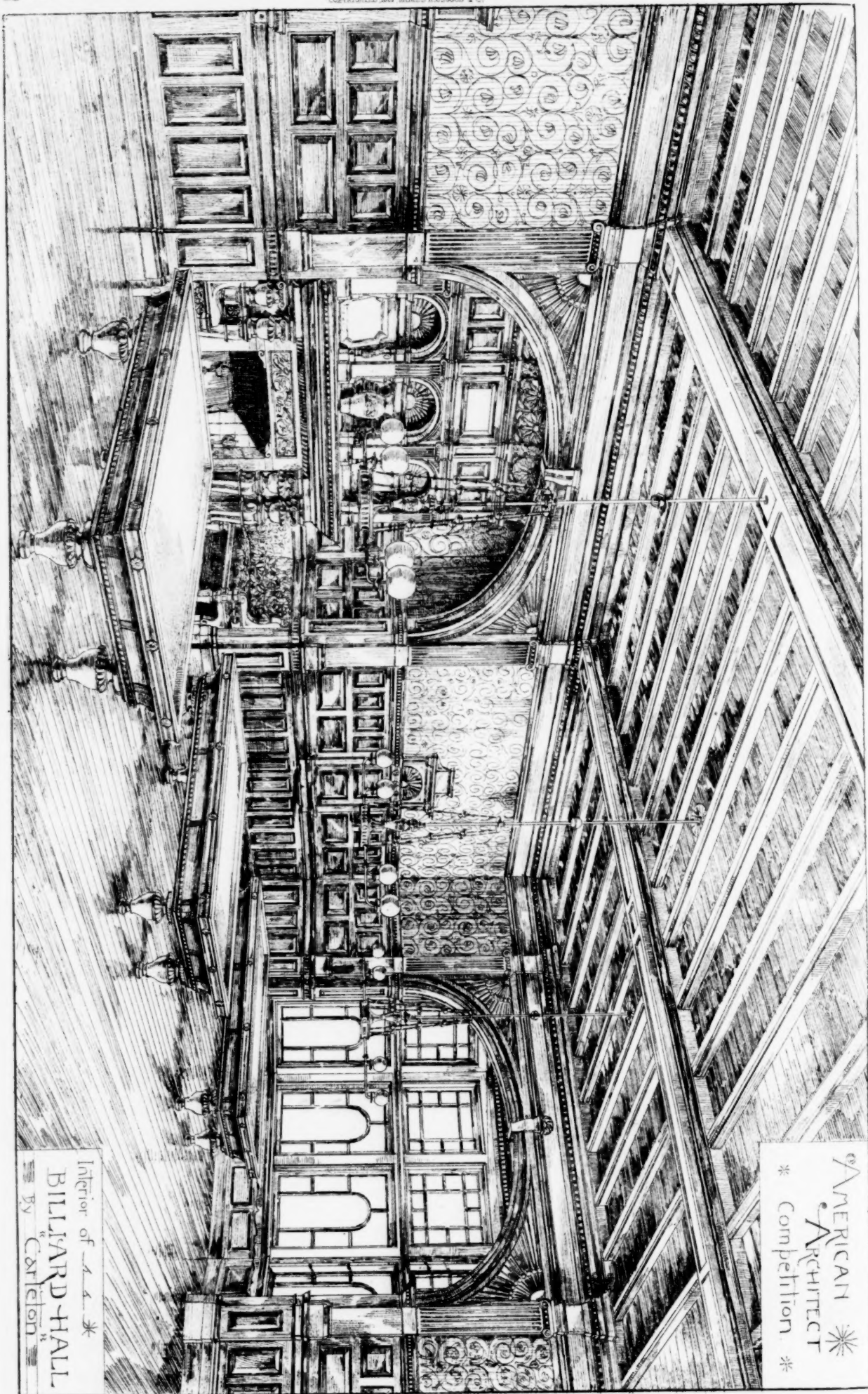
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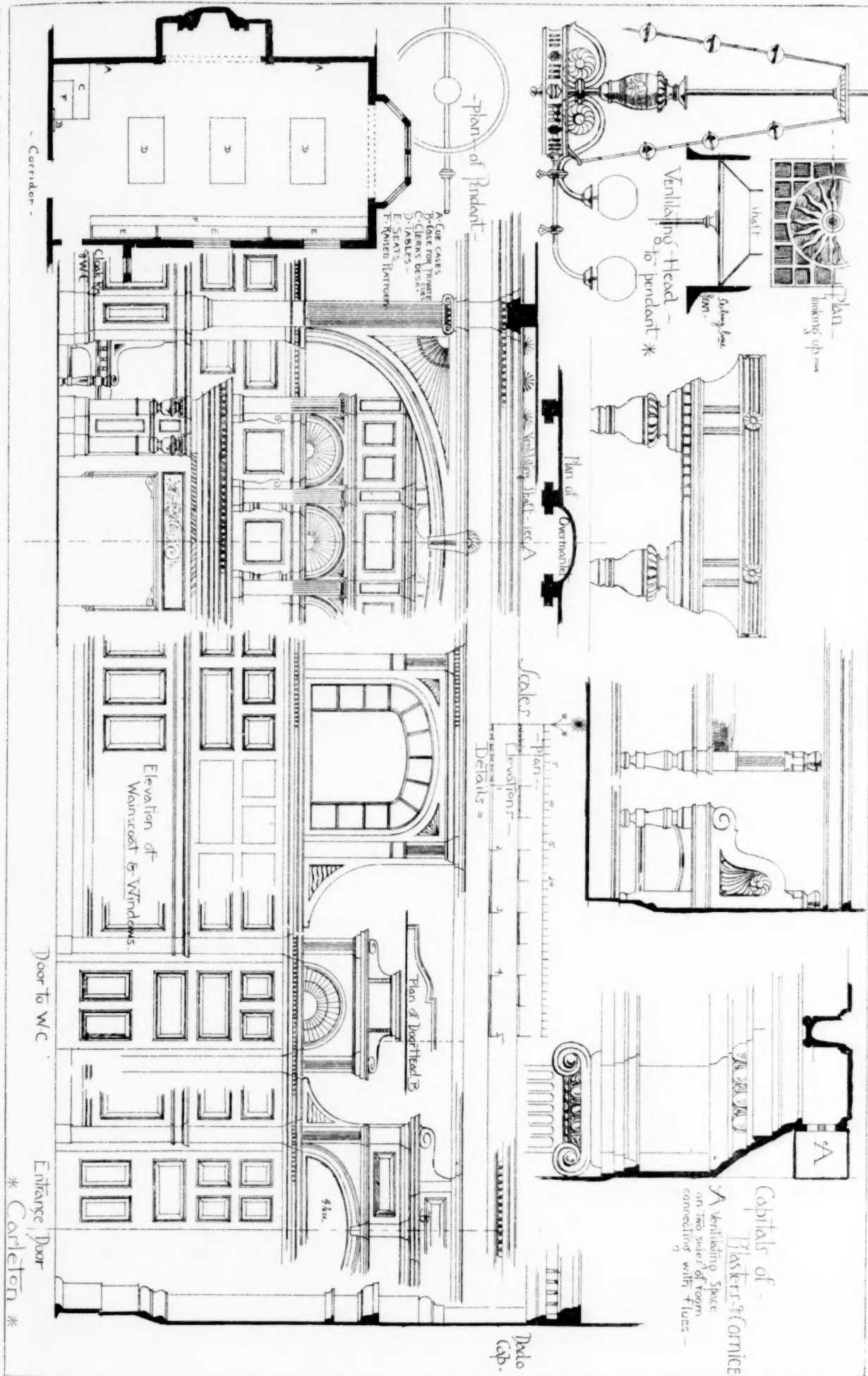




Interior of A. A. *
BILLIARD-HALL
* by Corbion *

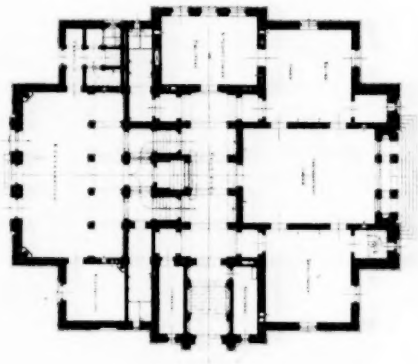
* AMERICAN *
ARCHITECT
* Competition *

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FIRST
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THE ARTISTS'
CLUB HOUSE

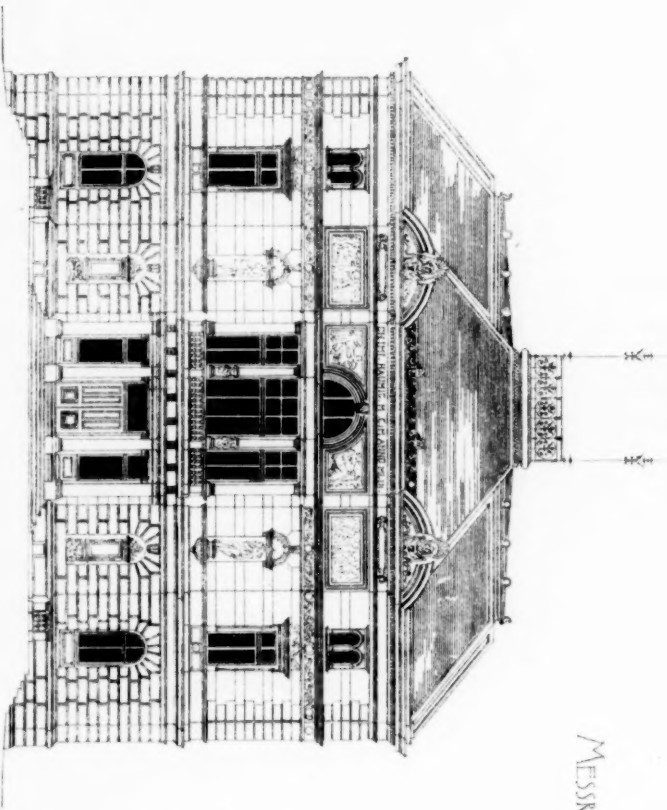
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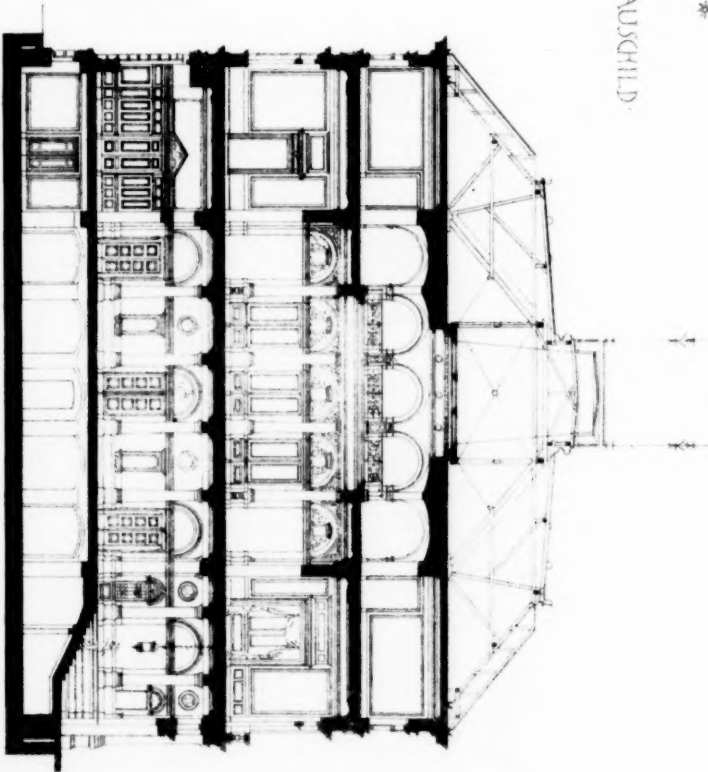
MESSRS. EITZNER & HAUSCHILD

ARCHITECTS.

SECOND
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ELEVATION TOWARDS RIVER EMB.



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nure, £1,919 4s. 10d.; and of ashes and selected material, £3,587 0s. 4d.; total, £5,506 5s. 2d.; expenditure in sorting, sifting and removal, was £3,811 18s. 3d., leaving a balance to credit of £2,194 6s. 11d. per annum. This does not, however, include the cost of collection in the city, or of cartage to the wharf. The wharf premises have been in use for a dozen years past, and were reconstructed in 1876, since which time no complaints have been made of smoke, of effluvia, or nuisance arising from them. Passing on to consider the apparatus suggested to be used for refuse disposal, Col. Haywood remarks that these consist of a destructor, a carbonizer, a carcase crusher, and a Firman dryer, which he inspected in operation at Leeds, Farnworth and Warrington. The destructor is a furnace of special construction, into which the dust, ashes and other refuse are thrown just as they are collected, without separating or sorting the materials. All is consumed in the furnace, which, in the first case, is lighted by cinders and materials selected from the refuse itself. The furnace is assumed to be continuously in operation, and great heat is necessary for its success; it leaves a residuum consisting of clinkers, which are sold for road-making or ground up into mortar. The carbonizer consists of a furnace attached to a close iron chamber, round which the heat circulates. In this chamber vegetable refuse is reduced to a charcoal, and the fumes given off are mingled with the products of combustion and destroyed. The carcase crusher is a modification of the ordinary bone crusher, used by artificial manure manufacturers, and consists of two pairs of toothed cylinders revolving with different velocities at some distance apart from each other. By its agency large masses of flesh and bone can be reduced to sizes suitable for being operated upon by the Firman dryer, which is an apparatus for reducing, by heat, to a dry, or nearly dry, condition, the previously prepared meat and bones; the residuum comes out in the form of a coarse powder, somewhat resembling the manure made at Paris and other cities on the Continent from human excreta, commercially known as "*poudrette*," and is said to be very valuable as manure. It has been suggested by the medical officer of health for the city that a large establishment should be made at Golden Lane, to which house, trade and market refuse, as well as condemned meat should be carted and dealt with by a system combining destructor, carbonizer, carcase crushers and Firman dryers. This would involve the sacrifice of a large rent of the area for commercial uses, and would also necessitate the maintenance of two stations, Golden Lane and Lett's Wharf, a division of site and work not tending towards economy, in the opinion of the city engineer. Further than this, the use of such a site, placed in the heart of a community is not, he thinks, desirable. The apparatus would not be efficient for the purpose, and he does not think the processes would be financially successful. Should the committee think a fundamental alteration in the mode of disposal is needed, the city engineer recommends that experimental works should be erected at Lett's Wharf on an area of some 6,700 square feet. On this could be erected a destructor of ten cells, capable of dealing with 10 tons of refuse per 24 hours, or more than half the city output, mortar mills, carcase crushers and Firman dryers. Messrs. Manlove, Alliott, Fryer & Co., tender to supply these as per plan and specification given with the report, for £6,605, to which would have to be added structural alterations at the wharf, estimated at £2,700. The commissioners of Sewers have adopted the recommendation of this report. — *The Building News*.

THE MOSQUE OF OKHBA AT KAIRWAN.

THE news having reached Tunis that most of the buildings at Kairwan were accessible to Europeans, the correspondent of the *Times* says that he resolved to visit the Holy City. Although about a dozen English travellers have passed through Kairwan since the Marquis of Waterford nearly lost his life there from the blows of a fanatic some forty years ago, nobody, with the sole exception of Mr. Rae, has ever succeeded in forming even an approximate idea of the configuration of the town itself, or obtaining trustworthy information as to the venerable relics it contains of the palmiest days of Moslem magnificence. He gives the following account of the most sacred building in all Africa: As a rumor was very generally current that the permission granted to visit the various religious edifices would be withdrawn, I lost no time in securing the services of an efficient guide and making a minute examination of the interior of the great Mosque of Sidi Okhba, the founder alike of Kairwan and of Moslem supremacy in North Africa. Mr. Rae's description of the exterior of the building, which was recently alluded to in the *Times*, is in the main correct, and the survey now made by French engineers also confirms his measurements. The details he received from a Moslem source as to the arrangements of the interior were inaccurate, and destroy in a measure the value of the ground-plan of this unique building which illustrates his "Country of the Moors."

The Mosque of Okhba is so constructed as to be in a direct line with the city of Mecca, and it runs, therefore, east and west. The prayer chamber faces the east, while the *minâr* or tower is built at its western extremity. On the southern side are four handsome porches. The door of the southeast angle of the edifice leads directly into the prayer chamber, which is approached by a similar entrance on the northern side. The gross length of the mosque is 142 yards; its breadth varies from 85 yards to 75. The prayer chamber measures exactly 40 yards by 80. Its main feature is a great central nave, the lofty arched roof of which is supported by a double row of enormous

black marble columns, with nine lesser aisles on either side of it having a flat ceiling resting on arches springing from eighteen rows of smaller columns of every conceivable shade and color. The prayer chamber is separated from the adjoining vestibule and cloister by a series of large carved wooden doors. These are generally closed, and hence arises a "dim, religious light," which can, however, be dissipated at pleasure. The guardians of the mosque were good enough to open several of them to enable me to thoroughly examine the columns in the interior. The arrangement of the pillars is by no means as regular as Mr. Rae imagines. In the first place, there are no columns at all imbedded in the wall at the east end, but the next row to it consists throughout of two pillars in close proximity. Most of the capitals are Corinthian, and of white marble, but I noticed some of stone or rough yellow marble, and of pure Byzantine form. These latter are very beautiful, and are adorned with grotesque combinations of fruit, flowers, and even figures, after the manner of the most ancient buildings in Sicily. Against the southern wall of the prayer-chamber is a row of thirteen columns, three being placed close together on the right of the door, with a solitary Byzantine pillar on the opposite side. Each of the other rows contains ten columns, except that of the northern wall, which possesses eleven. The most remarkable portion of the whole building is the nave, which terminates in a dome lighted by stained-glass windows directly over the *mihrab*. Nearly all the pillars of the nave are black or of a dark color, and are at least twenty feet in height. The capitals are very large and all white. The wall above the arches is covered with delicate tracery in chiselled cement. The little apse for the *mihrab* is lined with mosaic in different colored marbles, and has a red porphyry pillar on either side of its arch. To its left is a large slab of white marble, surrounded by broad bands of *verde antique*. It is covered with emblems, and is said to have been placed there by Okhba himself 1,200 years ago. The *minbar*, or pulpit, is on the right of the *mihrab*, and is about twelve feet high. It has twelve steps, is exquisitely carved, and in its side are several small doors, with curiously-wrought bronze hinges. There are forty pillars in the nave alone, two groups of four each being directly under the eastern dome. The total number of columns in the prayer-chamber, including the façade, is exactly 206. The building is indifferently lighted by clusters of small glass lamps suspended from the roof. When the doors are closed and the worshippers engaged in evening prayer, the scene is a very impressive one and not easily to be forgotten. The prayer-chamber opens onto a vestibule, the roof of which is somewhat lower, but which has a second dome in a line with the central nave. The columns and arches of the vestibule are much more lofty than those of the cloister or arcade which runs along the remaining portion of the southern and northern walls, leaving a large open space in the centre, paved with slabs of white marble, now in a very dilapidated condition. The pavement covers vast water cisterns beneath, and in the middle of the court is a very complex marble sun-dial, apparently of no great antiquity. The total number of columns in the vestibule is 34, and in the cloisters 172, making a total of 412 in the interior of the mosque; but their arrangement is by no means uniform. Those in the prayer-chamber present every variety of richness and color, but the pillars in the vestibule and cloister are nearly all of a very poor kind of white or gray marble. The arches are nearly all in the shape of a semicircle. On four of the pillars in the cloister are Arabic inscriptions, one in Kufic character and of some length. The *minâr* is about 120 feet high. It has three stories, each having a crenellated battlement. The summit is reached by an excellent staircase of white marble, many of the slabs still bearing traces of their having seen service in some Roman building. The door of the *minâr* is low and is formed of three slabs, covered with rich carving. Close to the door two Roman inscriptions are imbedded in the wall. One is upside down, but it contains the words "Cæsar" and "Trajan." The other is incomplete, but apparently runs thus: — "ANTONINI FILII . . . AURELLIA ANTONINI . . . DIVI NERVA EAD . . . NEPOTIS . . . DEDICAVERT." Ascending the tower, I noticed in the corner the white flag which a week ago proclaimed Kairwan's unconditional surrender of its position as "an intact Moslem city," and its renunciation forever of its pretensions to uphold any longer the spirit of its most cherished traditions. The view from *minâr* of Sidi Okhba at Kairwan is a very remarkable one. Immediately beneath us were the pillared cloisters of the mosque itself, and the domes, cupolas, roofs, and minarets of the countless colleges, schools, and other buildings in which the Tunisians have for ten centuries and more "steeped themselves in Islamism."

GAS-ENGINES.¹

IN motors other than the steam-engine, attention should be called to the admirable results arising from the application of science to the gas-engine. Until the last few years, gas-engines made no progress; they produced very little work for the amount of gas consumed, and they were unsatisfactory in every way. As an instance I may mention, that at the Institution of Civil Engineers, when rebuilt in the year 1868, a gas-engine was fixed, for the purpose of working the fan which ventilates the meeting-room. Its use was continued for a few years until it had proved itself so thoroughly

¹ A portion of the opening address read before the Society of Arts by its Chairman, Sir Frederick J. Bramwell, F. R. S.

unsatisfactory that it was removed, and was replaced by an hydraulic engine.

In the gas-engine, the power is developed (as is well known) from the ignition of a combustible mixture of gas and air. In the early gas-engines, a sufficient and uniform charge of such a mixture was introduced into the cylinder, and being lighted either electrically or by the application of a gas-flame, an explosion took place, attended by an immediate development of pressure and of heat. The piston being attached by the connecting rod to the crank could only travel at such pace as was permitted by the motion of the crank, and thus it was not possible for the piston to move with the needful rapidity to turn into work the heat developed by the explosion. This heat, therefore, was communicated to the walls of the cylinder, from which it was abstracted by a constant current of water, and thus a very great part of the energy was uselessly carried away. Moreover, the pressure upon the piston, instead of being that which is desirable, viz.: a practically steady or continuous pressure, giving as it were a push to the piston, was short and violent, inflicting on the piston and its connection a blow. The subject being considered scientifically, these defects were brought to light, and the cause of the non-success of the gas-engine was ascertained. The first attempt at a remedy was the liberation of the piston from the crank-shaft, so that upon the ignition of the mixture the piston could be shot upwards in the cylinder at a pace rapid enough to utilize a great portion of the heat, and to convert it into work. On the descent of the piston under atmospheric pressure, a rack attached to it became, by means of palls, connected to the wheel of the driving shaft, and thereby gave the necessary rotary motion. Engines of this construction were largely made, and afforded good economic results, but they were noisy, and were also irregular in their motion.

The recent improvement in gas-engines was, while re-establishing the connection between the piston and the crank, the providing for an immediate and useful absorption of the heat generated in the explosion. This is effected by charging the cylinder, not merely with the explosive mixture as before, but with that, *plus* a considerable quantity of an incombustible aeriform fluid of some kind, either atmospheric air or the products of combustion, as the case may be. This incombustible part of the charge is situated in the cylinder, at a part remote from the point of ignition, and gradually mingles with the combustible mixture, which is richest at the point of ignition, and it is into the incombustible aeriform fluid, thus provided to receive it, the heat generated passes, thereby raising the pressure of the whole volume of aeriform fluid in the cylinder. This pressure propels the piston, and the whole mixture being of considerable bulk, the pressure is sustained so as to follow up the piston as it moves away. An indicator diagram taken from one of these engines closely resembles that from a steam-engine, and differs widely from the short, sharp blow diagram of the early gas-engine.

The result of this improvement has been to cause the gas-engine to be introduced and employed in a vast number of cases. There are many temptations to the use of a good gas-engine. There is no fear of the boiler blowing up, no fear of its being injured for lack of water; no stoking is needed; hardly any attention is necessary; and having regard to the great requirement for electrical illumination in clubs, theatres, and even in private houses, there appears to be a very large future for this kind of motor.

Ordinarily, gas-engines are worked by the gas supplied from the public mains, but we are to be favored here this Session by a paper from Mr. Dowson, describing the arrangement he uses for generating a cheap gas, not suited for illuminating purposes, but calculated for employment in motor engines. According to the statements made by Mr. Dowson, at York, it would appear that power can even now be attained by this mode of utilizing fuel for less cost than it can be obtained in the ordinary steam-engine of the present day.

DANGEROUS CHIMNEYS.

THE gale of Friday last, says the *Building News*, developed, among others to which we have referred, a danger not hitherto regarded as one of a very serious or alarming character. In the account of accidents caused by this unusually early and severe storm, a considerable portion of the casualties (at least so far as the land is concerned) was due to the fall of chimneys. There is in the metropolis a comparative paucity of industries requiring the aid of lofty shafts to encourage and assist in the combustion of fuel for generating steam; and we are, therefore, the more surprised at the extent and character of the recent disasters in that direction. In the great manufacturing centres of Lancashire and Yorkshire, much attention is given to the construction of the high chimneys, which occupy an important position, for without their aid steam could not be forthcoming, and the industries dependent on its potent agency would speedily collapse. Hence the care bestowed on the erection of these lofty "stalks," their construction being confided to special workmen, who deftly rear them up, producing some of the best examples of brick construction in the country. The Lancashire chimney builder does all the work of construction "overhand," operating from foot-holes inside the stalk, up which all the materials are hoisted. The best and most general form of these excellent chimneys is circular, thus securing not only facility of construction, but a capacity to withstand external pressure during storms. The two well-known high chimneys at Glasgow were built to overcome the damages caused from the outflow of deleterious gases in the extensive chemical works of which they now form an important and indispensable adjunct.

These great chimneys are highly creditable examples of brick construction, exceeding in their height St. Paul's, and may be regarded as creditable monuments to the industrial enterprise which led to their construction.

Chimneys so circumstanced suffer but little damage from the most violent gales, and when an exceptional disaster takes place, its cause is generally traceable to defective foundations or a too hurried up-rearing of the superstructure. Small chimneys, whose functions being of limited character, are, generally speaking, built up in the most hurried and careless manner, and in such positions as to render them specially liable to the damaging influences of sudden and violent gusts of wind. Not less dangerous, and perhaps more subject to disaster, are the slender and attenuated chimneys of the dwelling-house, which, owing to the obtuseness or indifference of the architect, are placed in all positions in and around the modern villa. Central stalks or chimneys are not now much the fashion, although all past experience proves they best provide against many of the inconveniences resulting from back-draughts and their inseparable accompaniments of smoke. Many a well-constructed grate and fire-place is blamed for inefficiency where the true cause of their faulty action is due to damp and cold flues in external and badly-clothed chimneys. To maintain the true action of a chimney-shaft of any kind it is necessary that it should be protected against weather dangers, or, in other words, built with sound and non-absorptive materials, and thus rendered capable of resisting the insidious influences produced by abnormal gales or rainfalls.

Although, unfortunately, the late gale caused much damage to many fair-to-look-at chimneys, the "pots" also, in a greater degree even, helped to swell the long list of disaster and death. The chimney-pot proper receives but scant attention in the metropolis, from its being regarded as a matter of little import, its shape and capacity being left to the whim or caprice of the bricklayer. This question is not so treated in such cities as Glasgow and Edinburgh, where special provision is made on the roofs of the houses, commanding ready access to the chimney shafts for the purposes of reparation, or other necessary attention, to what is regarded in the North as an important part of the building. Chimney-pots are looked upon as ornamental factors in the scheme of London house-building, and, from their variety and grotesqueness, it would appear as if some artistic efforts had been applied to their design and fabrication. Their prominent position, stuck or placed on the top of a brick stalk, is frequently ludicrous; but the smile which their appearance is calculated to create is speedily repressed when it is considered how much danger lurks behind their ornate nothingness. Chimneys and chimney-pots are in themselves sufficiently alarming and dangerous in their effects when tilted from their ill-chosen and imperfectly-protected position; but the more widely-spread disaster they occasion in breaking through roofs and crushing weak walls, is the most damaging outcome during storms.

There are an innumerable lot of small detached chimney-shafts in every populous town, placed in out-of-the-way corners, which have been recklessly constructed, being used in connection with bakers' ovens in the midst of dense populations, which, from their position, are more liable to be overthrown in exceptional weather. In London there is a sort of "roving commissioner," or some such officer, who, aided by the police, pounces down upon unfortunate bakers who are found neglecting the consumption of the smoke from their oven-flues. Such an authority should be supplemented by an experienced builder, who should examine these numerous frail structures, and where found deficient in stability, order them to be pulled down, and thereby avert the dangers which they now too frequently cause. The passer-by along the main streets cannot see, and therefore knows nothing of, these dangers lurking in secret places beyond his "ken"; but let him step aside, and, in such districts as Whitechapel, a very little trouble will convince him that there exists in such quarters a state of things hardly credible. He will find some very eccentric-looking structures, many of them bolstered up and kept together by singularly contrived combinations of wood and iron, which, under ordinary circumstances, suffice to maintain them in a fairly perpendicular position.

It is surprising that the chimney dangers, although capable of comparatively easy averting, receive but scant attention at the hands of architect and builder, from which it may be inferred that they regard the question as one of slight importance. A chimney to be capable of performing its main functions, should be solid and substantial in character, having a capacity of securing — under all circumstances — perfect draught and comfort to the house in which it is built; with perfect freedom from smoke and back-draught. The chimney hitherto has been mainly considered as the prime heat-producing agent of the household; but in the not far distant future it will become an important factor in the needful schemes of ventilation which are now gradually moving to the front. When that time arrives, the architect must give more heed to the question of the chimney, and properly provide for its stability and efficiency. The foundation on which it will be based must be solid and durable, and not only competent to withstand the pressure placed on it, but it must also be built of such materials as will prevent the ascent of ground-moisture from below, and resist insidious climatical influences from above. When the chimney and its proper functions are better understood, and accounts taken of the future work it has to perform in warming as well as purifying the house, more attention must be given to its character and details.

LIME AS A PRESERVATIVE.

LIME, it is well known, preserves iron-work; and Wren, in his "Parentalia," mentions the freshness of iron cramps which had been bedded in mortar for 400 years. It is usual to lime-white iron mains, tanks, and other articles to prevent rust; and bricklayers are in the habit of smearing their trowels with mortar. In the demolition of old buildings the ends of joists, ceiling-laths, quarters, plates and bond timber which have been bedded in lime-mortar, are usually found in a sound condition, in spite of their having been bedded all round. Higgins, in his well-known treatise on "Calcareous Cements," now rather an antiquated work, speaks of the value of lime-water or water freed from "acidulous gas." Something of this protection is rendered to wood and iron which are covered with lime. It is well known that an alkaline solution prevents corrosion of iron; and Mallet, in his work on "The Action of Air and Water upon Iron," proposed lime-water to replace bilge-water, and thus prevent the internal corrosion in iron ships. Lime has a powerful affinity for oxygen, and to this cause may be attributed its preservative effects upon iron and other materials.

It would be interesting to record the many evidences of the value of lime in arresting decay. As long ago as 1769 a Mr. Jackson, a chemist, obtained permission to prepare timber for the shipyards, by immersing it in a solution of salt water, lime, muriate of soda, etc.; another practical experimentalist suggested slaked lime, thinned with a solution of glue, for mopping the timbers of a ship. The preservation of timber has been attempted by surrounding it with pounded lime, and several attempts have been made to preserve timber by the use of lime. Mr. Britton in his work on "Dry-Rot," mentions a number of cases where lime has been of service. He says "quicklime with damp has been found to accelerate putrefaction in consequence of its extracting carbon; but when dry and in such large quantities as to absorb all moisture from the wood, the wood is preserved and the sap hardened." "Vessels long in the lime trade have afforded proof of this fact, also examples in plastering laths which are generally found sound where they have been dry." The joists and sleepers of basement floors are rendered less subject to decay by a coating of lime-white; and this might be renewed at intervals. The same writer adds, "it does not appear practicable to use lime-water to any extent for preserving timber, because water holds in solution only about 1-500th part of lime, which quantity would be too inconsiderable; it, however, renders timber more durable, but at the same time very hard and difficult to be worked." These facts are instructive; they show, at least, that lime in a sufficient quantity kept dry is a valuable preservative agent, and some practical chemist might earn a deserved repute if he could prepare a lime solution that would be capable of rendering so substantial a service to all builders. Such a solution would be at least sufficiently remunerative to make it worth while to try a few experiments in this direction. It is stated on good authority that the white ant in India costs the Government £100,000 a year for repairing wood-work, bridges, etc., caused by its depredations. Concrete basements have been found to resist the encroachments of the ant. Dr. Darwin proposed a process of timber preservation some years ago, in which an absorption of lime-water was effected, and after that had dried, a weak solution of sulphuric acid, so as to form sulphate of lime in the pores of the wood. The growth of dry-rot or fungus on timber has been prevented by lime-water, and many instances have been mentioned of its value.

The cleansing and sanitary virtues of lime are more generally known. The painter uses lime-water to kill the grease upon his work instead of turpentine; and soot stains on the outside of flues have been removed by the agency of thick warm lime-wash. The value of lime-white as a wash for walls, as a purifier of the air in sheds, stables and other buildings, is unquestionable, though all lime-washed roof-timbers have rather a rough and penurious look. As a preservative coating to the joists of floors and other timbers not exposed to damp, it seems worthy of a more extended trial. — *The Building News*.

A CANAL IN THE FAR EAST.

HUMAN ingenuity has of late years been frequently directed to the task of cutting canals through the narrow isthmuses to be found at numerous spots over the globe, and since the successful completion of the Suez Canal engineers have devoted their attention with enthusiasm to similar schemes in other quarters of the world. Already we are promised within a reasonable period water-ways through the Isthmuses of Panama and Corinth, and now it is stated that a plan is on foot for cutting a canal through the Isthmus of Kraw. As this last undertaking is one of very considerable importance to the Eastern commerce of this country, and its full significance is certainly not appreciated, if even it be known, it may not be uninteresting to explain the objects which the promoters of such a scheme might have in view, and the consequences which would naturally follow its successful accomplishment.

If the reader will turn to the map of the Indo-Chinese peninsula he will find, where the broad red line of British territory reaches its southern limit in the Province of Tenasserim, the small stream of the Pakchan, situated on the spur of a mountain range, and in territory where the authority of Malayan States encroaches upon that of Siam. The town or village of Pakchan has also been, and in future is likely to be, better known as Kraw. At this point the Malayan

Peninsula, which stretches southward for 500 miles to Singapore, is at its narrowest breadth, and the distance across from the side of the Indian Ocean to that of the China Seas is further decreased by the existence of natural waterways for some distance inland from both shores. From side to side it is no more than 50 miles, and the Pakchan River on the western coast and the Itassay on the eastern afford the ready means of further reducing it. The distance, therefore, over which it would be necessary to cut a canal would probably not exceed 30 miles. The neighboring districts are known to be fertile and to contain great mineral wealth. A tin mining company has been established for more than ten years at Malewon, on the Pakchan, and gold has been found in the neighboring stream of the Lenya. So far as our knowledge goes the engineering difficulties also are not of a stupendous character, and political drawbacks and considerations fortunately do not exist.

On the other hand, the principal and incontestable advantage of such a canal would be that it would shorten the journey both from England and from India to China by at least 600 miles. How great that advantage would be and what incalculable results might attend it, all those who are aware of the development of which Chinese trade is susceptible will perceive. The French would also be greatly benefited by the shortening of their road to Saigon and their possessions on the Cambodia; and not only might their sympathy and co-operation be counted upon, but, so far, they appear to have even taken the initiative in the matter. Whether the present scheme be one calculated to effect its object or not, there can be no question that the cutting of a canal through the narrow Isthmus of Kraw is an undertaking calling for not merely the support but even for the active participation of the Government of India. It is certain to be accomplished sooner or later, and it is essentially a scheme that should be carried out under its influence and control. A Kraw canal affords one way of improving the internal means of communication of India and its dependencies, while it simplifies the navigation of one of the principal ocean routes. — *The London Times*.

THE RECENT TEST OF FIRE-PROOF MATERIALS.

DECEMBER 9, 1881.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Sirs,—In your very detailed account of the test of fire-proof materials and methods, in the *American Architect* of the 3d inst., you omitted to mention that strips of lead were suspended within the Standard Fire-Proof Column of the Wight Fire-Proofing Company. As only the similar strips in the unprotected column are mentioned as having been melted, I fear that no examination was made of the condition of the lead in the first-mentioned column, which I would like to hear about. An important omission in the column test was the failure to provide for measuring the relative expansion of the columns, and to subject them to their proper loads. This omission seems to have been unavoidable under the circumstances, but I hope it will be supplied if further tests are made.

The protected iron girder had to carry its natural load, and must have been subjected to a transverse strain of several tons. I hope that in any future test a similar unprotected girder will be placed across the building near it, so that it can be seen what would be the effect on iron girders as heretofore generally employed. It struck me that the severest test of all the materials was that of the protected girder.

I think that the same cause may be assigned for the passage of fire through the wire-and-plaster ceiling, and the consequent burning through four inches of hard-pine planking in two places, as that which is given for the charring of beams in four places over the tile ceiling; namely, the washing off of the fresh plaster by the severe streams from the fire hose, followed by the second and unexpected fire.

I noticed, after the first fire, two places in the tile ceiling, where not only was the plaster washed off, but the mortar between the joints was washed out. There may have been more which I could not see on account of the steam. I could also see the wires of the wire-and-plaster ceiling in several places, and the surface was considerably roughened.

I think that I must have been the last to enter the building (and two other gentlemen were with me at the time) before it became too dark to see anything. It was impossible for any one, without danger to life, to pass in beyond the line of the iron girder, and the wire ceiling could not have been reached from that point, even with a cane. So I think your assumption, which seems to be stated in rather a positive manner, that it was "punched with a stick" is not founded on facts or reason.

It is very evident to my mind that all the damage to the ceiling slight as it is, was caused by the second fire after openings had been made by the force of the water. I had but a few minutes to examine it on the morning following the test, before taking the train for New York, and that was my conclusion from such an examination as could then be made.

You say you "hope that the manufacturers and patentees most interested will aid the committee in charge in their endeavor to conduct a second and more satisfying experiment." I certainly thought it would be satisfactory to know that the fire did not penetrate the roof which you say was subjected to "the fiercest and most satisfactory test"; but if it is not, the Company that I represent will be glad to see the experiment repeated. But if the committee try the test again they must first let the pointing of the joints and over the plates be

thoroughly dried before plastering the ceiling. Then they must wash the ceiling over with a brush before plastering, and give the whole time to set, which was not done before. For our tile ceilings do not depend upon the surface plastering for their fire-proof qualities, but they do depend upon having the joints perfectly filled and the mortar well set by time. I have no fear as to the results, if these injunctions are carried out, and will be very much pleased to have our ceilings tested for any length of time, and to any degree, in comparison with any other kind subjected to the same ordeal.

Respectfully yours,

P. B. WIGHT,
General Manager Wight Fire-Proofing Company.

[THE condition of the lead enclosed in the column of the Wight Fire-Proofing Company was not examined, because it could only be done by taking down the column, and in so doing disturbing the stability of the frail test-building, which in view of the desirability of holding a second test, it did not seem wise to do. The committee judging by the manner in which the protecting material similar to that about the column protected the wood-work of the building have good reason, seemingly, for believing that the lead strips are still intact.

Steps are now being taken to secure money enough to conduct a second series of experiments on a much larger and more complete scale, and there seems little reason to doubt but that those who have the matter in hand will succeed, since the experiment already made has excited a real interest in Boston, at least. — EDS. AMERICAN ARCHITECT.]

TIN-LINED FIRE-DOORS.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — At the recent trial of fire-proofing materials in connection with the Fair of the Charitable Mechanic Association, I am informed that the doorway of the building was closed with what purported to be an adequate wooden door covered with tin; that this door took fire very early, and had to be protected with water played from outside.

This puzzled me until I learned that the wooden door was covered with tin only upon the inside, which may have retarded the effect of the fire by about two minutes; but for any further protection such a door would be as worthless as a thin iron door under the same conditions.

It is a pity that the door had not been made by some one who understood what its purpose really was.

Yours very truly,

E. A.

AN EXPLANATION.

We owe it to both Messrs. Fisk & Coleman, proprietors of the Boston Terra-Cotta Works, and to Messrs. Lewis & Lane, to say that the latter gentlemen are proprietors not of the terra-cotta works named above, as stated in our issue for December 3, but of the Boston Architectural Terra-Cotta Works. — EDS. AMERICAN ARCHITECT.

NOTES AND CLIPPINGS.

THE TRADE SUPPLEMENT. — We desire to publish the first number of the *Trade Supplement* with our issue for January 7, 1882, but as yet our advertisers have not sent in the necessary material, and until this is forthcoming the publication must be delayed. Almost every advertiser has signified his intention of taking advantage of the opportunity we offer, but as yet few have done more than this.

DESTROYING THE CANALS OF VENICE. — A correspondent writes to the *London Daily News* deprecating impending changes at Venice. He says he is assured that the syndic and prefect, who have control of municipal affairs, have determined to fill up the smaller canals and convert them into streets. The gondolas are threatened with absolute extinction, owing to a recent concession to a steamer company on the grand canal. Through competition the gondoliers have been reduced to a state of great poverty. It is openly stated that their masters received 30,000 francs as the price of their acquiescence in the changes.

TUNNEL UNDER THE PYRENEES. — The new railway, approved by the Spanish Senate, is to run from Saragossa to Huesca, then by Upper Arragon to Jacca and Canfranc, reaching the French frontier near the gorges of Somport, where an international tunnel, four miles long, will pierce the chain line of the Pyrenees. It will then run amid scenery of Alpine grandeur on the French side to Oloron, thus meeting the South and Central French lines, and making the journey between Paris and Madrid eight hours shorter than by the railway communication already existing. It is eleven hours from Madrid to Huesca. The new line will be 125 kilometres from Huesca to the tunnel of Somport, and can be built in four years with Government subsidy. It will give immense satisfaction to the inhabitants of Arragon, who secure a new channel for the export of millions of dollars' worth of wines to the south of France, and easier access to Spas in the Pyrenees. Antiquated military circles in both countries are the only opponents of the plan. Several foreign and native companies offer to undertake the work immediately. — *Exchange*.

THE FRAUENKIRCHE AT NUREMBERG. — Important restorations have been completed in the Frauenkirche of Nuremberg, one of the most remarkable structures in that ancient town, and the church was recently reconsecrated by the Archbishop of Bamberg. Built in the latter part of the fourteenth century, the building still retains the celebrated clock in which the seven Electors are made each hour to pass in solemn procession around the central figure of the Emperor. Artists from Vienna, Munich, and Innsbruck have restored the porticoes and the sculptures of the west front.

THE GENESEE FALLS MOTOR. — For the past three weeks, James M. Bois, president of and practical engineer for the Hydraulic Motor Company, has been quietly but steadily perfecting the details in the mammoth machinery at the lower falls of the Genesee River, for the purpose of condensing the air that is to be used for the company's motive power. The final fitting together of the large pipes and the construction of the flumes have been completed, and the machinery has been found to work smoothly and successfully. The compressor, the machine that has been so long on the way from Norwalk, Conn., has arrived and now lies on the Central freight-platform, just west of State Street. It is a very heavy machine, thirty thousand pounds in weight, and is of immense power. It is to be taken to the works as soon as possible, and lowered over the bank, which will be a great undertaking. When the compressor is at the required spot, it will require but a few days to make the necessary connections with the other machinery, and, if the weather permits, the people of Rochester will see the car running over the street-car tracks by means of compressed air within three weeks. To give some idea of the power obtainable from the machinery, it is stated as a fact that the actual weight of water that will flow into the pipes each minute is six hundred tons. This falls a distance of over fifty feet, thus giving a power that is almost incalculable. — *Rochester Democrat*, November 20.

VENTILATION. — With respect to ventilation, it is the thing that the natural man abhors. In reference to it, I feel inclined to paraphrase that which has been said about charity, namely, that it is an emotion of the mind in which A never sees B in want, without desiring to relieve him, not with the goods of A, but with the goods of C. Similarly, it may be said that when A feels the atmosphere of a room stuffy, he desires it to be changed, not at the risk of himself, A, catching cold, but at the risk of B, or any person other than A. If a proof of this were wanted, let me refer you to any assembly where there is some big man whose orders are taken — a judge on the bench, or a chairman of a meeting. What is the direction to the attendant, when the judge or chairman feels there is a need of ventilation? "I feel the air of this court or room very close; open two of those windows down there" — "down there;" not "open two of the windows near me." The big man, with the natural fear of ventilation, lets somebody else bear the burden, while he himself gets the benefit. It is very rarely indeed that the man "down there" has either the readiness or the courage to protest. The only instance that occurs to me of the kind is that of Sydney Smith, when, as a curate, sitting at a dinner largely attended by the higher orders of the clergy, he said to the waiter, who was about to open a window close by, "don't give me my death of cold; open one behind a bishop." — *Sir F. J. Bramwell to the Society of Arts*.

AN ART CITY. — The latest æsthetic idea is certainly a curious one, and comes from America. It is said that an art city is to be founded there, of which all the inhabitants shall be musicians, painters, sculptors, literary men and the like. A correspondent says that those in active life will retire there for their holidays; while others, tired of the world, but still eager for art, will be retained permanently to form a focus of art instruction, which will render it unnecessary for young American art-students to come to Europe to study. Behind the wild idea of an art city, a sort of glorified Bedford Park, there is a background of solid sense; and as I hear Gounod has already signified his adhesion to the proposal, and Rubinstein is said to have it under consideration, it might be assumed that the obstacles suggesting themselves to the non-artistic mind are not regarded as insurmountable. As regards the financial side of the scheme, I am assured that no doubt is felt. Numerous wealthy Americans, out of pure patriotism, would freely support a project of this kind, though it possibly might not find favor with the all-powerful American press, as one of the primary conditions is the exclusion of all art critics from the sacred precincts of the art city. It is a most amusing scheme; but oh how fearfully the artistic inhabitants would quarrel with each other. — *Court Circular*.

THE LIBRARY AT BLENHEIM. — The library at Blenheim is one of the largest apartments in any of the country mansions of England. It formed from the first a prominent feature in the palace designed and built by Sir John Vanbrugh, who began his work in 1705, and which was not completed when the Duke died, in 1722. The splendid apartment occupied the whole of the west wing, being 184 feet long by 28 feet wide. It is entered from the fine state-rooms, the saloon, the dining-room, and the two drawing-rooms, which, with the grand cabinet at the east corner, form the ground-floor of the façade. The centre of the ceiling in the great hall is painted by Sir James Thornhill, the subject being the "Victory of Blenheim," for which he was paid the munificent sum of 25s. the square yard. The palace cost £300,000, of which £240,000 were contributed from the Privy purse. It could not, however, be brought into existence now under £1,000,000. — *London Truth*.

ONE WAY TO PREVENT DECAY OF WOOD POSTS. — The decay of wood embedded in the earth is difficult to guard against; but, according to *The British Farmers' Gazette*, a simple precaution, costing neither money nor labor, will increase the durability of posts put in the ground by fifty per cent. This is simply by taking care that the wood is inverted — i. e., placed in the opposite direction to that in which it grew. Experiments have proved that oak posts put in the ground in the same position as that in which they grew, top upward, were rotten in twelve years, while their neighbors, cut from the same tree, and placed top downward in the soil, showed no signs of decay for several years afterward. The theory is that the capillary tubes in the tree are so adjusted as to oppose the rising moisture when the wood is inverted.

UTILIZING SAW-DUST. — There is a new project at Minneapolis to utilize the saw-dust thrown out from saw-mills, by mixing it with peat, grinding both, and then moulding the product into bricks or blocks of a convenient size to use for fuel.

Prospectus for 1882.

THE present indications are that during the coming year the editors will be enabled to make the *American Architect* more interesting and valuable than ever before, and the fact that each successive year has added new attractions to what was already of considerable merit may be taken as a guaranty that during the year 1882 the standard of its performances will be in no degree lowered. The editors would prefer not to make any announcement of their intentions until some plans now under discussion are definitely decided on, but custom seems to require that about this season of the year a prospectus for the ensuing year shall be issued by all publishers of periodicals, and we follow in the beaten track, suggesting to our subscribers, however, that they may safely read between the lines promises of more than actually meets the eye.

The character of the illustrations depends so largely on the interest which the more capable designers in the profession take in the publication of this journal that the editors might stand excused from pledging themselves either to maintain the standard of excellence already attained or to raise it still higher. But there are certain veins of individual endeavor which the increasing prosperity of the journal will enable them to pursue with considerable vigor, and as "nothing succeeds like success" they may hope that the impetus that they are able to give this important feature of the *American Architect* will be followed up by former contributors, and that those members of the profession who have never contributed a design to its pages will no longer leave to others the privilege of upholding in the eyes of the reading public of both hemispheres the dignity of architecture in America.

As in past years the illustrations will consist of photo-lithographic reproductions of American and foreign buildings, while the pure Heliotype views from nature will as before be published occasionally as circumstances may demand — and it is sincerely hoped that the demand may occur with increasing frequency. In like manner colored prints of interior decorations and other suitable subjects will be published in the course of the year. The feature, however, which will add most to the attractiveness of the paper will be the publication of a greater number of cuts in the body of the text of each number, which will give to the journal an entirely fresh and, it is hoped, more attractive aspect, for it will be the endeavor of the editors to make every cut of value to the architect as well as interesting to the general public.

The Competitions in design with money prizes will be continued through the year.

The general tone and literary character of the journal will accord with its past performance, and it is perhaps invidious to particularize even those papers for which arrangements have already been made. The papers on "Building Superintendence" which have appeared during the year 1881 in the first issue for each month — or the Monthly number, so-called — and which have detailed the manner of constructing a stone chapel, and have proceeded so far in the construction of a wooden dwelling-house as the plumbing work, will be continued during the year, and after completing the construction of this house will next describe the manner of building a large city office-building, during which description a discussion of the strength of materials and other matters of general scientific construction will be taken up. The instructive series of papers on "Building Stones" will probably be extended through the year.

In the line of fresh endeavor it may be stated that arrangements are now making for series of papers on the following topics of general and special interest: —

A series of illustrated papers by different writers on the architectural character and buildings of different cities throughout the country; a series of papers on village improvements and village improvement societies; a series of practical papers on scaffolding; a series of illustrated papers on what American decorative artists are accomplishing; a series of papers on wood-engraving; a series of papers on sanitary matters; and possibly a series of papers on steam heating.

About this skeleton-work of subjects, which as may be seen are diverse enough in character to suit the most dissimilar tastes, while they are all of much general interest, will be arranged articles on kindred topics and matters of current interest, as has been the custom of the journal in former years.

The following well-known writers may be expected to contribute of their knowledge during the coming year:

EDWARD ATKINSON,
PROF. CHARLES BABCOCK,
ALEXANDER BLACK,
ERNEST W. BOWDITCH,
J. M. BRYDON,
PROF. T. M. CLARK,
F. CROWNINSHIELD,

CHARLES A. CUMMINGS,
HIRAM A. CUTTING, PH. D.,
CHARLES H. HART,
PROF. W. P. P. LONGFELLOW,
PROF. N. CLIFFORD RICKER,
R. RIORDAN,

ARTHUR ROTCH,
MONTGOMERY SCHUYLER,
HENRY VAN BRUNT,
MRS. SCHUYLER VAN RENSSELAER,
PROF. WILLIAM R. WARE,
GEORGE E. WARING, JR.

In conclusion it may be said that the policy of the *American Architect* is in the largest and best sense a liberal one, and its aim is to cover with what completeness it may the whole field that by the widest construction may be conceived to be included within the limits of its elected province, which is defined only by the boundaries of Architecture, Construction, Sanitation, the Fine Arts, and the Arts of Decoration.

The journal is not and will not be partisan in tone; its pages are open to the discussion — within proper limits — of any pertinent subject from every point of view; it is not the tool of any association, clique or body of men; it is conducted solely by its editors, and they alone are responsible for its utterances and the facts and theories it promulgates.

To those who have in the past helped to make the *American Architect* what it to-day is the editors desire to express their grateful acknowledgments, and at the same time to assure them that their coöperation in the future will be cordially accepted.

BUILDING INTELLIGENCE.

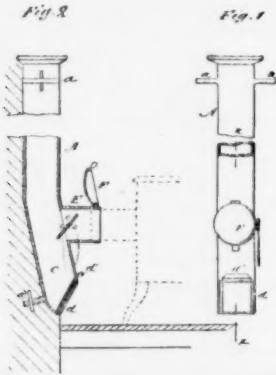
(Reported for The American Architect and Building News.)

[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 twenty-five cents.]

248,337. SMOKE-FLUE.—Constantine L. Brady, St. Louis, Mo. The flue A, which is of sheet or cast iron, and square in cross section, is intended to take the place of the brick chimneys in frame houses, and to be built in the walls of brick houses, or it may be inserted in the smoke-flues of houses already built. To support the flue in place in the chimney, arms, *a a*, are provided at or near the top of the flue and the arm *a'* near the bottom, which hold the flue firmly. The lower portion of the flue is bent or curved inward, so that the open end *d* is inside of the house, a short distance above the floor, and is closed by the sliding door *d'*. The horizontal pipe-connection E reaches through the wall, and is provided with the damper *e*, which is nearly in line with the front wall of the flue, in which position it serves also to prevent the pipe coming



from the stove being inserted too far into the flue. The extension E, when not in use, is closed by the hinged cap F, which is held in place by a suitable device. It will be understood that the flue should be provided with as many pipe connections E as there are stoves to the house, though only one is shown in the drawings, and from the construction of the flue it will also be understood that the flue is practically self-cleaning, as the ashes and soot will not adhere to the smooth metal surfaces of the flue, but will fall to the soot-chamber C, which is formed by the flue being extended below the pipe-extension E, so that soot can be easily removed from the inside of the house by simply raising the sliding door *d'*. Between the stove-pipe extensions E of the different stories, the flue may be surrounded with fire-clay sections, if desired, thus avoiding all possible danger of fires from the flue.

- 250,638. CONTOUR-MEASURING TOOL.—Henry C. Barker, Sedalia, Mo.
250,639. VENTILATOR WHEEL OR FAN.—James M. Blackman, Chicago, Ill.
250,641. CHAIN-WRENCH.—William H. Brock, Corona, N. Y.
250,651. EARTH-BORING APPARATUS.—John R. Davis, Bloomfield, Io.
250,662. KNOB ATTACHMENT.—George M. Hathaway, New York, N. Y.
250,670. BIT AND DRILL STOCK.—Wallace Lyon, Bridgeport, Conn.
250,673. VISE.—Alphonse Montant, New York, N. Y.
250,714. PAINT-VEHICLE.—Nelson H. Coope, Oil City, Pa.
250,728. TAP AND DIE.—Hayward A. Harvey, Orange, N. J.
251,743. AUTOMATIC CUT-OFF FOR RAIN-CISTERNS.—Christian W. Myers, Lincoln, Pa.
250,765. BOX-JOINT FOR SEWER-PIPES.—James Thompson, Chicago, Ill.
250,778. EARTH-AUGER.—Llewellyn A. Blake, Corsicana, Tex.
250,807. STONE-SAWING MACHINE.—Thomas W. Hardie, New York, N. Y.
250,828. SASH-HOLDER.—David F. McKittrick, Marysville, O.
250,867. PORTABLE HOUSE.—William H. Wrigley, Oakland, Cal.
250,901. FIRE-ESCAPE.—J. Paris Dunn, Brooklyn, N. Y.
250,912. FIRE-EXTINGUISHER.—Frederick Grinnell, Providence, R. I.
250,913. FIRE-EXTINGUISHER.—Frederick Grinnell, Providence, R. I.
250,932. SAW-SET.—Martin Marshall and Hugh J. McLevitt, Philadelphia, Pa.
250,933. MANUFACTURE OF COLUMNS, POSTS, ETC., OF GLASS.—Christopher W. McLean, New Bern, N. C.
250,935. AUTOMATIC FIRE-EXTINGUISHER.—Jonathan C. Meloon, Providence, R. I.
250,963. AUTOMATIC FIRE-EXTINGUISHER.—Henry S. Parmelee, New Haven, Conn.
251,010. ARTIFICIAL MARBLE.—Virginia J. Watts, Baltimore, Md.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS.—Since our last report, 19 permits have been granted, of which the more important are as follows:—

Jacob Saum, 8 two-sty brick buildings, Parish Alley, 216' s of Prestman St.
Chas. E. Blaney, 4 three-sty brick buildings, Lafayette Ave., beginning at the s w cor. of Mount St.; also, 6 three-sty brick buildings, Mount St., s of the above.
E. E. Jackson & Co., two or three-sty brick buildings, s e cor. East Falls Ave. and Stiles St.
Aug. Knoop, two-sty brick stable, Burgunder Alley, s of Cross St.
Presbyterian Congregation, (colored), new brick and stone front to church building, Madison St., between Park Ave. and Cathedral St.
A. Mahone, 12 three-sty brick buildings, Mount St., between Mosher and Townsend Sts.
A. Mahone, 5 three-sty brick buildings, Mosher St., between Mount and Gilmore Sts.
A. Mahone, 8 two-sty brick buildings, Vincent Alley, between Mosher and Townsend Sts.
Chas. W. Rockefeller, 9 three-sty brick buildings, n w cor. Mount and Mosher Sts.; also, 5 three-sty brick buildings, Mosher, w of Mount St.
HOUSE.—Mr. Geo. A. Blake, builder, has begun the erection of a dwelling-house, 6' x 72', on St. Paul St., near John St., for Mr. Ross Winans; cost over \$100,000; Messrs. McKim, Mead & White, of New York, architects.

Boston.

BUILDING PERMITS.—Brick.—42 to 48 Chauncy St., (rear) Ward 10, for Wm. H. Slocumb and Leopold Morse, iron building for storage, 12' x 35'; Stephen B. Trofion, builder.
N St., near Fifth St., Ward 14, for Caleb Kimball, 2 dwells, 21' x 32', 2-sty; Caleb Kimball, builder.
Wood.—Unnamed St., near Stark St., Ward 4, for B. S. Barrett, dye-house, 20' x 30'; N. H. Hunnewell, builder.
Walnut Ave., rear of, near Dale St., Ward 21, for Arthur W. Tufts, dwell., 20' x 26'; Isaac Sprague, builder.
Unnamed St., near Washington St., Ward 24, for Sam'l Atherton, 3 dwells, 25' 6" x 34', two-sty, hip roof; S. M. Chesley & Co., builder.
Sargent St., cor. Harvard Ave., Ward 20, for Alonzo P. Clifford, dwell., 18' x 37', two-sty; Alonzo P. Clifford, builder.
4 to 6 Sargent St., Ward 20, for Alonzo P. Clifford, dwell., 29' x 31', two-sty; L. 16' x 18'; Alonzo P. Clifford, builder.
8 Sargent St., Ward 20, for Alonzo P. Clifford, dwell., 29' x 31', two-sty; Alonzo P. Clifford, builder.
M St., near East Third St., Ward 14, for Wm. T. Eaton, 4 dwells, 20' x 32', L. 16' x 20', two-sty and mansard; Wm. T. Eaton, builder.
Church St., rear of, near Mt. Vernon St., Ward 25, for John Brennan, wagon-shed, 18' x 24'; John Brennan, builder.
West Sixth St., near C St., Ward 13, dwell., 22' 5" x 42' 8", three-sty; owner, Hugh Gibbin; Edward Lynch & Co., builders.

Brooklyn.

BUILDING PERMITS.—South Elliott Pl., Nos. 73 and 75, one-sty brick livery stable; cost, \$2,000; owner, John Gallagher, 66 Schermerhorn St.
Eighth Ave., n w cor. Sackett St., four-sty brownstone dwells.; owners and builders, J. Doherty & Son, 280 Flatbush Ave.
Even St., e s, 50' s Frost St., three-sty frame tenement; cost, \$3,450; owner, John Weynig, Even St., near Frost St.; architect, John Platte; builder, C. Wiher.
Decatur St., s s, 250' w Reid Ave., 7 two-sty dwells., cost, each, \$7,000; owner, William H. Wells, 67 Liberty St., New York, architect, G. Nichols.
Bedford Ave., Nos. 526, 528 and 530, being 237' s De Kalb Ave., 3 four-sty brownstone tenements; cost, each, \$12,000; owner and builder, E. Freil, 484 Lafayette Ave.; architect, Hugo Kalfa.
ALTERATIONS.—Degraw St., s s, about 175' e Bond St., one-sty frame extension; cost, \$3,000; owners, Nelson & Holden.
HOSPITAL.—The following award has been made in the competition for the Sevey Brooklyn Methodist Episcopal Hospital: 1st, J. Mumford, Brooklyn; 2d, Mercin Thomas, Brooklyn; 3d, F. C. Merry, New York. There were in all nine competitors.

Chicago.

BUILDING PERMITS.—C. W. Meacham & Co., 6 two-sty basement brick dwells., 32' x 120', cor. Tremont St. and Garfield Ave.; cost, \$18,000.
F. Keller, Esq., three-sty and basement brick dwell., 21' x 58', La Salle St., near Schiller St.; cost, \$6,000.
F. R. Oils, 2 five-sty and basement brick stores, 60' x 100', 226 to 240 State St.; cost, \$40,000.
John Norden, two-sty brick store, 25' x 43', 236 Townsend St.; cost, \$3,000.
Henry Strong, five-sty and basement brick store, 50' x 176', Adams St., near Fifth Ave.; cost, \$75,000.
E. P. Yates, two-sty and basement brick stable, 40' x 116', 18 South Sangamon; cost, \$3,000.
Union Iron and Steel Co., one-sty brick boiler-house and iron merchant mill, 170' x 208', cor. Ashland and Archer Aves.; cost, \$25,000.
Seth Gage, two-sty brick dwell., 20' x 48', 141 Seminary Ave.; cost, \$4,000.
William Grace, three-sty brick store and dwell., 47' x 60', Wentworth Ave., near Twenty-sixth St.; cost, \$8,000.
Charles Korup, 2 two-story and basement brick flats, 44' x 54', Twelfth St., near Ladin St.; cost, \$9,000.
John W. Buckley, two-sty brick livery stable, 50' x 120' South Park Ave., near Thirty-third St.; cost, \$13,000.
N. W. Bradley, two-sty brick store and dwell., 21' x 56', 40 Sholto St.; cost, \$3,500.

M. Kline, two-sty brick iron works, 24' x 50', Van Buren, near Jefferson St.; cost, \$2,500.
John V. Gorman, two-sty brick store and dwell., 20' x 50', cor. Hinman St. and Ashland Ave.; cost, \$3,300.

B. J. Ettelsohn, four-sty brick store and flats, 40' x 50', n e cor. Franklin St. and Charles Place, cost, \$12,000.
B. A. Brooks, two-sty brick dwell., 25' x 50', 1077 Jackson St.; cost, \$6,000.
W. E. Murray, two-sty brick store and dwell., 50' x 60', State St., near Sixteenth St.; cost, \$8,000.
F. Campbell, 5 one-sty brick cottages, 20' x 30' each, Thirteenth St., near Hogan Ave.; cost, \$1,000.
A. C. Yund, 2 one-sty brick cottages, 21' x 32' each, Leavitt St., near North Ave.; cost, \$2,400.

Cincinnati.

BUILDING PERMITS.—The following permits have been issued since our last report.
G. C. Glasgow, three-sty brick building, 51 West Seventh St.; cost, \$1,000.
Chas. Ulrich, 8 two-sty brick buildings, n e cor. of Luin and Richmond Sts.; cost, \$9,700.
Six permits for repairs, costing \$1,700.
DEPOT.—The work of tearing down the old buildings on Third St. and Central Ave. is now under way to make room for the new Union Depot.
HOUSE.—Mr. J. M. Potter is to build a brick house on Nassau St., opposite St. James Ave.; cost about \$10,000; George W. Kapp, architect.

New York.

BUILDING PERMITS.—Nineteenth St., n s, 133' 9" w Avenue B, one-sty brick factory; cost, \$2,000; owners, Schoenberg & T. New, Twentieth St., 166' w Avenue B, architect and mason, T. New.
Wall St., No. 110, four-sty brick office-building; cost, \$15,000; owner, James H. Jones, Bartow, Westchester Co.; architects, J. & J. Jardine; masons, E. D. Connolly & Son; carpenter, John Geagan.
Seventy-second St., s s, 200' e Second Ave., 6 three-sty brick brownstone front dwells.; cost, each, \$9,000; owner, Michael Duffy, 1842 Third Ave.; architect, Andrew Spence.
West Twenty-eighth St., No. 237 three-sty factory, cost, \$5,000; owners, Alanson Cary, 17 East Forty-Third St. and Edward A. Morn.
Tenth Ave., n w cor. Dykman Ave., three-sty frame factory, owner, Kate S. Bruckmann, 241 West Thirty-fourth St.; architect, Durand Woodman, builder, F. Lyons.
Bleecker St., No. 99, rear, one-sty brick workshop; cost, \$2,000; lessee, Elias Hyams, 311 West Thirty-first St.; architect and builder, Wm. T. Roylance.
Canal St., No. 493, four-sty brick tenement and store; cost, \$7,000; owner, Chas. F. Friedland, 493 Canal St.; architect, Wm. Howe.
West One Hundred and Twenty-fourth St., No. 113, four-sty brick (brownstone front) flat; cost, \$15,000; owner, Catharine Fetterch, 111 West One Hundred and Twenty-fourth St.; D. F. Macrae; builder, John Fetterch.
Concord Ave., w s, 136' n One Hundred and Sixty-third St., two-sty frame dwell.; cost, \$2,000; owner, May A. Bigelow, 1001 Madison Ave.; architect, Wm. W. Gardiner; builder, Peter P. Decker.
One Hundred and Fourteenth St., s s, 103' e Third Ave., 4 three-sty brick (stone front) dwells.; cost, each, \$7,500; owner, Charles Van Fleet, 272 Bergen St., Brooklyn; architect, J. E. Styles.
ALTERATIONS.—Twenty-first St., s s, 75' w Third Ave., raise roof three feet; interior alterations; cost, \$5,000; owner, August C. Hassey, 235 East Fourth St.; architect, Wm. Graul.
Third Ave., s e cor. One Hundred and Sixty-first St., frame structure on top of building for beer cooler; cost, \$2,000; owner, A. Hupfel's Sons, on premises; architect, Charles Stoll.
BUILDING MATERIALS.—Brick are unchanged. Rosendale cement has advanced, and is firmly held at \$1.50 per bbl. in New York. Lime seems to look like advancing, and laths show an upward tendency.
AQUARIUM-BUILDING.—The site of the old aquarium has now been definitely sold for building purposes. It is, however, very doubtful as to what purpose the new building will be. Very probably it will be a theatre.
FLAT.—A flat for four families is to be built at No. 113 West One Hundred and Twenty-fourth St., 25' x 69', brownstone front; cost, \$15,000; Catharine Fetterch is the owner.
Philadelphia.
BUILDING PERMITS.—Sixteenth and Callowhill Sts., two-sty stable-building, 37' x 150'; Reading R. R. Co., owners.
Twenty-first St., s of Parrish St., 10 three-sty dwells, 16' x 46'; Jno. McGill, owner.
Emerald St., n of Clearfield St., three-sty dwell., 18' x 46'; J. C. Stackhouse, contractor.
Ella St., e of Amber St., three-sty dwell., 12' x 30'; L. L. Yates, contractor.
State Road, n of Friendship St., 2 two-sty dwells, 16' x 42'; Crosta & Roubner, contractors.
Eighteenth St., n of Fasker St., 7 three-sty dwells, 16' x 42'; Jos. Stuker, owner.
Brown St., No. 1027, three-sty dwell., 17' x 60'; Benj. Ketcham & Son, owners.
ALTERATIONS AND ADDITIONS.—Twenty-third and Cherry Sts., two-sty addition to foundry, 18' x 50'; Richards & Shoups.
Sixteenth and Buttonwood Sts., one-sty addition to boiler-house, 40' x 100'; Jas. Moore, owner.
CHURCH.—The Trustees of the Trinity M. E. Church have purchased a lot at the corner of Fifteenth and Mt. Vernon Sts., at a cost of \$32,000, on which it is proposed to erect a new church.
HOSPITAL.—To be erected at the University Hospital a wing for incurables, M. B. 48' x 84', ward extension, 32' x 86', three stories high, to be of pressed brick and brownstone, and terra-cotta finish; cost, \$65,000; J. Erickson, contractor; George Hewitt, architect.
LABOR MARKET.—The Journeymen Bricklayers' Association has established the rate for the season of 1882 at \$1.50 per day, and nine hours on Saturdays, to go into effect on the first Monday in April, 1882.