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THE Joint Committee of Congress, to which was referred the selection of a site for the new Congressional Library has decided upon the main features of its report. Instead of utilizing Judiciary Square, the Committee will recommend the acquisition of a plot immediately adjoining the Capitol grounds, and will urge the erection of a building in which nothing properly belonging to the repository of the great national collection shall be omitted for the sake of satisfying the dictates of a misplaced economy. The cost of the site proposed will be considerable, but there can be no question of its superiority in every respect to that in Judiciary Square. It is the misfortune of Washington that its fine buildings are not only scattered at great distances from each other, but are in many cases almost concealed by inferior structures; so that the half-score of edifices which if grouped together with judgment on the Capitol Hill would have produced an impression of magnificence unequalled in any city in the world, are powerless in their actual positions to do more than mitigate slightly the air of inexpensive comfort which Washington shares with much less ambitious towns. The placing of the new Library in the same range with the Capitol would be a decided advance in the right direction, and if the imperative condition were imposed upon the architect of the building that it should group well with the Capitol, we venture to say that its design would be none the worse, while the general effect of both would be improved.

THE *Deutsche Bauzeitung* of December 14 contains a plan and section of the ill-fated Ring-Theatre in Vienna, together with a very intelligent description of the fire which destroyed it. The walls of the building were unusually thick, particularly the one separating the stage from the auditorium, and other precautions were taken in the construction to avoid danger from fire. The roof was of iron, and an ample system of water-pipes was provided, arranged especially with reference to a possible conflagration on the stage, and a wire-gauze curtain hung behind the proscenium arch. The gas-lights were carefully arranged, and due watchfulness insisted upon, and as the *Bauzeitung* says, the danger of fire was no greater than in a hundred other theatres. The real fault of the building—one which cost nearly a thousand lives—was in the planning of the staircases and entrances. Although five flights of stairs led from the upper portion of the auditorium to the ground floor, and one more led to the royal box, and two served the stage end of the theatre, every one of them had the fatal fault of being enclosed in a room by itself, opening only by a door into the vestibules or passages. One side of the building adjoined the neighboring houses, but the other side and the front and rear bordered on open streets. Unfortunately, it had been found desirable to give the portion facing the principal side street to restaurants, so that there was no public entrance to the theatre except in the middle of the front. Of the two gallery staircases, which were enclosed by other rooms on the lower floor, one was accessible only by a tunnel under the parquet floor, and the other opened into a crooked passageway leading to the front entrance. The grand staircases themselves, situated on

either side of the main vestibule, were not only awkwardly winding, but reversed in direction, so that the persons descending them were directed against the wall which enclosed the auditorium, at a distance of only a few feet, and in such a manner as to meet face to face the crowd from the parquet pouring out of a door in the same wall. The two streams mingling were obliged to turn at a right angle to reach the main vestibule, which they again entered face to face with the multitude descending the stairs on the other side, and a second turn was necessary to direct them toward the entrance doors. According to the information gathered by the *Bauzeitung*, the fire began by the accidental wafting of a "border," painted on jute canvas, into the gas-lights close by. A moment later the curtain caught, and was drawn blazing by the current of air into the auditorium, kindling the papier-mâché decorations in all directions. Apparently no effort whatever was made to put in operation the various protective devices which existed. A turn of the hand would have thrown streams of water in every direction over the building, but the valve was left untouched; the wire curtain might have been dropped in a few seconds, but it was neglected; the doors of special exit, which would have saved multitudes, were not unlocked; the oil-lamps provided to illuminate the passages in case of failure of other means were not lighted, and the gas being turned off at the first alarm by an unreflecting official, the terror-stricken fugitives were left to grope their way in darkness through passages which were notoriously difficult to follow, even in clear light.

THE subsequent history of the disaster is but too well known to every one, and furnishes a striking proof of the uncertain reliance to be placed in the intelligence or presence of mind even of trained firemen in times of panic. No one can read the accounts of such catastrophes without hoping that some means may be found for substituting automatic mechanical action for human agency in such cases. We have already in extensive use an electric alarm which gives notice at any distance, or in any number of places, whenever the temperature in a given room exceeds a certain fixed degree of the thermometer, and this might be applied to give notice to fire-engineers or hydrant-men at a safe distance. Better still would be the employment of pierced pipes or rotary sprinklers, plugged with fusible metal, at all points of the stage and auditorium. Though neglected and forgotten for a hundred years, such an apparatus would never lose its vigilant efficiency. So long as any water remained in the tanks or street service from which the sprinklers were supplied, these would be ready, without a thought from any human being, as soon as the temperature in any spot rose above the melting-point of the plugs, to scatter their potent shower about the place where it might be needed, following it with others just as fast and as far as the fire might spread. With these, and a few other precautions, such as the suspension of the wire curtain by combustible cords, and the provision of a strong ventilation outward from the auditorium to the stage, a degree of permanent safety might be given to theatres which no spasmodic efforts at official inspection and regulation can secure.

A PARAGRAPH is going the rounds of the newspapers, quoted from the Vienna *Neue Freie Presse*, and purporting to give an account from Tacitus of the collapse of an amphitheatre at Fidenæ, a town in the suburbs of Rome, in the reign of Tiberius, by which fifty thousand persons were killed or wounded. The architect or proprietor of the building was one Atilius, and the paragraph ends with the remark that "there is much comfort, after reading about the horrors of the catastrophe, and the measures adopted to prevent their repetition, in being informed by Tacitus, with characteristic terseness, that 'Atilius was burned.'"

UNFORTUNATELY for the moral of this story, Tacitus does not make, either tersely or otherwise, the assertion about Atilius which is attributed to him. The whole account is, however, so interesting as to be worth transcribing. Atilius was a man of low station, who built an amphitheatre, "but neither laid the foundation solidly, nor framed the wooden superstructure with firm bracing, acting in these respects like one who had undertaken the business not from abundance of wealth

or desire for political interest, but from sordid greed of gain." On account of the nearness of the place to Rome, great multitudes of men, women and children crowded into it to see the first combat of gladiators, when it fell, throwing down headlong and burying in the ruins those who were watching the spectacle or standing about the building. "But those," Tacitus continues, "who were slain at the first crash escaped further torture; more to be pitied were those who, mangled and torn, still remained alive and heard the lamentations of their dear ones whom they could not save." As the ruins began to be removed, the wives, brothers, and friends of the victims, who, drawn together by the news of the calamity, soon crowded eagerly around, "rushed forward, embracing and kissing the lifeless corpses, often quarrelling over one whose features could no longer be recognized. Fifty thousand persons were killed or wounded in the building; and by a decree of the Senate it was ordained that for the future no one should exhibit gladiatorial shows whose fortune was less than four hundred thousand sesterces, and that no amphitheatre should be built except on ground of known firmness. Atilius was driven into exile, and for many days the houses of the richer citizens remained open, while surgeons and persons carrying medicinal applications passed continually about, and the city presented the aspect which it bore in ancient times after a great battle, when the wounded were brought in to be cured and cared for."

IN emulation of that in Philadelphia, a company has been formed in Boston to lay pipes in the streets for the purpose of carrying electric wires of all kinds, and the Board of Aldermen has already given permission to begin the work. It is understood that pipes of various sorts will be used, according to the character of the soil through which they pass, iron being probably the only suitable material for laying in the "made" land of which a large part of the territory of Boston consists, while vitrified clay will answer for a firm natural soil. Rent is to be charged the various telegraph, telephone, and electric-light companies for the use of the tubes, but the rates will be kept very moderate, and in consideration of this the municipal authority is expected to forbid the running of any more wires above the surface. The great extension of the telephone system in Boston has led to the multiplication of wires to an annoying degree, and it would be a decided relief to have them removed underground. Electric-light wires are fortunately not so numerous as in some other cities, but such as exist cannot be too quickly put out of harm's way.

THE Society for the Propagation of Architecture, in Amsterdam, invites all architects to take part in a competition for designs for an Architects' Club-House. Whether the project is really to be carried out or not does not appear, but the programme is nevertheless an interesting one. The building is to measure forty-five by thirty-five metres in plan, and is to stand in an open ground of unlimited extent. A porch, or covered way for carriages, is to be provided, and the basement must contain three or four rooms for the concierge, a kitchen, scullery, wine-cellar, larder, and beer-cellar; a court or large room for packing and unpacking, with storage for cases; an elevator, heating apparatus, coal bins, hoistway for goods, and staircases. The principal story must comprise a vestibule, cloak-room, and conversation room; one large and several small galleries for the exhibition of designs and objects of art; a large hall or covered court for displaying materials and appliances for construction, with small rooms annexed for the same purpose; an office, with storeroom attached; a grand staircase, and at least two smaller ones, with necessary minor rooms: the second story is to have one or two vestibules; a grand lecture-room, to be used for balls and receptions on occasion and to cover at least three hundred square metres; a large conversation-hall, adjacent to the last; a refreshment-room and promenade, also adjoining the grand hall; several small rooms for committees or other purposes; a library, reading-room, drawing-room, cloak-rooms, and other dependencies; and the third story is to give accommodation for an extension of the library, and is to contain also one large and several small rooms for draughtsmen, a garret for storage, and a number of available chambers. In the entresol are to be the apartments of the Secretary, with private entrance from the street, and including a kitchen, store-room, and four other rooms. Besides these, the draughtsmen's rooms and the extension of the library may be placed in the entresol if desired. Four floor-plans, at a

scale of two centimetres to the metre, two elevations at one centimetre to the metre, two sections at the same scale, and details, at one tenth the full size, of a part of the principal front and of the grand hall are required, and may be sent before May 1, 1882, to the Bureau of the Society for the Propagation of Architecture, Wijde Kapelsteeg No. 2, Amsterdam, Holland. The jury will be composed of three foreign and four native architects, and three prizes, consisting of medals of gold, silver, and bronze, with money premiums of five hundred, three hundred, and one hundred florins, will be awarded.

A MEMORIAL has been prepared for presentation to Congress during the present session, requesting an appropriation of public money for the construction of the so-called Hennepin Canal, which is designed to extend from Hennepin, on the Illinois River, the present terminus of the Illinois and Lake Michigan Canal, about seventy-five miles directly west to the Mississippi, which it reaches at Rock Island, opposite the city of Davenport, Iowa. The route was surveyed by Government engineers in 1870, and the cost estimated at about four million dollars. In connection with the Illinois and Lake Michigan Canal, which it is proposed to deepen and widen, the new waterway would furnish the farmers of the North-west with cheap transportation for their grain by way of Chicago to the seaboard, and materially add to the prosperity of that section of the country. At present, according to the memorialists, the rates for carrying grain from Chicago to New York, a thousand miles in round numbers, are nearly the same as those for transportation from the Mississippi to Chicago, one hundred and eighty miles, so that the competition of lake and canal navigation has apparently the effect of reducing by about four-fifths the tariff charged by railroads where there is no such competition. Leaving out of view however this exceptional case, and assuming that the saving in transportation charges by the construction of the canal would be no more than the actual difference in cost of service, which was estimated by a Congressional committee at one-half cent per ton per mile, this difference would represent to the Northwestern States, on the seventy million tons of grain annually sent thence, even supposing that only half of this were shipped by canal, a saving of thirty-two million dollars. In other words, thirty-two million dollars are annually thrown away in carrying the precious product of the Northwestern grain-fields by a needlessly expensive route to the seaboard, which might be saved, not only to the producers, but to the country, by the provision of a cheaper way. Such wise economies as this are peculiarly fitting for an enlightened government, and the whole country would look with satisfaction on an expenditure from which so much good would be derived.

A VERY successful attempt has been made to adopt the electric lamp as a head-light for locomotive engines, under the system invented by Messrs. Sedlacek and Wikilull, of Leoben, Austria. The French Compagnie du Nord some time ago interested itself in the matter, and has just fitted one of its locomotives with the new light. The lamp employed differs materially from the ordinary arc-lights, which do not work well when subjected to the violent vibrations of a moving train, and is in itself an ingeniously simple contrivance. The electrodes in the new apparatus are supported by floats, which rest on the surface of water contained in the two legs of an inverted siphon. At the bottom of the siphon a piston moves horizontally, urged in one direction by a spring, and in the other by an electro-magnet, the helix of which is formed by the current producing the light. While the lamp is disconnected, the piston is pushed inward by the spring, until the carbons come in contact; but on the passage of the current the magnetic effect of the helical coil draws it out again, lowering the water level in one arm of the siphon, and raising it in the other, thus separating the carbons by a distance proportional to the intensity of the current. As the carbons burn away, the length of the arc increases, while the intensity diminishes, and the piston slowly reenters its little cylinder. On reaching a certain point it opens a tube, through which a small portion of the water in the longer leg of the siphon escapes, allowing the float upon it to fall, and bringing the carbons again into contact, to be instantaneously separated by the renewed current. For application to railway purposes the lamp was found to be admirably fitted. The track was brilliantly lighted for a long distance in front of the train, and a sense of security was felt which is commonly absent in night travelling.



ANNUAL ADDRESS BEFORE THE AMERICAN INSTITUTE OF ARCHITECTS.<sup>1</sup>—I.

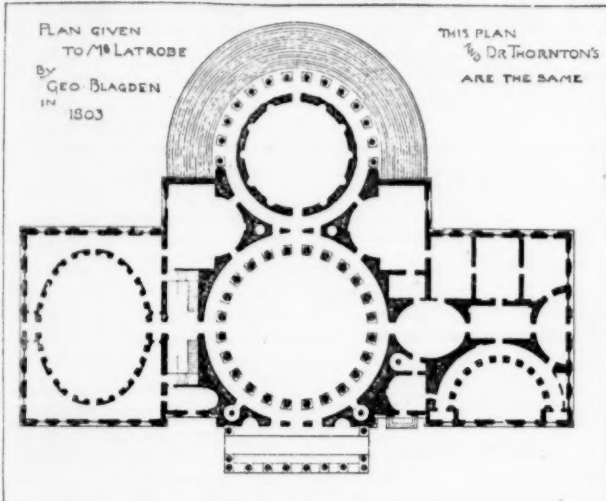
Members of the American Institute of Architects:—



THE subject of the address that I have been asked by your distinguished president to deliver, as his alternate, is "Washington and the Capitol at the beginning of the present Century."

Although not an architect myself, I am nevertheless, the son of an architect, and inasmuch as we are here under the shadow almost of the building with which my father's name is more especially identified, I have thought that you would—pardoning the egotism which is more or less necessarily involved—bear with me if I made the Capitol the main topic of my discourse.

The permanent seat of the Government of the United States was selected only after much contention and bitter debate. The subject first came up in the House of Representatives, August 27th, 1789, on a motion "That a permanent residence ought to be fixed for the General Government of the United States, at some convenient place as near the centre of wealth, population, and extent of territory as may be consistent with convenience to the navigation of the Atlantic Ocean, and have due regard to the particular situation of the Western Country." It was in the discussion of this motion, that Fisher Ames doubted "whether the Government would stand the shock of a selection which involved as many passions as the human heart could display." On the 3d September the discussion was renewed; and the merits of the several sites suggested for the Seat of Government being under discussion, and among others, the Potomac—which had been strongly urged by Mr. Madison as being "more certain and convenient than any other, while the water-way to the sea was wholly unobstructed"—Mr. Wadsworth, of Connecticut, said "that he did not dare to go to the Potomac. He feared the whole of New England would consider the Union dissolved."



There was much more uttered in the same style. The question was taken at last on a resolution, agreed to in the House of Representatives by a vote of twenty-eight yeas to twenty-six nays, authorizing the President to appoint three commissioners to report the most eligible situation on the Susquehanna, in Pennsylvania. To this, however, the Senate adopted an amendment, by a vote of ten yeas to seven nays, fixing upon Germantown as the permanent seat. In this amendment the House concurred by a vote of thirty-one yeas to twenty-four nays; notwithstanding Mr. Madison asked for delay, "that the eye of America should be indulged with an opportunity of viewing it before it made it their fixed abode." In accepting the Senate's amendment, however, the House added a proviso, "continuing the laws of Pennsylvania in force within the ceded district until Congress should otherwise provide." This, of course, sent the bill back to the Senate for concurrence, but it being within twenty-four hours of the close of the session, a motion was carried to postpone the further consideration of the bill to the next session of Congress. At the session of 1790, the same angry debates were resumed; but at last, on the 16th of July, an act was passed authorizing the President to appoint commissioners to survey, under his direction, a district of territory, not exceeding ten miles square, at some place on the river Potomac, between the mouths of the Eastern branch and Conococheague. The President, "with that consummate judgment which distinguished his career, fixed upon just the one spot in the entire range of territory prescribed by Congress, which commanded the

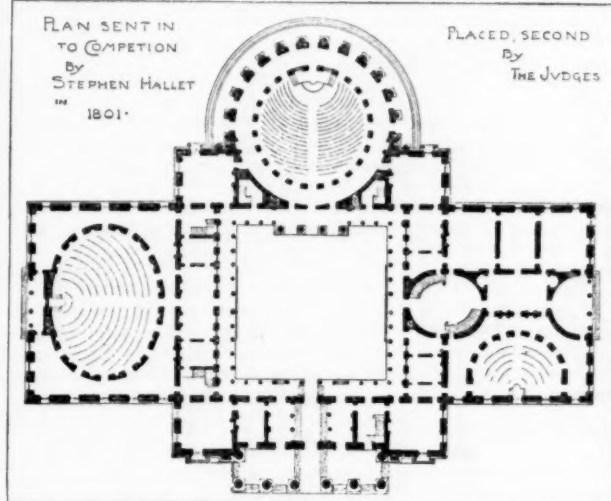
three-fold advantages of unfailing tide-water navigation, convenient access to Baltimore and the other great cities mentioned, and superb natural sites alike for public buildings and the varied wants of a populous city;" and, himself an old surveyor, described, by metes and bounds, the district which by his proclamation, dated Georgetown, March 30, 1791, became the permanent seat of the Government of the United States. Mr. Jefferson, in his *Ana*, says that the selection was a compromise brought about by Hamilton, by which he secured a majority for the assumption by Congress of the debts of the several States.<sup>2</sup>

To prepare the plan of the future city, the commissioners appointed Charles Pierre L'Enfant to be their engineer. He had come to America as an officer in the French line in 1777, was wounded in the assault of Savannah by D'Estaing, was taken prisoner, was exchanged in 1782, became Major of Engineers in 1783, was sent to France by the Society of the Cincinnati to arrange for the engraving of its gold badge, and being accomplished in many ways, was employed on his return by Robert Morris to design a palatial residence in Philadelphia, which never rose above the cellar story. In 1789 we find him preparing the old City Hall in Wall Street, New York, for occupation by Congress after the adoption of the Constitution.

Brought into notice in this way, L'Enfant seemed to be the proper person to prepare the plan for the new city, and at once proceeded, with the assistance of Andrew Ellicott and others, to execute the work. It was Ellicott who established the meridian of Washington, the intersection of which by an east and west line is marked by the Capitol.

L'Enfant appears to have had *carte blanche* in the matter; nor had Peter the Great more power in this regard when he laid out on the marshes of the Neva, the grand avenues of the Russian Capitol than the French Major of Engineers, who seems in some respects to have imitated him when he traced on the swampy grounds of the Potomac the plan of a city, which already in the stately magnificence of its public buildings promises to equal if not to surpass the city of the Czar.

It might be inferred from a letter of General Washington, dated April 30, 1791, that he intended the seat of Government to be called



"the Federal City;" but in the instructions given by the commissioners to L'Enfant, they say: "We have agreed that the federal district shall be called 'the Territory of Columbia, and the federal city the city of Washington,'" and this was made the title of the map. When this was finished and the public sales were about to begin, from the proceeds of which the public buildings were to be erected, L'Enfant refused to submit his work to public inspection, his excuse being that certain neighborhoods would be seized by speculators, and shanties run up where he designed palaces to be constructed. Such not being General Washington's view of the matter, the commissioners took possession of the map, and L'Enfant's further services were dispensed with. In 1812 he was employed by Mr. Madison to plan a fort on the Potomac below Washington, and later Mr. Monroe offered him a professorship at West Point which he did not accept. There are those yet living who remember seeing him, in his somewhat peculiar dress, wandering, an aged man, in the streets of Washington as late as 1825. In this year he died, taking his place in the ranks of the vast host of the forgotten *bene meritos*. He lies buried on the Digges' farm, close by his last work for the United States—the fort on the Potomac.<sup>3</sup>

The act of 16th of July, 1790, had directed the commissioners to provide, prior to December 1, 1800, suitable buildings for the accommodation of Congress on plans to be approved by the President, and

<sup>1</sup> Delivered November 16, 1881, by Mr. John H. B. Latrobe.

An unexpected delay in the preparation of the illustrations has prevented the earlier publication of this address.

<sup>2</sup> For a full and interesting account of the debates in the above connection, see "The Founding of Washington," an address delivered by Ainsworth R. Spofford, Fund Publication No. 17 of the Maryland Historical Society.

<sup>3</sup> The facts stated in the text in regard to Major L'Enfant are taken from an interesting history of him, prepared with much care, in the *New York Tribune* of September 3, 1881.

in March, 1792, a premium was offered of \$500 or a gold medal, by advertisement.

"This mode of obtaining designs for public buildings," says one—the truth of whose words must commend itself to my professional hearers—"is sure to defeat its own end. It brings into competition those who think they have knowledge in an art which they have never had an opportunity to learn or practice—those who, enticed by the reward, think that personal influence will procure it for them—those who know nothing of design but its execution; and it keeps out of the competition all who have too much self-respect to run the race of preference with such motley companions, and, especially, all regularly educated professional men who understand their business too well not to know that a picture is not a design, and that to form and elaborate a plan of a public work so that it shall be capable of being executed from the papers they present, requires so much time, labor and clerkship, that no reward, such as is usually offered can compensate."<sup>1</sup>

The result of the advertisement for plans for the Capitol and President's house verified these remarks; and inasmuch as pains had been taken to publish it in all the principal towns and cities, the architectural ability of the United States as it existed in the last decade of the eighteenth century may be reasonably supposed to have been brought to light.

I have had access to some eight or ten of the designs offered in competition. All of them are bad, very bad, indeed—the greater part below contempt, and some bordering upon the ludicrous. In one, a triple window has a cornice broken by an arch over the central opening, on either side of which is a man rampant, with one foot on the arch and the other on the level of the cornice, as though the two men proposed to do battle over the key-stone. This competitor evidently thought himself strong in statuary, and placed an array of figures on the parapet of the President's house of the most ridiculous description. Another competitor exhausted himself on the face of a clock, where the twelve letters in the words United States are used to mark the hours. The spread-eagle seems to have been regarded as an essential in some of the designs, and the bird exhibits itself on pediments and in weathercocks in most extraordinary shapes. One of these national birds is carefully drawn with the wings of a penguin and a breastplate of thirteen circles ingeniously arranged. Another competitor has devoted the greater part of his labor to portraying the separate chairs of senators and representatives, and indicating the color of the leather, or other material, for the seats. Another ventures upon perspective, and makes a sad affair of it. Take them all in all, they are indeed a sorry lot.

Among the competitors, however, were William Thornton and James Hoban. To the first was awarded the premium for the Capitol, while the other obtained that for the President's house.

In an address delivered at the tenth annual convention of the Institute, Thornton is spoken of as "an English amateur who had come from the West Indies, was a thorough man of the world, founded a race-course, and sported blooded horses."<sup>2</sup> Thornton was more than this, however; he was a man of genius and a philanthropist, who offered to take a colony of negroes from the United States and establish it on the coast of Africa, anticipating the work of the American Colonization Society. But he was not an architect; claiming, indeed, no more acquaintance with architecture than he had acquired in two weeks' study in the Philadelphia library. Incapable of appreciating the difficulties of the profession, self-reliant, impulsive and impatient, it is not to be wondered that he quarreled with those who undertook to execute his suggestions, for his plans amounted to little more. The address just referred to says, further, that Thornton "succeeded in having the plans of Stephen L. Hallett, a French architect who had been one of the competitors, superseded by his own, and in having the premium awarded to himself." This does not appear to have been the opinion of Mr. Jefferson, who was Secretary of State at the time, and greatly interested in the subject. In a letter addressed by him to Mr. Latrobe, July 28, 1804, he says, referring to the plans in competition: "Many were sent in. A council was held by General Washington and the Board of Commissioners, and after a very mature examination, two were preferred and the premiums given to their authors, Dr. Thornton and Hobins"<sup>3</sup> (sic).

I have Thornton's drawings. On the margin of one is written, in Mr. Latrobe's hand: "Given to me by George Blagden, as the only existing drawing of the Capitol, May 3, 1803." On another: "Received by B. H. Latrobe from the President U. S., Jan. 12, 1805;" on the third, "Plan of the Capitol received from Dr. Thornton, April, 1806." All correspond and represent, no doubt, the plan approved by General Washington. The address already mentioned says that "Dr. Thornton had, it appears, carried the day by a neatly washed elevation, and when his ground plans were corrected according to sound principles of construction they looked so remarkably like Hallett's that this gentleman formally protested against the award, claimed the original invention, and begged leave to present proof of it." I have in my possession what purports to be Hallett's original design, obtained by Mr. Latrobe from Mr. James Greenleaf, a prominent person in Washington at the time, who appears to have received it from Hallett himself. There is the same idea of a central build-

ing with wings for the Senate and House of Representatives respectively, that characterizes Thornton's plan; although where Thornton had a central rotunda, with an interior colonnade, Hallett has an enormous square hall, with colonnades on the four sides, and there are other differences. The address again says that the original designs of Hallett were restored to the archives of the Capitol in 1871, "whereby the memory of Hallett stands vindicated." That he was an accomplished architect seems to have been admitted on all hands; nor does the fact that he was employed to carry out Thornton's plan absolutely militate against his claim that this was in fact his own. Circumstances may have left him no alternative. That Thornton and the commissioners quarreled with him is very certain; and about July, 1794, he was discharged. Hallett's successor was George Hatfield, an English architect of talent, skill and experience,—a refined and estimable gentleman, who, among other edifices, designed the City-Hall in Washington. During four years of strife with Thornton and the commissioners he kept his place, but was at last driven away, and in May, 1798, ceased to be employed at the Capitol.

When Hatfield went down, like Hallett, before Thornton, Hoban, the architect of the President's house, took charge, with no better fortune than his predecessors. Thornton was still impracticable, and the commissioners offensive. He kept his place, however, until 1802, when the executive authority was transferred to a commissioner, and in 1803, Mr. Jefferson, then President, appointed B. Henry Latrobe as Surveyor of the Public Buildings, which was the title of the office of architect.

Although for the purposes of the present narrative it would suffice to state the simple fact of Mr. Latrobe's appointment, yet the letters of Mr. Jefferson conferring it, have an interest that leads me to quote them from the originals in my possession:—

WASHINGTON, March 6, 1803.

Sir,—Congress have appropriated a sum of money (\$50,000) to be applied to the public buildings under my direction. This falls, of course, under the immediate business of the superintendent, Mr. Munroe, whose office is substituted for that of the Board of Commissioners. The former post of Surveyor of the Public Buildings, which Mr. Hoban held till the dissolution of the Board (at \$1,700 a year), will be revived. If you choose to accept it, you will be appointed to it, and would be expected to come on by the 1st of April; indeed, if you could make a flying trip here to set contractors at work immediately in raising freestone, it would be extremely important, because it is now late to have to engage laborers, and the quantity of freestone which can be raised, delivered and cut in the season is the only thing that will limit the extent of our operations this year. I set out to-morrow for Monticello, and shall be absent three weeks, but shall be glad to receive there your answer to this. Accept my friendly salutations and regards.

THOMAS JEFFERSON.

P. S.—On the raising of the freestone be pleased to consult Col. D. C. Brent, who can give you better information and advice on the subject than any other person whatever, having been much concerned in the business himself.

WASHINGTON, March 6, 1803.

Dear Sir,—The letter in which this is enclosed being a public one, and to be produced whenever necessary as a voucher, I have thought it would be useful to add a word in one of a private and friendly nature. From the sum of \$50,000 we shall take between \$5,000 and \$10,000 for covering the north wing of the Capitol and the President's house. The residue of \$40,000 to \$45,000 will be employed in building the south wing, as far as it will go. I think it will raise the external walls to the uppermost window-sills, being those of the *entresols*, and I have no doubt Congress at their next session will give another \$50,000, which will complete that wing, inside and out, in the year 1804. Before that period the repairs of their frigates will become so threatening that I have no doubt that they will come into the proposition of the dry-dock to rescue themselves from heavier calls. I mention these things to show you the probability of a pretty steady employment of a person of your character here, though the present job has the appearance of being for the present season only,—say of eight or nine months—and that your being in possession of the post will put all other competitors out of the question. Should you think proper to undertake it, if you come here on a flying trip, as suggested in my other letter, you can advise with Mr. Munroe, who will set into motion whatever you may desire; and if you can be here finally the first week in April, you will find me here, and everything may be put under full sail for the season. Accept my best wishes and respects.

TH. JEFFERSON.

P. S.—I think a great quantity of sheet-iron will be wanting.

Mr. Latrobe came, accordingly. His salary was \$1,700 while visiting Washington occasionally only, but was increased to \$3,500 when he made his permanent residence there. The eight or nine months, as we will see, extended to as many years.

Born in England, though of American descent on his mother's side, Mr. Latrobe was theoretically and practically an architect, having studied in the office of Cockerell, eminent in London in the profession, and having had a large experience in the erection of buildings in England. Besides this, he was a person of very remarkable and various accomplishments, versed in many languages, an adept in natural science, an admirable draughtsman, imbued with the spirit of his profession and devoted to it—an engineer, too, as well as an architect. Coming to America in 1796, he built the Virginia penitentiary, at Richmond, and many private mansions, and removing to Philadelphia in 1798, designed the Bank of Pennsylvania and constructed the old water-works that in 1800 and long afterwards supplied Philadelphia with water. While in Virginia he became acquainted with Mr. Jefferson, who, when the work on the public buildings was resumed, placed them, as we have seen, under his charge.<sup>4</sup>

<sup>1</sup> Letter from B. H. Latrobe, in 1805, to members of Congress, in the Library of the Maryland Historical Society.

<sup>2</sup> Address of Adolph Cluss, Esq., before the American Institute of Architects, October 12, 1877.

<sup>3</sup> Jefferson's Correspondence, Vol. iv, p. 535.

<sup>4</sup> B. Henry Latrobe was descended from the Boneval Family of France, a younger branch of which, John Henry Boneval de la Trobe, emigrated to Holland after the revocation of the Edict of Nantz, entered the military service of



The Capitol at this time was in the hands of Mr. George Blagden, who had been the principal stone-mason under Hallet, Hatfield, and Hoban, and to whose ability and personal worth and integrity Mr. Latrobe's correspondence bears ample testimony.

The north wing had been so far completed in 1800 as to be occupied by the Senate, the courts, and the library of Congress. The south wing was little more than an enclosure, some twenty feet in height, within which was an oval brick building, occupied by the House of Representatives, and called by the public "the Oven." Of this Mr. Latrobe reported in 1804 that "it would have been dangerous to have assembled within it had its walls not been strongly supported by shores from without." When "the Oven" was pulled down, that the construction of the south wing might go on, the House of Representatives was transferred to the library in the north wing, the books being removed to an adjacent committee-room. Here it was so uncomfortable that an amendment actually passed the Senate to transfer Congress to the other end of Pennsylvania Avenue, and establish it permanently in the presidential mansion.

The appointment of Mr. Latrobe was the signal for battle with Thornton, nor was it long before the strife waxed warm.

Influenced by the prestige of General Washington's approval, Mr. Jefferson was desirous that there should be as few departures as possible from Dr. Thornton's plan; and, with a view to the establishment of friendly relations, Mr. Latrobe called upon its author. The result of the visit is best explained by the following letter, dated February 27, 1804:

"To the President of the United States:

"Dear Sir,—I judged very ill in going to Dr. Thornton. In a few peremptory words he in fact told me that no difficulties existed in his plan but such as were made by those who were too ignorant to remove them; and though these were not exactly his words, his expressions, his tones, his manner, and his absolute refusal to discuss the subject spoke his meaning more strongly and offensively than I have expressed."

In Mr. Jefferson's reply, dated the following day, he says:

"Dear Sir,—I am very sorry the explanations attempted between Dr. Thornton and yourself on the manner of finishing the House of Representatives have not succeeded;" and the President then goes on to state what has been already quoted in regard to the selection of Dr. Thornton's plan.

A word here with regard to this plan, which is now before me. When the Oven was removed from the south wing, the architect had before him a rectangular area surrounded by walls that had been carried up as high as the basement story, and which corresponded externally with the north wing. Within this area all that Thornton's plan showed were twenty-four little squares, with inscribed circles, representing the position of as many columns. On one of the three plans of which I have already spoken Dr. Thornton had drawn lines to signify the divisions into rooms of the space between the external walls.

Of this plan Mr. Latrobe writes to the President on the 29th of March, 1804, after Dr. Thornton had refused to hear him:

"No, I is an exact copy of the plan proposed by Dr. Thornton for the arrangement of the ground floor into offices and committee-rooms.

"It is liable to these remarks: 1. The author has forgotten that the open space enclosed by the elliptical hall becomes a dark cellar, the hall of legislation being raised to the story above. 2. Therefore, the doors leading into it are useless, if not absurd. 3. None of the rooms can be furnished with fireplaces excepting on the outer wall, and it is now too late to open them there, on account of the solidity of the stonework and the hardness of the material of which it is composed. 4. No staircase can be carried up behind the speaker's chair between the wall and the elliptical enclosure, for want of room." Without pursuing Mr. Latrobe's objections further, his letter explains, among other things, how he proposes to obviate the difficulty caused by the elliptical form of the chamber, by substituting two semicircles abutting on a parallelogram; and referring then to Dr. Thornton's plan, where spacious stairs were shown leading only to a gallery and to a room fifty feet square, with but one window, and that in a corner, says: "I have taken the liberty to alter the whole of this part of the plan;" and then he proceeds to describe the construction, with a portion of which all are now familiar who have visited the south wing through the basement entrance. This letter is a long one, and explains in detail the design that it was proposed to follow. Another and longer letter, dated April 29, describes, in still more de-

tail, the Prince of Orange, went with him to England, was severely wounded at the battle of the Boyne, married and settled in Waterford, and died in Dublin at the age of 96. His son Benjamin La Trobe, born April 19, 1728, joined the Moravian Church, was married, in 1766, to Anna Margareta Antes of Pennsylvania, who had been sent to England by her Moravian parents to be educated at a school of "The United Brethren," where Mr. Latrobe met and married her. They had three sons: Christian Ignatius, prominent in the Moravian Church, distinguished for his compositions in sacred music, and known to the literary world by his travels in Africa; Benjamin Henry, the subject of this notice, and Frederick, a physician, who settled at Dorpat, in Livonia. In the history of Manchester there is an admirable engraving by Bromley of the Rev. Benjamin La Trobe, from a painting by Astley, a distinguished artist, and a memoir showing the high position he held in the regard of his contemporaries.

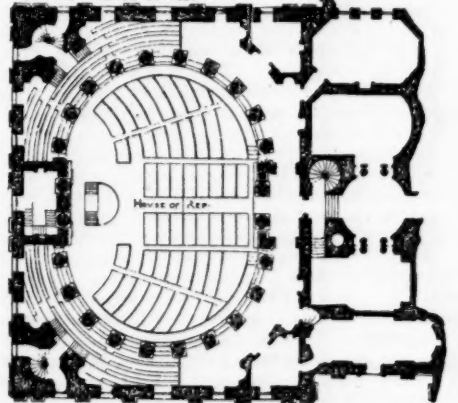
B. Henry Latrobe was born May 1st, 1764, in Yorkshire, England, where his education was carefully attended to by his father; and at twelve years of age was sent to a Moravian seminary in Saxony, where he remained until prepared to enter the University of Leipzig, where he completed his education. In 1785 he left Leipzig, and with some college friends, in a spirit of adventure and frolic, entered the Prussian Army, as a cornet of Hussars; was twice in severe actions,

tail, Mr. Latrobe's plan, which thus became an original one as regarded the interior arrangements of this part of the Capitol, and, having been approved by the President, was subsequently carried out.

Of this the corridors and committee-rooms, the stairs, and the lobby with its panelled dome, all of which defied the flames when the Capitol was burned by the British in 1814, still remain.

It was only natural that Dr. Thornton should have been dissatisfied with criticism like the foregoing, which was the substance of Mr. Latrobe's replies to questions proposed to him by a committee of the House of Representatives; and the letter of the 29th of April concludes as follows: "I have lately received a letter from Dr. Thornton on the subject of the answers which I gave to the committee of the House of Representatives. In these answers I expressed as much as possible the truth as regarded the original plan, and thought I had spoken of it with delicacy. The letter to me is, among those who admire the fashion, an unequivocal challenge to the field."

MR. LATROBE'S MODIFICATION OF THORNTON'S PLAN OF THE HOUSE OF REP.



Mr. Latrobe's plan of the south wing, as described in these letters, having, as already said, been approved, there was no further reference to Dr. Thornton. No sooner, however, had work there been begun than it was found that the entire wing, including the exterior wall even, had to be taken down to the foundation, owing to the defective character of the materials and workmanship. In this portion of the Capitol, therefore, Mr. Latrobe had a *tabula rasa*, with the single exception of the exterior, which had to conform to that of the north wing, which was already under roof and occupied.

In the address, already more than once referred to, Mr. Latrobe is said "to have accepted and availed himself of Hatfield's services in the prosecution of the work." I hardly think that this could have been so. When Mr. Latrobe was appointed "Surveyor of the Public Buildings" he was engaged as engineer in constructing the original plan of the Chesapeake and Delaware Canal, and resided sometimes in Wilmington and sometimes in New Castle, paying occasional visits only to Washington, until the work on the canal ceasing, for want of funds, in 1808, he removed to Washington with his family. During his absence the clerk of the works, Mr. John Lenthall, executed the singularly minute instructions which, in letters and drawings in detail, he received from Mr. Latrobe. The entire correspondence and many of the drawings are in my possession. They left nothing to be done but to obey them. In all this time, from 1803 to 1808, I find but a single letter to Mr. Hatfield, which I quote for the double purpose of correcting a mistake and showing the opinion entertained of Mr. Hatfield by his successor:

NEW CASTLE, April 28, 1804.

"Mr. George Hatfield:

"Dear Sir:—By mistake I carried the enclosed letter to New Castle. You have conferred a favor upon me by its communication, which is the more important, as I am now at open war with Dr. Thornton. . . . If you could go over your drawings and ascertain what is his . . . in the plan now said to be the original plan, I should be infinitely obliged to you. The contest which must now inevitably ensue is highly disagreeable, but I shall enter on it without reluctance if, in any respect, it can lead to the removal of that load of calumny with which you have been treated. My opinion of you can be of little consequence, while you possess such talents, in the last of which he was badly wounded; resigned his commission, and after some time passed in travelling, returned to England in 1786.

On the death of his father, which happened soon after, he entered the office of Mr. Cockerell, as stated in the text, and adopted the profession of an architect.

Here his probation was brief. His acquirements on all subjects, extraordinary for his years, gave him great advantages, and on leaving Mr. Cockerell in 1788, he soon found himself fully occupied, and was made, in the following year, Surveyor of the Public Offices and Architect and Engineer of the City of London.

In 1790, Mr. Latrobe married Miss Lydia Selous, sister of the well-known law-writer of that name; and by her had two children, a son and a daughter. In 1793 his wife died; and, two years afterwards, influenced largely by his political and republican views, and by the same spirit that had carried him into the Prussian Army, he came to America, regardless of the prospect of lucrative employment in England, and declining a Surveyorship of the Crown, offered him by Lord Barham, at a salary of £1,000 a year. Embarking at London on the 25th November, 1795, he landed in Norfolk on the 20th March, 1796. To continue the account of his life would be to make this notice a biography—to do justice to which a volume would be necessary. Sufficient has been said to supply what seems to be wanting in the brief reference in the text.

Mr. Latrobe died September 3d, 1820, in New Orleans, where, at the time of his death, he was engaged in erecting works for supplying the city with water.

taste, and knowledge as are more easily admired than imitated. All that is necessary to be done is to expose the truth."

Had Hatfield's services been "accepted and availed of," Lenthall would not have been the only person to whom letters in regard to the plan or construction of the building would have been addressed.

One might reasonably suppose that, having held his ground against Dr. Thornton and escaped the fate so far of Hallett and Hatfield, all would have been plain sailing with the architect; but the President was now to be contended with. Mr. Jefferson had studied architecture while in Paris as minister of the United States to France. Never interfering with Mr. Latrobe in the practical parts of his profession, he nevertheless had notions of his own, and the voluminous correspondence that the letter-books contain shows the cases in which he sat in judgment in matters of taste when the Capitol was under construction during his presidency.

As already said, Mr. Latrobe had substituted two semicircles abutting on a parallelogram for Dr. Thornton's ellipsis, the whole covered by a flat dome, the centre of which was necessarily cylindrical, supported by a colonnade of twenty-four columns standing on a wall some seven feet above the floor of the hall, beyond which were the galleries and lobbies. For reasons of economy, as well as taste, Mr. Latrobe preferred that these columns should be after the model furnished by the clespydra at Athens, or by the Doric order as exhibited in the Theatre of Marcellus at Rome; and among the drawings in the portfolios are two admirable sections, colored and shaded—one north and south, the other east and west—showing the æsthetic effect of each design. In the letter which accompanied these drawings is the earliest suggestion of which I am aware of the employment of iron in architectural decoration. "The bells of the capitals," says the writer, referring to the clespydra, "may be easily cast in one piece of iron, with the upper row of plain leaves; the other may be cast separately and fixed with copper rivets." Mr. Jefferson, however, insisted upon the column of the Choragic Monument of Lysicrates. This was the more remarkable, inasmuch as Mr. Jefferson had suggested in one of his letters "whether it would not be well to make the internal columns of well burnt brick, moulded in portions of circles adapted to the diminution of the columns," adding: "I know of an instance of a range of six or eight columns in Virginia twenty feet high, well proportioned and properly diminished, executed by a common bricklayer. The bases and capitals would, of course, be of hewn stone. I suggest this for your consideration, and tender you friendly salutations."<sup>1</sup> On another occasion Mr. Latrobe had provided a lantern above a central opening in the arched ceiling of the hall, observing that it would afford a diffused light, while Mr. Jefferson insisted that the alternate panels in the alternate rows of panels into which the ceiling was divided, should be of plate-glass. It was in vain that the architect spoke of the objectionable cross lights from a hundred openings; of the condensation of moisture on the plate-glass dripping on the heads of the members seated at their desks below; of the inevitable leakage where the exterior of the ceiling was the roof of the hall, and exposed to the weather; of the effect of the sun's rays scattered through the chamber. Mr. Jefferson was pertinacious and peremptory; and having been obliged to yield to the President in the matter, and make the best of his plans, there is in one of Mr. Latrobe's letters a marginal sketch of an arrangement of blinds operated from the interior to obviate the last-named difficulty. That the ceiling thus perforated, and when admirably painted by George Bridport, at the head of the decorative painters of the day, was picturesquely effective may be admitted; but it was found in practice to be open to the objections that had been urged against it.

#### SANTA MARIA DEL FIORE.



It is stated that the Grand Duke of Tuscany proposes to bear the cost of finishing the works so long since commenced, and still being carried forward, for bestowing upon Santa Maria del Fiore, better known as the Cathedral of Florence, the only thing of which that fine building stands in need of. No one can have visited Florence without remarking that its churches, wonderful and full of interest as are the interiors of them all, are, for the most part, devoid of a façade. This, till

about fifteen years ago, was the case with Santa Croce, and in like plight stands Santa Maria Novella, San Lorenzo, and the other famous ecclesiastical edifices of the Fair City. It is highly probable that if political exigencies had not entailed the departure of the Grand Duke from Tuscany, this reproach would long since have been removed, as far as the Duomo is concerned. Both his Highness and his friend and protégé, Dr. Sloane, were disposed to push forward the work at the very time that the cry of "Italy, One and Free," resounded from the lakes of Lombardy to the shores of Calabria. It was hardly to be expected, however, that

the ex-ruler of that delightful province should not, for a time at least, have felt sufficiently sore at his expulsion as to keep a tight hold upon his private purse-strings where the embellishment of Florence was in question. It is possible, moreover, that the Grand Duke cherished the belief that the chapter of accidents would before long restore him to the happy and delightful position he once occupied. But the chapter of accidents has tended altogether in the other direction, and the battle of Sadowa, the liberation of Venice, the disaster of Sedan, and, finally, the death of Pius IX., and the tranquil succession by King Humbert to the throne of Victor Emmanuel, must have sufficed to convince all but fanatical optimists that events were not going to be rolled back, and that Florence and Tuscany have seen the last of the Grand-Ducal House.

Probably not uninfluenced in some degree by these considerations, the Grand Duke has at length relented to the city which laughed rather than drove him out of the Pitti Palace, and received the King of Italy with vociferous cheers. It is highly creditable to the deposed sovereign that, though he can no longer rule over the most beautiful city in the world, he is determined to do what in him lies to make it still more beautiful than it is. The Italian Government, and even the Florentine Municipality, has from time to time voted small sums for completing the building of the façade of the Duomo. But the money came in dribbles, and from the embarrassed and mendicant Municipality itself all hope of financial assistance has long since vanished. We presume, and it is sincerely to be hoped, that no false *amour-propre* will neutralize the generous intentions of the Grand Duke or prevent the completion of the façade. The Italian Government would do itself no credit by quarrelling with such a gift by reason of the former position of the donor. It is in the character of a lover of the arts and of Florence that he bestows this timely boon; and it ought to be accepted in the gracious spirit in which it is proffered.

There are few things more certain in the records of the development and desecration of art than the fact that Santa Maria del Fiore once did possess a front immeasurably more tasteful and precious than any it is ever likely to possess again. It is nearly six hundred years since the Florentines resolved that they would erect in their city an edifice than which "nothing more great or magnificent could be invented by human effort or industry." The foundations of the Duomo were laid two years before the close of the thirteenth century, but the fifteenth century was far advanced before the building, as we now see it, had attained its magnificent maturity. The original design, due to Arnolfo, as he is generally called, still survives in one of Memmi's frescoes in the Capella degli Spagnuoli that is entered from the outer cloister of Santa Maria Novella. It was much more modest than the one which was ultimately carried out, mainly by the famous Brunelleschi. Architect after architect was employed upon the work—the Florentines had set their heart upon being superior to every other of the kind—and among them was the shepherd lad, Giotto. His Campanile, which stands by the side of the Cathedral and the Baptistery, still survives in all its airy grace. But Giotto had likewise furnished the Duomo with a façade, upon which others beside himself, and notably Donatello, had lovingly labored. This still existed in the days of Lorenzo de Medici, and many a time Frà Girolamo Savonarola had his back to it when he thundered from the out-door pulpit of the Cathedral against the carnal levity of Florence.

But in the middle of the sixteenth century it was destroyed by the "art improvers" of the period, under the plea that it had grown out of date and obsolete, and that they could vastly improve upon it. The Proveditore, Benedetto Ugucione is "damned to everlasting fame" as the person mainly responsible for an act of vandalism that vies with the worst efforts of time and the barbarians. Perhaps we ought to be thankful that these sixteenth-century purifiers of art contented themselves with destroying what they could not imitate, and never gave effect to their project of replacing it. What perhaps is most singular in connection with this ruthless devastation is that the marble slabs were plucked off with such indecent haste that they were unfit to be used again for purposes of embellishment. So for three hundred years the rich and dainty Duomo remained in a condition the exact opposite to that of those fabled animals whose face was lovely but whose body was monstrous. No doubt one of the reasons why the restoration was so constantly put off was the ever-growing feeling that it would not be performed to the satisfaction of the Florentines. Nor can it be denied that the enterprise is no light one. The cost counts for something, but art that cannot be estimated by cost, since it cannot be procured by being paid for in money, counts for much more. An additional objection is to be found in the disagreeable contrast that exists between marbles that have taken upon themselves the rich bloom of the centuries, and marbles that wear the cold glittering surface they bring with them from the quarries of Carrara. Certainly the façade of Santa Croce was at first a disfigurement to that building rather than an adornment. In the case of the Duomo there has always been a talk of staining the purely white marble slabs, in order that the new may the better and the sooner harmonize with the old.

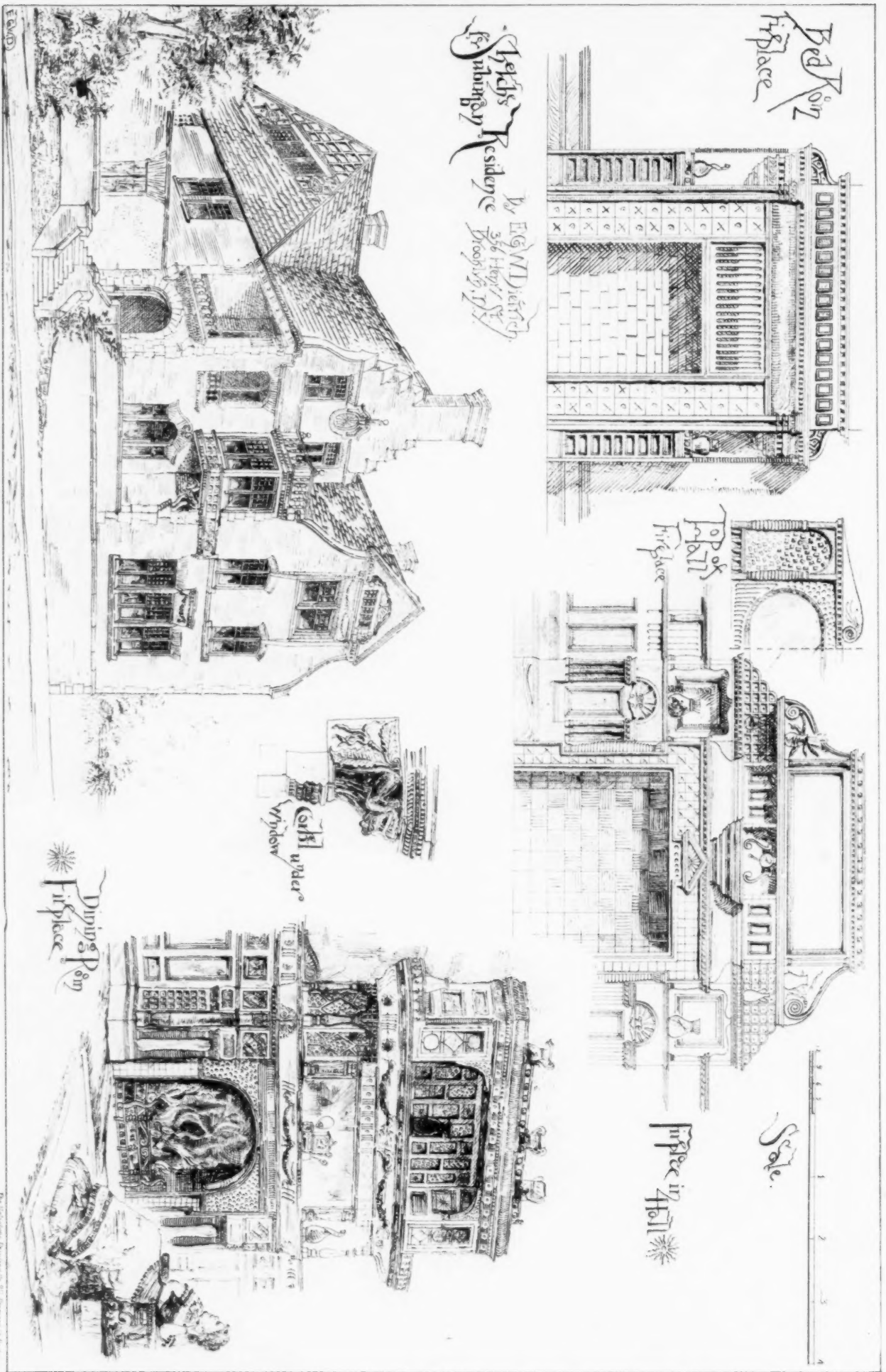
A casket precious inside is proverbially worthy of a nobler exterior; and the Duomo of Florence is nobly incased externally, save in one comparatively small spot. It is quite time the blot should be removed. The memories of the building are almost commensurate with its beauty. In the year 1436 Pope Eugenius consecrated it with the utmost imaginable pomp on the Feast of the Annunciation

<sup>1</sup> Jefferson's Correspondence, Vol. iv, p. 235.





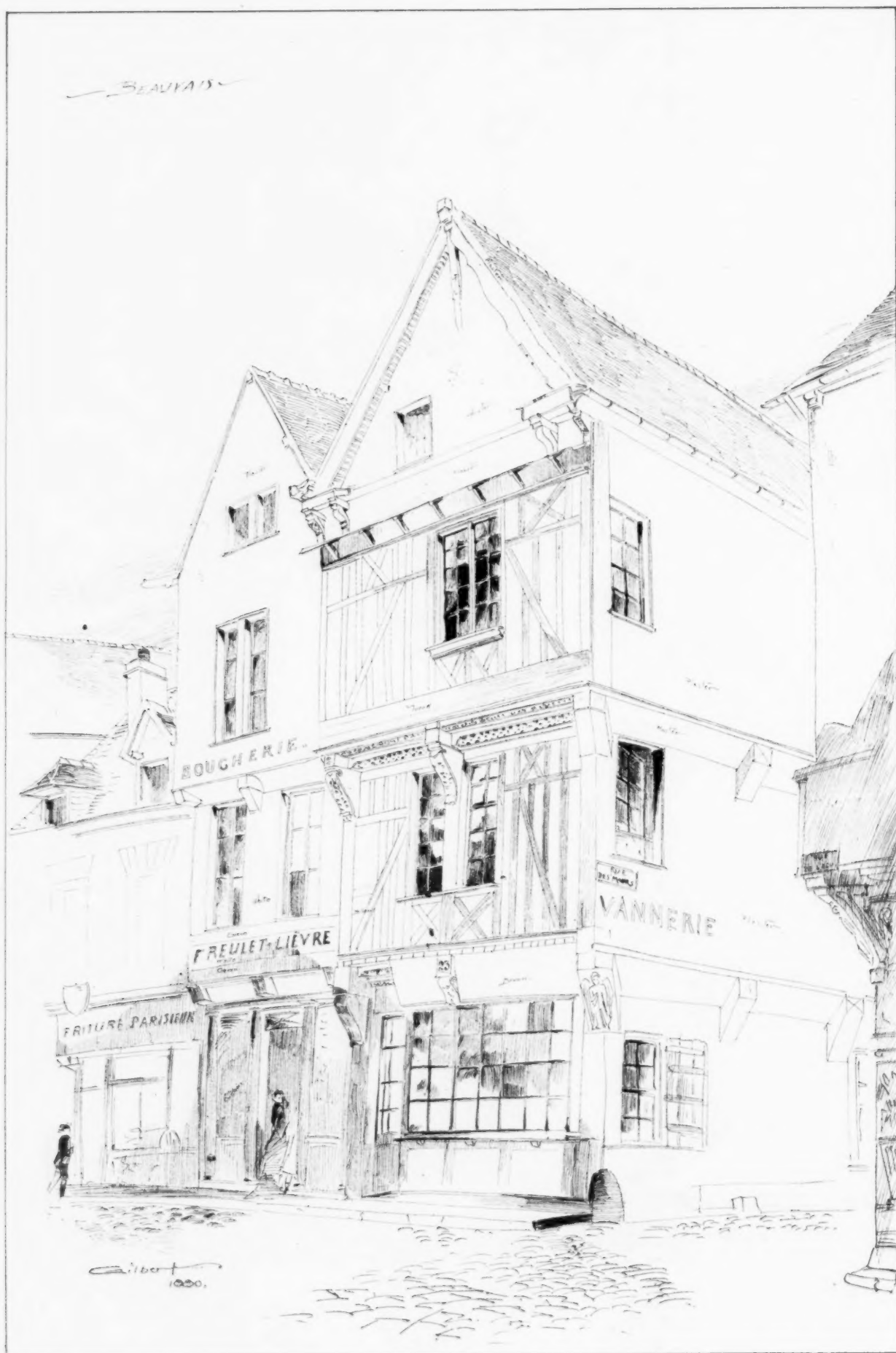
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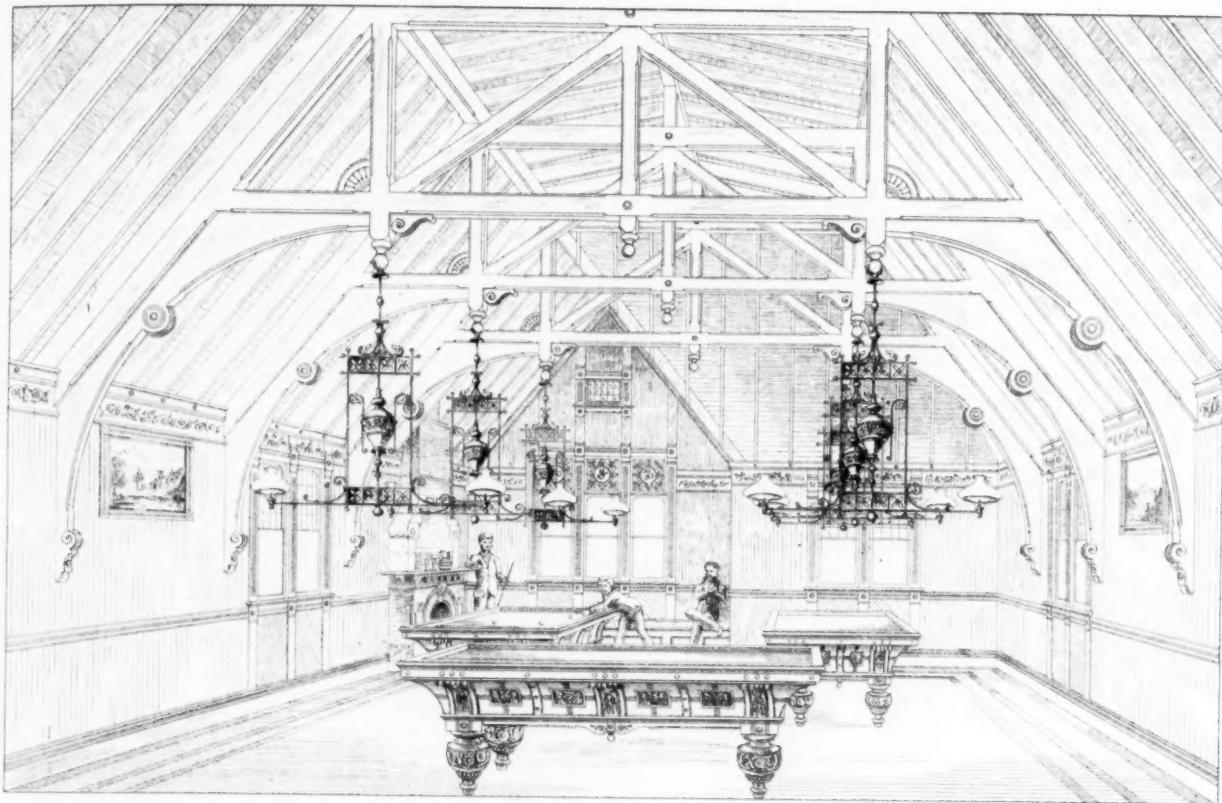
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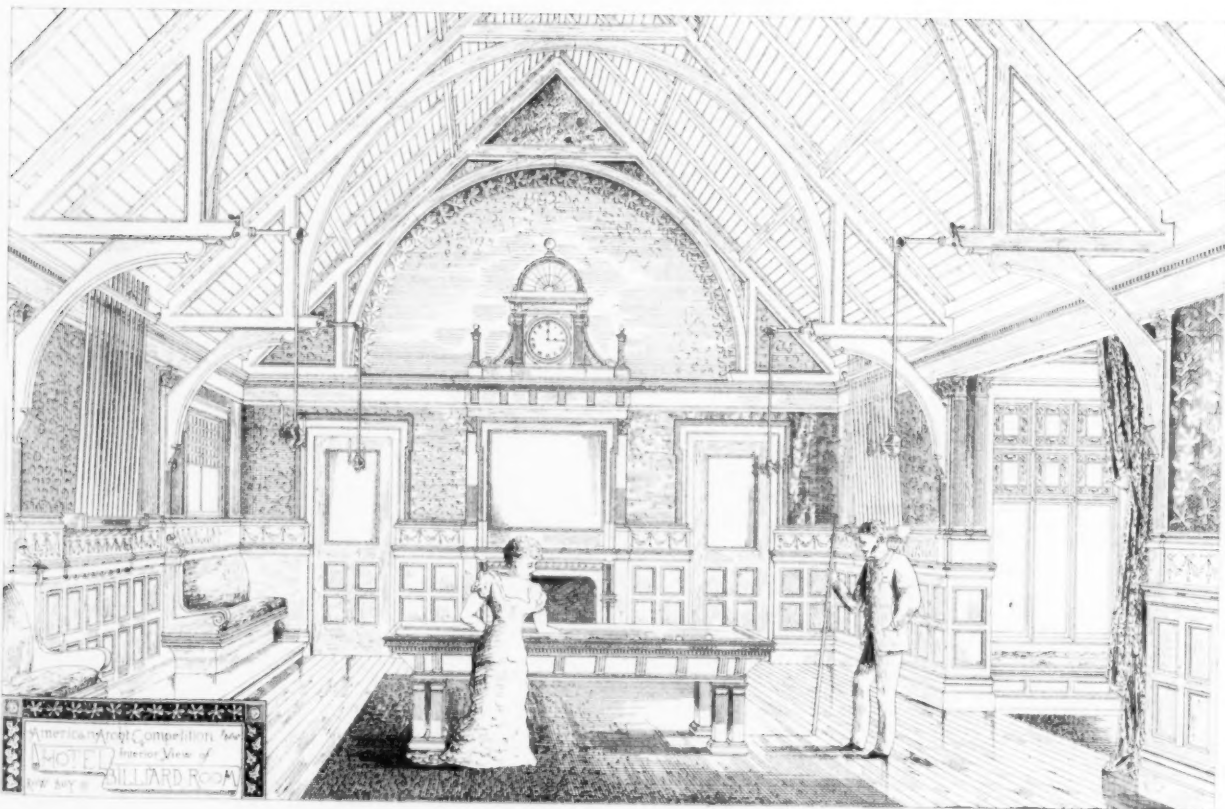








KOELTER



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Design for a Cottage.

B. Linfoot, Architect.



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of the Virgin. A closed gallery was erected all the way from the chief door of the Church of Santa Maria Novella to Santa Maria del Fiore. It was richly carpeted throughout, and hung with tapestry, damask silk, and abundant flowers. Along this covered way the Pope proceeded, accompanied by 7 cardinals, and 37 archbishops and bishops. The ceremonies of the consecration occupied five hours, and are described by the contemporary chronicler, Ammerato, as "exquisite." The Gonfaloniere of Florence, Davanzati, was knighted by the Pontiff, who himself clasped the knightly mantle on the Gonfaloniere's breast; "the like honor to which," says the same historian, "was never paid to any other citizen." It would take long to enumerate all the historical mural tablets and tombs to be seen in the Duomo. Brunelleschi is commemorated there, and so is Giotto. The memorial to the latter was erected at the expense of Lorenzo the Magnificent, and the epitaph was composed by Poliziano. Marsilio Ficino, the reviver of the Platonic philosophy, has likewise a bust there; and we may say of it, "Where'er you tread, 'tis haunted, holy ground." The Evil one, according to the Florentine tradition, is imprisoned somewhere within its walls; for visiting it one day to speak to the monks, he left his horse, the Wind, outside, which is waiting there for him still, since the monks kept him in the sacristy. Any one who has felt the Tramontana blow in the Piazza of the Duomo will have little difficulty in understanding how the story originated. — *London Standard*.

AN ITALIAN  
TOMB

## THE ILLUSTRATIONS.

COMPETITIVE DESIGN FOR A HOTEL BILLIARD-ROOM. BY MR. W. G. COPELAND ["Row Boy"], SAN FRANCISCO, CAL.

"Row Boy" gives us an appropriate and cheerful interior with a light and simple roof, whose trusses divide the hall into three equal divisions for the tables. The lights for the latter hang conveniently from the truss-brackets, but the number of burners is insufficient. The trusses are shown by the section to be properly constructed, but the way in which the large brackets are brought down upon slight decorative pilasters does not suggest the importance of the perpendicular tie which connects the brackets with the roof timbers. The bay-window opens pleasantly in the centre of the side of the hall, and the raised seats are neatly introduced. So much refinement and invention is shown in making the cues form the chief feature in the simple stand provided for them, and in the treatment of various other details, that the commonplace and meagre design of the tables is a disappointment. The ventilation is quite insufficiently indicated. The perspective is simply and crisply drawn, but it is well-nigh ruined by "Row Boy's" inexplicable whim of introducing impertinent and wretchedly-drawn human figures."

COMPETITIVE DESIGN FOR A HOTEL BILLIARD-ROOM. BY "Fideliter."

"The general aspect of 'Fideliter's' hall is cheerful, and is well in the spirit of the programme. Its open-timber roof is light and unpretentious. The tables are good, and the chairs, the details of the wood-work, and the brick fireplace indicate thought and a refined taste; but the over-elaborated chandeliers are not in keeping with the rest of the design, and are not properly arranged over the tables. The existence of the latter receives no consideration in the plan, which is ill-devised, or rather, it may be said, has received from its author absolutely no thought. The position of the cue-racks shown in detail is not established upon the wall in the perspective, neither is there sufficient indication of seats or raised platform for spectators. No scheme for ventilation is suggested. The perspective

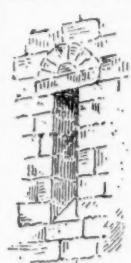
drawing is correct, but presented in a meagre and uninteresting manner, and what merit might be given to it for simplicity is destroyed by the puerile attempt to introduce human figures."

SKETCH FOR A SUBURBAN RESIDENCE. BY MR. E. W. DIETRICH, ARCHITECT, BROOKLYN, N. Y.

HOUSES ON THE RUE DE L'EAU, BEAUVAIS, FRANCE. SKETCHED BY MR. CASS GILBERT, NEW YORK, N. Y.

DESIGN FOR A COTTAGE, MR. B. LINFOOT, ARCHITECT, PHILADELPHIA, PA.

## TEST OF ST. LOUIS WATER-PROOFING FOR BRICKS.



THE following tests of St. Louis Water-proofing for bricks were recently made by Mr. F. E. Kidder, for the committee on the building materials exhibited at the Mechanic Fair recently held in Boston. The tests were made on St. Louis hydraulic-pressed brick, treated on all sides by the St. Louis Water-Proofing Company, of St. Louis, in the physical laboratory of the Massachusetts Institute of Technology; very sensitive balances being used for weighing the bricks, before and after immersion.

The following is taken from Mr. Kidder's report to the committee:—

In order to ascertain what amount of water the bricks would absorb in their natural condition, two bricks of the same kind as those which were treated with the water-proofing were immersed in water, and at the end of one hour one brick had absorbed  $9\frac{1}{10}$  per cent of its weight of water, and the other 10 per cent. This was all that the bricks would absorb, as the weight of the bricks did not increase after several hours' immersion. To ascertain the effect of freezing on the saturated bricks, one of them was exposed, for a few hours, to a temperature somewhat below the freezing point of water, and the freezing of the water in the bricks burst a piece some three or four square inches in area, and about one-half an inch thick at its thickest part, out of one face of the brick.

To test the protecting qualities of the water-proofing, three of the same kind of bricks, treated on all sides with water-proofing, were immersed in water at a temperature of about 65° Fahrenheit for 70 hours, when no increase could be detected in the weight of the bricks due to immersion.

One of the bricks was afterwards immersed in water which was for a short time at a temperature of 78° Fahrenheit, and at the end of 43 hours it had absorbed  $\frac{1}{10}$  of one per cent of its weight of water. After 120 hours further immersion in water at 65° Fahrenheit, it had absorbed  $1\frac{7}{10}$  per cent of its weight of water. This brick had several small cracks in it, through which this small amount of water probably entered the brick.

Two other bricks of the same kind, treated on all sides, were immersed in water at 65° Fahrenheit for 1½ hours without absorbing any water.

In 45 hours' immersion one brick absorbed  $\frac{3}{10}$  of one per cent of its weight of water, while the other brick absorbed no water at all.

During sixteen days' immersion the brick which before had absorbed a small amount of water took up  $1\frac{3}{10}$  per cent of its weight of water, while the other brick took up only  $\frac{1}{10}$  of one per cent of its weight of water. Both of these bricks had a large number of small cracks, and it was probably in these cracks that the small amount of water taken up by the bricks was contained.

The results of these tests may be summed up as follows:—

Bricks not treated with water-proofing were entirely saturated after one hour's immersion, when they contained about  $\frac{1}{10}$  of their weight of water.

Three bricks treated on all sides with the water-proofing solution absorbed no water during 70 hours' immersion in water at the ordinary temperature.

Two bricks during 16 days' immersion absorbed  $\frac{1}{10}$  and  $\frac{3}{10}$  of their weight of water respectively. The protecting power of the water-proofing is destroyed by immersing bricks treated with it in water at a higher temperature than 100° Fahrenheit, and probably even at a temperature of 85°. But bricks in ordinary situations would never be subjected to the presence of water at such high temperatures. The bricks tested were treated with water-proofing about two months before the tests were made.

## JUDGES' REPORT ON THE TEST OF FIRE-PROOF MATERIALS.



AS the following is a portion of the official report of the judges on the late test of fire-proof material made at Boston, we are constrained to print it, although we feel that in passing over in silence the materials of other exhibitors than Mr. Loring which were subjected

to test, the judges have laid themselves open to criticism.

Only one of the judges was present at the actual test, and the present report is based not so much on the results of the public trial

as on certain private experiments made by the judges. It is proper to draw attention to the fact that one of the judges, Mr. Edward Atkinson, declined to sign the report, as he had not been present at the making of any of the tests.

BOSTON, December 21, 1881.

To C. W. SLACK,

President Massachusetts Charitable Mechanic Association:—

The undersigned, requested to act as a Board to judge of the result of the test of fire-proof building materials and methods made by Frank E. Kidder, engineer, submit for your consideration some general conclusions on the subject of fire-proofing and of the adaptability of materials for this use.

The test was a severe one, and reflects credit on Mr. Kidder, and for details of the manner of conducting test we would refer to Mr. Kidder's report. . . .

Buildings may be protected and partially fire-proofed, using posts, columns and girders of wood or iron, thoroughly encased in a fire-proof material; these holding firmly together and supporting the principal parts of the interior and exterior, and rendering such buildings less liable to fall in case of fire, and leaving them in condition to repair at a relatively small expense. We regard as essential qualities in a perfect material for general use in fire-proof building construction the power to successfully resist disintegration by the action of fire, water, and frost.

Loring's Porous Terra-Cotta, as tested, has satisfied us that this material can be made to possess all these qualities. A perfect sample when cut resembles pumice-stone, the substance being well-burned clay. The porosity increases its power as a non-conductor, and enables it to resist sudden and extreme changes of temperature without liability to fracture; renders the body penetrable, so that nails, screws, or other metallic fastenings can be driven into it to secure it to, or about, the constructive frame-work which it covers and protects, or, to attach slate, tile, or other weather-proof covering to this material, when used as a substitute for ordinary wall, floor, or roof sheathing.

It also increases its power of suction, making it the best possible material for receiving plastic cements, asphalt, etc., when used with these and other materials for exterior and interior ground-work and finish.

We have examined Mr. Loring's drawings showing his proposed methods for using this and other materials in building construction. They involve in some cases radical changes in the ordinary methods of utilizing building materials, and in our opinion they are thoroughly practical and economical and can be profitably used by every one interested in erecting safe and permanent buildings. They show earnest and intelligent work by one who has carefully studied the nature of the destructive power of fire, water, and frost, and their methods of attacking ordinary building materials and methods of construction, and they clearly indicate to us that, by seeking to develop and use the best qualities of each material, he has finally combined them in the constructive portions of buildings, making them, in a simple, efficient, and economical way, proof against destruction by these elements.

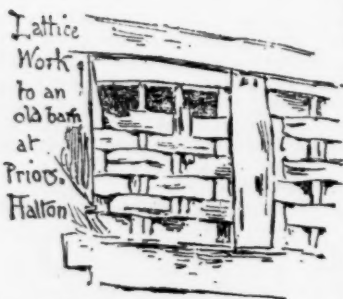
The terra-cotta submitted to these tests gave evidence in a remarkable degree of its ability to protect iron beams and columns from the action of fire and water, without fracture or disintegration, as well as to insure the complete security of wood from the action of the flames, so that not the least charring was observed where it was protected by Loring's Porous Terra-Cotta.

We are impressed with the importance of having, if possible, a thorough test of the materials submitted by the Clinton Wire-Cloth Company, the Loring Fire-Proofing Company, and the Wight Fire-Proofing Company, believing that there is sufficient merit in the materials as exhibited by the gentlemen representing the wire-cloth and porous terra-cotta to warrant another, and if possible, a severer test.

We trust that an invitation may be extended to these gentlemen to exhibit, and the expense paid by subscriptions of those who wish greater security from the ravages of fire, in order that the relative merits of material may be more generally known and better understood than was possible by the circumstances connected with the first test.

Signed, JOHN S. DAMRELL, } Board of  
WM. A. GREEN, } Judges.  
OLIVER L. SHAW, }

#### SOME HINTS ON PATTERN-DESIGNING.<sup>1</sup>—I.



From the British Architect.

not for the sake of imitation, or to tell a fact directly; so that people have called this art ornamental art, though indeed all real art is ornamental.

Now, before we go further, we may as well ask ourselves what reason or right this so-called ornamental art has to existence? We might answer the question shortly by saying that it seems clear that

<sup>1</sup> By William Morris. A lecture delivered at the Working Men's College on December 19.

BY the word pattern-design, of which I have undertaken to speak to you to-night, I mean the ornamentation of a surface by work that is not imitative or historical—at any rate, not principally or essentially so. Such work is often not literally flat, for it may be carving or moulded work in plaster or pottery; but whatever material relief it may have is given to it for the sake of beauty and richness, and

mankind has hitherto determined to have it even at the cost of a good deal of labor and trouble: an answer good enough to satisfy our consciences that we are not necessarily wasting our time in meeting here to consider it; but we may furthermore try to get at the reasons that have forced men in the mass always to expect to have what to some of them doubtless seems an absurd superfluity of life.

I do not know a better way of getting at these reasons than for each of us to suppose himself to be in the room in which he will have to pass a good part of his life, the said room being quite bare of ornament, and to be there that he may consider what he can do to make the bare walls pleasant and helpful to him. I say the walls, because, after all, the widest use of pattern-designing is the clothing of the walls of a room, hall, church, or what building you will.

Doubtless there will be some, in these days at least, who will say, "Tis most helpful to me to let the bare walls alone." So also there would be some who, when asked with what manner of books they will furnish their room, would answer, "With none." So I think you will agree with me in thinking that both these sets of people would be in an unhealthy state of mind, and probably of body also, in which case we need not trouble ourselves about their whims, since it is with healthy and sane people only that art has dealings.

Again, a healthy and sane person being asked with what kind of art he would clothe his walls, might well answer, "With the best art," and so end the question. Yet, out on it! so complex is human life, that even this seemingly most reasonable answer may turn out to be little better than an evasion.

For I suppose the best art to be the pictured representation of men's imaginings; what they have thought has happened to the world before their time, or what they deem they have seen with the eyes of the body or the soul: and the imaginings thus represented are always beautiful indeed, but oftenest stirring to men's passions and aspirations, and not seldom sorrowful or even terrible.

Stories that tell of men's aspirations for more than material life can give them, their struggles for the future welfare of their race, their unselfish love, their unrequited service—things like this are the subjects for the best art; in such subjects there is hope surely, yet the aspect of them is likely to be sorrowful enough; defeat, the seed of victory, and death, the seed of life, will be shown on the face of most of them.

Take note, too, that in the best art all these solemn and awful things are expressed clearly and without any vagueness, with such life and power that they impress the beholder so deeply that he is brought face to face with the very scenes, and lives among them for a time; so raising his life above the daily tangle of small things that wearies him, to the level of the heroism which they represent.

This is the best art; and who can deny that it is good for us all that it should be at hand to stir our emotions; yet its very greatness makes it a thing to be handled carefully, for we cannot always be having our emotions deeply stirred; that wearies us body and soul; and man, an animal that longs for rest like other animals, defends himself against the weariness by hardening his heart, and refusing to be moved every hour of the day by tragic emotions; nay, even by beauty that claims his attention over-much.

Such callousness is bad, both for the arts and our own selves; and therefore it is not so good to have the best art for ever under our eyes, though it is abundantly good that we should be able to get at it from time to time.

Meantime, I cannot allow that it is good for any hour of the day to be wholly stripped of life and beauty; therefore we must provide ourselves with lesser (I will not say worse) art with which to surround our common work-a-day or restful times; and for those times, I think, it will be enough for us to clothe our daily and domestic walls with ornament that reminds us of the outward face of the earth, of the innocent life of animals or of man passing his days between work and rest as they do. I say, with ornament that reminds us of these things, and sets our minds and memories at work easily creating them; because scientific representation of them would again involve us in the problems of hard fact and the troubles of life, and so once more destroy our rest for us.

If this lesser art will really be enough to content us, it is a good thing; for as to the higher art there never can be very much of it going on, since but few people can be found to do it; also few can find money enough to possess themselves of any portion of it, and; if they could, it would be a piece of preposterous selfishness to shut it up from other people's eyes; while of the secondary art there ought to be abundance for all men—so much that you need but call in the neighbors, and not all the world, to see your pretty new wall when it is finished.

But this kind of art must be suggestive rather than imitative; because, in order to have plenty of it, it must be a kind of work that is not too difficult for ordinary men with imaginations capable of development; men from whom you cannot expect miracles of skill, and from whose hands you must not ask too much, lest you lose what their intelligence has to give you, by over-wearying them. Withal, the representation of this lower kind of life is pretty sure to become soulless and tiresome unless it have a soul given to it by the efforts of men forced by the limits of order and the necessities of art to think of these things for themselves, and so to give you some part of the infinite variety which abides in the mind of man.

Of course you understand that it is impossible to imitate nature literally; the utmost realism of the most realistic painter falls a long way short of that; and as to the work which must be done by or



dinary men, not unskilled or dull to beauty, the attempt to attain to realism would be sure to result in obscuring their intelligence, and in starving you of all the beauty which you desire in your hearts, but which you have not learned to express by means of art.

Let us get back to our wall again, and think of it. If you are to put nothing on it but what strives to be a literal imitation of nature, all you can do is to have a few cut flowers and bits of boughs nailed to it, with perhaps a blue-bottle fly or a butterfly here and there. Well, I don't deny that this may make good decoration now and then, but if all decoration had to take that form I think weariness of it would drive you to a white-washed wall; and at the best it is a very limited view to take of nature.

Is it not better to be reminded, however simply, of the close vine-trellis that keeps out the sun by the Nile side; or of the wild woods and their streams, with the dogs panting beside them; or of the swallows sweeping above the garden-boughs toward the house-eaves where their nestlings are, while the sun breaks the clouds on them; or of the many-flowered summer meadows of Picardy? Is not all this better than having to count day after day a few sham-real boughs and flowers, casting sham-real shadows on your walls, with little hint of anything beyond Covent Garden in them?

You may be sure that any decoration is futile, and has fallen into at least the first stage of degradation, when it does not remind you of something beyond itself — of something of which it is but a visible symbol.

Now, to sum up, what we want to clothe our walls with is (1) something that is possible for us to get; (2) something that is beautiful; (3) something which will not drive us either into unrest or into callousness; (4) something which reminds us of life beyond itself, and which has the impress of human imagination strong on it; and (5) something which can be done by a great many people without too much difficulty and with pleasure.

These conditions I believe to have been fulfilled by the pattern designers in all times when art has been healthy, and to have been all more or less violated when art has been unhealthy and unreal. In such evil times beauty has given place to whim, imagination to extravagance, nature to sick night-mare fancies, and finally workman-like considerate skill, which refuses to allow either the brain or the hand to be over-taxed — which, without sparing labor when necessary, refuses sternly to waste it — has given place to commercial trickery sustained by laborious botching.

Now, I have been speaking of what may be called the moral qualities of the art we are thinking of: let us try, therefore, to shorten their names, and have one last word on them before we deal with the material or technical part.

Ornamental pattern-work, to be raised above the contempt of reasonable men, must possess three qualities — beauty, imagination, and order.

'Tis clear I need not waste many words on the first of these. You will be drawing water with a sieve with a vengeance if you cannot manage to make ornamental work beautiful.

As for the second quality — imagination — the necessity for that may not be so clear to you, considering the humble nature of our art; yet you will probably admit, when you come to think of it, that every work of man which has beauty in it must have some meaning in it also; that the presence of any beauty in a piece of handicraft implies that the mind of the man who made it was more or less excited at the time, was lifted somewhat above the commonplace; that he had something to communicate to his fellows which they did not know or feel before, and which they would never have known or felt if he had not been there to force them to it.

I want you to think of this when you see — as, unfortunately, you are only too likely often to see — some lifeless imitation of a piece of bygone art, and are puzzled to know why it does not satisfy you. The reason is that the imitator has not entered into the soul of the dead artist; nay, has supposed that he had but a hand and no soul, and so has not known what he meant to do. I dwell on this because it forces on us the conclusion that if we cannot have an ornamental art of our own, we cannot have one at all. Every real work of art, even the humblest, is inimitable. I am most sure that all the heaped-up knowledge of modern science, all the energy of modern commerce, all the depth and spirituality of modern thought, cannot reproduce so much as the handiwork of an ignorant, superstitious Berkshire peasant of the fourteenth century; nay, of a wandering Kurdish shepherd, or of a skin-and-bone oppressed Indian ryot. This, I say, I am sure of; and to me the certainty is not depressing, but inspiring, for it bids us remember that the world has been noteworthy for more than one century and in one place — a fact which we are pretty much apt to forget.

Now as to the third of the essential qualities of our art — order. I have to say of it, that without it neither the beauty nor the imagination could be made visible; it is the bond of their life, and as good as creates it, if they are to be of any use to people in general. Let us see, therefore, with what instruments it works, how it brings together the material and spiritual sides of the craft.

I have already said something of the way in which it deals with the materials which nature gives it, and how, as it were, it both builds a wall against vagueness and opens a door therein for imagination to come in by. Now, this is done by means of treatment which is called, as one may say technically, the conventionalizing of nature. That is to say, order invents certain beautiful and natural forms, which, appealing to a reasonable and imaginative person,

will remind him not only of the part of nature which, to his mind at least, they represent, but also of much that lies beyond that part. I have already hinted at some reasons for this treatment of natural objects. You can't bring a whole country-side, or a whole field, into your room, nor even a whole bush; and, moreover, only a very specially skilled craftsman can make any approach to what might pass with us in moments of excitement for an imitation of such-like things.

These are limitations which are common to every form of the lesser arts; but, besides these, every material in which household goods are fashioned imposes certain special limitations within which the craftsman must work.

Here, again, is the wall of order against vagueness, and the door of order for imagination. For you must understand from the first that these limitations are as far as possible from being hindrances to beauty in the several crafts. On the contrary, they are incitements and helps to its attainment; those who find them irksome are not born craftsmen, and the periods of art that try to get rid of them are declining periods.

Now this must be clear to you, if you come to think of it. Give an artist a piece of paper, and say to him, "I want a design," and he must ask you, "What for? What's to be done with it?" And if you can't tell him, well I dare not venture to tell you the name which his irritation will give you. But if you say, I want this queer place filled with ornament, I want you to make such and such a pretty thing out of these intractable materials, straightway his invention will be quickened, and he will set to work with a will; for, indeed, delight in skill lies at the root of all art.

Now, further, this working in materials, which is the *raison d'être* of all pattern-work, still further limits it in the direct imitation of nature, drives it still more decidedly to appeal to the imagination. For example: you have a heap of little colored cubes of glass to make your picture of, or you have some colored thrums of worsted wherewith to build up at once a picture and a piece of cloth; well, there is a wrong and a right way of setting to work about this: if you please you may set to work with your cubes and your thrums to imitate a brush-painted picture, a work of art done in a material wherein the limitations were as few and pliable as they are many and rigid in the one you are working in; with almost invisible squares or shuttle-strokes, you may build up, square by square, or line by line, an imitation of an oil-painter's rapid stroke of the brush, and so at last produce your imitation, which doubtless people will wonder at, and say, "How *was* it done? — we can see neither cubes nor thrums in it." And so also would they have wondered if you had made a portrait of the Lord Mayor in burnt sugar, or of Mr. Parnell in fireworks. But the wonder being over, 'tis like that some reasonable person will say, "This is not specially beautiful; and as to its skill, after all, you have taken a year to do what a second-rate painter could have done in three days. Why have you done it at all?"

An unanswerable question, I fear.

Well, such materials may be used thus, so clever are men; nay, they *have* been used thus, so perverse and dull are men!

On the other hand, if you will, you may thoroughly consider your glass cubes or your worsted thrums, and think what can best be done with them; but they need not fetter your imagination, for you may, with them, tell a story in a new way, even if it be not a new story; you may conquer the obstinacy of your material and make it obey you as far as the needs of beauty go, and the telling of your tale; you will be pleased with the victory of your skill, but you will not have forgotten your subject amidst mere laboriousness, and you will know that your victory has been no barren one, but has produced a beautiful thing, which nothing but your struggle with difficulties could have brought forth, and when people look at it they will be forced to say: "Well, though it is rough, yet, in spite of the material, the workman has shown that he knows what a good line is; it is beautiful, certainly, after its fashion, and the workman has looked at things with his own eyes — and then how the tesserae gleam in this indestructible picture, how the gold glitters!" Or, "What wealth of color and softness of gradation there is in these interwoven thrums of worsted, that have drunk the dye so deeply. No other material conceivable could have done it just like this. And the wages are not so high; we can have plenty of this sort of work. Yes, the man is worth his keep."

In this way, also, your materials can be used, so simple and trustful may men be that they may venture to make a work of art thus: nay, so helpful and joyous have they been, that they have so ventured — for the pleasure of many people, their own not least of all.

Now, I have tried to point out to you that the nature of the craft of pattern-designing imposes certain limitations within which it has to work, and also that each branch of it has further limitations of its own. Before saying a few words that relate to these special limitations, I will, by your leave, narrow our subject by dwelling a little on what is one of the most important parts of pattern-designing — the making of a recurring pattern for a flat surface. Let us first look a little on the construction of these — at the lines on which they are built. Now, the beauty and imagination which I have spoken of as necessary to all patterns, may be, and often have been, of the very simplest kind, and their order the most obvious. So, to begin with, let us take one of these: our wall may be ornamented with mere horizontal stripes of color; what beauty there may be in these will be limited to the beauty of very simple proportion, and in the

tints and contrast of tints used, while the meaning of them will be confined to the calling people's attention to the charm of material, and due orderly construction of a wall.

After this simplest form comes that of checkers and squares of unfoliated diaper, so to call it, which still is but a hint at the possible construction of the wall, when it is not in itself constructional. From that we get to diapers, made by lines, either rectilinear or taking the form of circles touching one another. We have now left the idea of constructional blocks or curves, and are probably suggesting scoring of lines on the surface of the wall joined to inlaying, perhaps; or else there is an idea in it of some sort of hangings at first, as in much of the ancient Egyptian work woven of reeds or grass, but later on suggesting weaving of finer materials that do not call attention to the crossing of warp and weft.

This next becomes a floriated diaper. The lines are formed by shapes of stems and leaves, or flowers fill the spaces between the lines. This kind of ornamentation has got a long way from the original stripes and squares, and even from the cross-barred matting diapers. The first of these (when used quite simply) is commonly external work, and is used to enrich further what sunlight and shadow already enriches. The second either implies an early stage of civilization or a persistent memory of its rudeness.

But as to this more elaborate diaper — for, simple as its construction is, it has never been superseded — in its richer forms it is intimately connected with the stately and vast shapes of Roman architecture; and until the great change took place, when the once-despised East began to mingle with the old, decaying Western civilization, and even to dominate it, it was really the only form taken by recurring patterns, except mere checker and scalework, though certain complications of the circle and the square were used to gain greater richness.

Here is an example of the strong hold this construction of pattern had upon Gothic art, and it is otherwise interesting as a specimen of traditional art grown stationary; for though it looks like a Lombard pattern of the twelfth century, it was wrought in Iceland towards the close of the seventeenth.

Now the next change, so far as mere construction goes, takes us into what is practically the last stage that recurring patterns can get to, and the change is greater than at first sight it may seem to you; it is part of that change in the master-art from late and decaying Classical art into Byzantine, or, as I would rather call it, newborn Gothic art. The first places where it is seen are a few buildings of the early part of the sixth century, when architecture seems to have taken a sudden leap, and, in fact, to have passed from death to new birth. As to the construction of patterns the change was simply this — continuous growth of curved lines took the place of mere contiguity, or of the interlacement of straight lines.

All the recurring patterns of the ancient and classical world were, I repeat, founded on the diaper square or round. All their borders or friezes were formed either by tufts of flowers growing side by side, with their tendrils sometimes touching or interlacing, or by scrolls wherein there was no continuous growth, but only a masking of the repeat by some spreading member of the pattern. But when young Gothic took the place of old Classic, the change was marked in pattern-designing by the universal acceptance of continuous growth as a necessity of borders and friezes; and in square pattern-work, as I should call it, this growth was the general rule in all the more important designs.

Of this square continuous pattern-work there are two principal forms of construction. — 1. The branch formed on a diagonal line, and 2. the net framed on variously-proportioned diamonds. These main constructions were, as time went on, varied in all sorts of ways, more or less beautiful and ingenious; and they are of course only bounding or leading lines, and are to be filled up in all sorts of ways. Nay, sometimes these leading lines are not drawn, and we have left us a sort of powdering in the devices which fill up the spaces between the imaginary lines. Our Sicilian pattern of the thirteenth century gives us an example of this; and this Italian one of the fourteenth century gives us another of the leading lines of the diagonal branch being broken, and so leaving a powdering on those lines; but in all cases the net or branch lines — that is, the simple diagonal or crossing diagonal — are really there.

For clearness' sake, I will run through the different kinds of construction that I have named: 1. Horizontal stripes; 2. Block diaper or checker; 3. Matting diaper (very various in form); 4. Square line diaper; 5. Floriated square diaper; 6. Round diaper formed by contiguous circles; 7. The diagonal branch; 8. The next; 9. (which is supplementary), powderings on the lines of the diagonal branch, or of the net.

These are all the elementary forms of construction for a recurring pattern, but of course there may be many varieties of each of them. Elaborate patterns may be wrought on the stripes or checkers; the foliated diaper may be wrought interlocking; the net may be complicated by net within net; the diagonal bough may be crossed variously, or the alternate boughs may be slipped down so as to form a kind of untied and dislocated net; the circles may intersect each other instead of touching, or polygonal figures may be built on them, as in the strange star patterns which are the differentia of Arab art.

Of course, also, these constructional lines may be masked in an infinite number of ways, and in certain periods it was most usual

to do this, and much ingenuity was spent, and not a little wasted, in doing it.

Before I pass to the use to which these forms of pattern may be put, I will say a little on the subject of the relief of patterns, which may be considered as the other side of their mechanism. We have, you see, been talking about the skeletons of them, and those skeletons must be clothed with flesh; that is, their members must have tangible superficial area; and by the word relief I understand the method of bringing this out.

Of course this part of the subject is intimately connected with the color of designs, but of that I shall only say so much as is necessary for dealing with their relief.

To put the matter as shortly as possible, one may say that there are two ways of relief for a recurring surface pattern — either that the figure shall show light upon a dark, or dark upon a light ground; or that the whole pattern, member by member, should be outlined by a line of color which both serves to relieve it from its ground, which is not necessarily either lighter or darker than the figure, and also prevents the color from being inharmonious or hard.

Now, to speak broadly, the first of these methods of relief is used by those who are chiefly thinking about form, the second by those whose minds are most set on color; and you will easily see, if you come to think of it, how widely different the two methods are. Those who have been used to the first method of dark upon light, or light upon dark, often get confused and troubled when they have to deal with many colors, and wonder why it is that, in spite of all their attempts at refinement of color, their designs still look wrong. The fact is, that when you have many colors, when you are making up your design by contrast of hues and variety of shades, you must use the bounding line to some extent, if not through and through.

Of these two methods of relief, you must think of the first as being the relief of one plane from another; in it there is always an idea at least of more than one plane of surface, and often of several planes. The second you must think of as the relief of color from color, and designs treated thus both should look, and do look, perfectly flat. Again, to speak broadly, the first method is that of the West, the second that of the East; but of the later and (excuse the "bull") the Gothic East, the idea of plane relieved on plane was always present in all the patterns of the ancient and classical world.

Now, as to the use to be made of these recurring surface patterns, the simpler of them, such as mere stripes and simple diapers, have been, and doubtless will always be, used for external decoration of walls, and also for subsidiary decoration where the scale is large, and where historical art plays the chief part. On the other hand, some people may doubt as to what share, if any, the more elaborate forms of pattern work should have in internal wall decoration. True it is that the principle of the continuous line, which led up to all that elaboration, was an invention of the later East, just as the system of relieving color from color was; and I believe the two things are closely connected, and sprang from this cause, that these peoples were for various reasons not much driven towards the higher pictorial art, and did not reach any great excellence in it; therefore they felt a need of developing their pattern art to the highest degree possible, till it became something more than a little-noticed accompaniment to historical art, which was all that it used to be in the ancient or the classical world.

Perhaps the fact that the barbarians invented what the elder civilization, the great nurse of the higher arts, despised, may seem to some of you a condemnation of this more elaborate pattern-work; but before you make up your minds to that, I would ask you to remember within what narrow limits that perfection of Greece moved. It seems to me that unless you can have the whole of that severe system of theirs, you will not be bettered by taking to a minor part of it; nor, indeed, do I think that you can have that system now, for it was the servant of a perfection which is no longer attainable. The whole art of the classical ancients, while it was alive and growing, was the art of a society made up of a narrow aristocracy of citizens, waited upon by a large body of slaves, and surrounded by a world of barbarism which was always despised and never noticed till it threatened to overwhelm the self-sufficient aristocracy that called itself the civilized world.

No, I think that the barbarians who invented modern Europe invented also several other things which we, their children, cannot decently disregard, or pass by wrapped up in a cloak of sham classical disguise; and that one of these things — the smallest of them if you will — was this invention of the continuous line that led to elaborate and independent pattern-work; and I believe that this was one of those things which, once invented, cannot be dropped, but must always remain a part of architecture, like the arch — like the pointed arch. Properly subordinated to architecture on the one hand, and historic art on the other, it ought yet, I think, to play a great part in the making of our houses at once beautiful and restful; and an end which is one of the chief reasons for existence of all art.

As to its subordination to the greater arts, all we can say about that is that we should not have too much of it. I don't think there is any danger of its thrusting the more intellectual and historic arts out of their due place; rather, perhaps, it is like to be neglected in comparison to them. But if it makes any advance, as it may do, I can see that counsels of despair may sometimes drive us into excess in the use of surface ornament. I mean that our houses are so base and ugly, and it is so hard to alter this bad condition of life, that



people may be driven out of all hope of getting good architecture, and try to forget their troubles in that respect by overdoing their internal decoration. Well, you must not suppose that I object to people making the best of their ugly houses; indeed, you probably know that I personally should be finely landed if they did not. Nevertheless, noble building is the first and best and least selfish of the arts, and unless we can manage to get it somehow, we shall soon have no decoration—or, indeed, art of any kind—to put into the dog-hutches which we now think good enough for refined and educated people, to say nothing about other buildings lesser and greater.

## THE EXCAVATIONS AT ASSOS.



WE believe that the following letter to the New York *Evening Post* respecting the anticipated abandonment of the excavations at Assos will be found of interest. We are requested to say that contributions in aid of a further prosecution of the work will be received by Professor C. E. Norton, Cambridge, or by William Endicott, Jr., Esq., Boston. It is earnestly to be hoped that there will be a generous supply of funds for the operations of the American Institute of Archaeology.

ATHENS, GREECE, December 9, 1881.

To the Editor of the N. Y. *Evening Post*:—

Sir,—I hear, with almost consternation, that the excavations of the American Institute of Archaeology at Assos, Asia Minor, are not assured of their continuance, and may even be suspended or abandoned this winter. In any other civilized country the government would have come in aid at once of such an undertaking, especially when its results have already given earnest of so much importance and so much has been done by private means. It is quite within the bounds of probability that these excavations, dealing as they do with the entire range of classical time, and even prehistoric matter, may, if conducted seriously, as begun, and persistently, as they merit, be the most important contributions to archaeology of the century, certainly far more important than those of Schliemann, either at Hisarlik or Mycenæ. Every American who has the slightest interest in classic archaeology, or pride in his country's reputation for liberal education, owes it to himself to contribute his mite, and some of those who spend so profusely for public purposes, which the whole public can appreciate, would do well to water this enterprise with a little of their bounty. There is no undertaking now on foot under American direction, to my knowledge, half so likely to render honor to the country as this work of the Institute of Archaeology, and it will be a disgrace to the nation if the pittance demanded for the continuance of the work is not at once given and even trebled. Either the French, German, or English Government, under the same circumstances, would have given pounds sterling where the Institute asks for dollars. The work should not be stopped for a day. The winter season is always the most fruitful in discoveries, and especially in the finding of small objects of value, as the rains wash them free from the soil; and to abandon the ground for a month is to leave it open to clandestine search by the experienced native excavators, who will profit by the work done, and may carry away objects of inestimable value, as everything from Assos is valuable, but especially so when exactly located.

The public spirit of the United States should put \$50,000 at once into the treasury of the Institute, to drive this work through with a despatch and thoroughness which would do credit to the nation.

W. J. STILLMAN.

## STORAGE OF WATER.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

You say that "the safest way is to estimate for storing half the annual rainfall at once." This would require 7,500 cubic feet of storage, or 56,250 gallons, or 1,406 barrels of 40 gallons each. This would take six cisterns 12 feet in diameter and 11' 10" feet deep in the clear of the dome and neck. This is certainly more than double the amount provided for in this locality (Cincinnati), and if the custom here has been so far wrong, it would be well to know it. Suppose that there are ten persons in the family, and allow 12 gallons per day for each person (this would seem to be ample), it would require to store six months' supply about 3,000 cubic feet, or 22,500 gallons, or 560 barrels. Then again, storing half the annual rainfall is not just the thing, as the rainfall is different in different localities, and the consumption of water (all things being equal) is the same, so that it would appear that we ought to estimate by cubical measurement.

C. C.

[C. C.'s house must be a large one, if he can get 7,500 cubic feet of rain-water from the roof of it in half a year. A country or suburban house, assessed, with the land, at ten thousand dollars, would hardly cover on an

average more than fifteen hundred square feet of ground, and this may be taken as the limit of the available rain-catching area of roof. Taking the average annual rainfall at 42 inches—a rather high estimate.—the total quantity intercepted by the roof in a year would be  $1500 \times 3 \frac{1}{2} = 5250$  cubic feet. One-half of this would be 2,625 cubic feet, or 19,687 gallons. For a family of seven persons, using water as the occupants of such a house would be likely to do, this is by no means an excessive allowance; in fact, we have known more to be required. Of course, circumstances are to be considered in all cases, and local custom, founded on actual experience, is a pretty safe guide.—EDS. AMERICAN ARCHITECT.]

## LATHING.

SMITH'S FALLS, January 10, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Would you be good enough to answer this question in the next issue? How far apart ought lath to be on a wall that is sheathed inside and outside, providing that we put lath perpendicular on sheeting to nail lath to?

M. R.

[THREE-EIGHTHS of an inch.—EDS. AMERICAN ARCHITECT.]

## NOTES AND CLIPPINGS.

A BRIDGE AT MINNEAPOLIS.—A stone bridge to be built at Minneapolis, Minn., will consist of sixteen 80-foot spans and four 100-foot spans, and including the shore-pieces will have a total length of 1,900 feet. It will support two railway tracks at a height of over sixty feet above the water, and will run diagonally across the river below St. Anthony's Falls. The cost is estimated at nearly \$530,000.

THE FORESTS OF LOUISIANA.—The New Orleans *Democrat* says that the most valuable and important woods, suitable for lumber, in the state are the oak, of several varieties, principally the live and white; the pine both long and short leaf; the cypress, cottonwood, gum, and black walnut. Each of these trees has its particular use and advantage, which makes it especially adapted to one of those numerous industries in which wood forms the principal material. There are other states which have good box timber, others again with plenty of material for house-building, for ship-building, or for staves; but Louisiana possesses such a variety of timber as would make it a field for every one of the sixty odd industries into which wood enters, from the simple saw-mill lumber to the best veneering, polished and fancy woods. The pine is the most abundant tree in the state, and constitutes over a third of the lumber wood of Louisiana. The cypress is unexcelled for shingles. Walnut and gum are well adapted to cabinet making. The first is master of the furniture field, while the gum has a brilliant future before it, and promises to be its successor at an early day. The cottonwood has been found fully equal to the famous white pine of Michigan for boxes, and even stronger and more durable. The live oak is admittedly the best timber for ship-building in the world. Growing in the swamps, it becomes completely impervious to water, and will resist water-rotting longer than any other wood known. The white oak has been found unexcelled for staves for the tougher barrels and casks. In shipping this timber to Europe, New Orleans does a large business. The ash and smaller oaks are unexcelled for fuel; they are firm and hard, and give a long-lasting and hot fire. Excellent charcoal is furnished by the pine. These varieties of woods are to be found in nearly every portion of the state, and cover nineteen-twentieths of the forest area of Louisiana. It is estimated that the state of Louisiana contains about 81,000,000,000 feet of good lumber, more than twice as much as Michigan; and 300,000,000 cords of wood fuel, worth, when sawed, some fifteen times the assessed value of the state, some \$20,000,000.

TIDAL FORCE AND ELECTRICITY.—Professor Sylvanus Thompson delivered a lecture before the Society of Arts on Wednesday, in which he indicated the advantage that might ultimately be gained from the storage of electricity. All that is needed for its use in most departments of life is a cheap motive-power, not derived from coal, and this may be obtained from the tides. They would be useless as motors for many purposes, but an intermittent force can store up electric energy. He believed there were places in England where tidal force could be cheaply utilized, particularly the gorge of the Avon. "A tenth part of the tidal energy in the gorge of the Avon would light Bristol, and a tenth part of the tidal energy in the channel of the Severn would light every city, and turn every loom, spindle, and axle in Great Britain." These may be dreams, but Sir W. Armstrong, it is said, lights his house by the energy of a little waterfall in his garden; and out of such dreams will emerge some day a practical proposal. Who will be Duke of Bridgewater this time, and spend a fortune, relying solely upon the accuracy of scientific calculation? He might live in history as a benefactor to the human race, or transmit to his descendants wealth beyond the dreams of avarice.—*Spectator*, November 26.

DEMOLITION OF A LEANING TOWER AT MUNSTER, WESTPHALIA.—The leaning tower of the church of St. Lambert, at Münster, in Westphalia, is being pulled down, as several large cracks were discovered at its base, and the inhabitants of the neighboring houses had been obliged to leave. The scaffolding used for the completion of the towers of Cologne Cathedral has been erected, and the first part taken down was the wooden cupola, beneath which stood for upward of three centuries the iron cages in which were exposed the bodies of the three Anabaptist leaders who had been put to death on the 22d of January, 1536. One of these was John of Leyden, the fanatic who proclaimed himself king and prophet, and who, after having been taken prisoner by the Bishop of Münster, whom he had dispossessed, was carried about from town to town, and eventually put to death with two of his associates at Münster. The bodies were then placed in iron cages, and the cages were hoisted up to the top of the tower of St. Lambert's Church, where they remained until last week. They will, together with many instruments of torture, be exhibited in Münster until the completion of the new tower, which is to be built out of the materials of the old one.—*St. James's Gazette*.



## 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.