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It is not surprising to hear that the joint Committee of Congress on the Library, on whom, apparently, the decision rests, are at a loss to know to whom to entrust the finishing of Brumidi's frieze in the Rotunda of the Capitol. That the committee should not know what was best in such a case is, in fact, the most natural thing in the world; and if this implied that the decision would be put into the hands of some one who did know we might be very well contented. But it seems to be out of the line of practice of committees to refrain from deciding matters for which they are not qualified. Senator Voorhees, whom the political wheel has brought to the chairmanship of the committee, believes Brumidi's frieze to be a grand work, and we are told that he proposes to send to "the art-centres of Italy, where frescos have always been held in high esteem," for a painter to finish it. This is perhaps as unpromising a way as any of buying a pig in a poke. Although frescos and other mural decorations have been and are held in esteem in Italy, as the traveller who runs may read in the window with a face looking out of it which he may see painted on a blank house-wall in almost any Italian town he runs through; and although there is a grain of truth in the Senator's implication that where frescos are held in higher esteem than they are among us, for instance, they are likely to be, on the whole, better painted, we believe that artists would not agree in holding the present generation of Italian fresco painters in very high esteem, in spite of their facile cleverness, or in counting on them for assistance for any more monumental work than the ceiling of a ball-room or a theatre. Further, we may suppose that since it is not a question of importing a skilled workman, as we might import a glass-blower from Venice, or a milliner from Paris, but of finding the best artist obtainable for a difficult work, the chances that the painter whom we might import to order would prove to be the man we want, when we got him here, are very uncertain.

Few undertakings, on the whole, have been less successful than the importation of foreign artists for American public works; few things are more unlikely than that we should get any artist of the first rank to come here and paint our Capitol. The *American Architect* has never been a vigorous advocate for protection to native artists,—believing that they will be a stronger race if they grow up unprotected and exposed to foreign competition,—and unquestionably there are many European artists of more skill and power for such work than are to be found in the United States; but between the men whom we can get at home and those whom we should be likely to import, we have no doubt that we should do better at home. But the question of finding a painter to finish Brumidi's work involves the major question whether his work should be finished at all. This we do not like to see taken for granted. The paintings of the Rotunda frieze are called the first real frescos painted in this country, and we presume they are so. There is a natural reluctance to sacrifice a large amount of skilful mechanical

work, unique in its kind, which we may lack the mechanical skill to replace; but the only title of this work to exist is as a work of art, and if it fails as a work of art, which we believe it does, there is no reason for retaining it in so conspicuous a place for a mere mechanical curiosity. If the work had been finished there would have been reason for letting it remain until some evident opportunity showed what was the best thing to replace it with. If it had been, as Mr. Voorhees styles it, a grand work, it would have been too precious to efface, however unfinished it might be. Since it is apparently a failure in art, and, as an unfinished thing, a blemish, the best thing would seem to be to courageously efface it, and then we may afford to take breath before we go to work again. When it comes to a permanent decoration, there is a kind of work yet more permanent than fresco, as well as decoratively finer, especially for such a situation,—that is, mosaic. No mosaic work, on a large scale, has yet been executed in this country, and a frieze three hundred feet long would be too grand an undertaking for a first experiment, but we may hope to see such work grow into use among us, and there is no grander opportunity for it than this, for which we can afford to wait.

It is a misfortune that things which, like matters of art, require special fitness for their decision, should be decided by Congressional committees, selected for entirely different purposes. No one imagines that when the presiding officers of Congress select the Committees on Public Buildings and Grounds, or on the Library, they investigate the artistic cultivation of the members. That an architect, a painter, or a sculptor should turn up in Congress would be an unheard-of thing. If one did, we might be sure that he did not succeed in his profession; and Congressmen are chosen for a training that is almost incompatible with serious cultivation of the decorative side of life. Congress is, indeed, a singularly unfit body to decide questions of aesthetics, and has won a pretty general recognition of its unfitness. But the means of mitigating the Congressional consciousness of universal capability is apparently yet to be discovered, and the fine arts are found to be a peculiarly apt field for the exercise of universal suffrage. Hence Congress, which calls the special knowledge of engineers and other scientific men into consultation, thinks that of artists superfluous. And hence our public questions of art are at the mercy of a body which, whatever its competence for the purposes for which it was chosen, holds in its artistic deliberations only the ideas which have percolated through the whole mass of the community, and is, in matters of art, always a generation behind the age. This means being a long way behind, for in our country art runs fast in its efforts to overtake the foreign countries which have a long way the start of us. It may fairly be said, that in matters of art the Government, instead of lending an efficient aid in the advancement of art, is always lagging in the rear. Artists feel their way forward as best they can. The public is gradually awaking to a lively interest in art, and a knowledge of the world's progress is slowly penetrating it; but the whole tendency of government patronage is retrograde among "the most enlightened and progressive nation, etc., etc., . . . the world ever saw."

It seems to us that it would be well, after trying our present system so long as we have, and with confessedly indifferent success, to try a change of method. It is a fair question, indeed, whether it were not better to give up all patronage of art by the Government unless it can be more judiciously distributed. The question of government patronage in art is always a difficult one; but nothing adds more to its difficulties than to put it into the hands of persons who are not educated to it, and whose chief interest and attention are given to other things. We may find some encouragement in the fact that foreign governments, which take the thing in a different way, succeed better. There are two ways open to a government which would employ artists without making any provision for training them. One is simply to employ men who have made their mark in their profession, and are recognized as superior among their fellows. This would save Congress a world of trouble, but it is condemned as undemocratic and un-American, and a death blow to rising genius. The other way is to put the choice into the hands of persons who are specially qualified by training to be judges, and who therefore do not need to wait for the

voice of fame. Hardly anything would seem more hopeless than to entrust it to a body of men who were selected for entirely different and even antagonistic purposes; whose whole interest and attention was taken up with other matters; who yet considered themselves beyond the instruction of a general reputation. There is, however, one worse way, and that is our alternative of allowing individual projects to be brought before Congress in the interest of their author, and then decided upon.

THERE is more difficulty in finding remedies than in discovering faults; but it is clear that the remedy in this case lies in the employment by the Government, under some form or other, of officers specially qualified for this duty. The idea which has been sometimes suggested of a Fine Arts Department in the government seems manifestly out of place, at present, at least. Perhaps the best relief would be found in the appointment of commissions, either occasional or more or less permanent. To appoint them to consider the projects of individuals would doubtless be unsatisfactory, but for particular occasions they might be appointed; or since we have commissioners of various kinds attached to the departments of the government, room might be found for a permanent Commissioner of the Fine Arts, were it not that an office of this kind would at once become the spoil of politics, and so bring us back into some of the difficulties from which we need escape. On the whole, special commissions would probably prove for the present our best resource; and we might hope that if they did not lead to the best results the need of selecting men trained for their work would come to be felt, and that if they were given proper authority we should at least be spared such helpless fumbling as we have seen over the designs for the Washington Monument and the Congressional Library; nor when men selected for such duties had to face the public and justify their selection should we be likely to see the adornment of our Capitol or of the public places of our cities given into the hands of untrained girls and men who stand at the bottom of their profession. At present it is not to the general government or to legislators that our best artists look for recognition. It is the commissioners of a State Capitol, or the building committee of a parish, that employ Mr. Hunt to paint the walls of the Assembly Chamber at Albany, or Mr. La Farge to decorate Trinity Church and St. Thomas's, while Congress votes our thousands for the experiments of Miss Vinnie Ream, or accepts the performances of Mr. Carpenter.

IN London it is not a Carpenter, or a Vinnie Ream, or a Brumidi, that has been called on to decorate the South Kensington Museum, but Sir Frederick Leighton, the President of the Royal Academy, who has just finished the great fresco in a lunette of one of the courts. The work brings naturally to mind Mr. Hunt's lunettes at Albany, the shape and size of the paintings being analogous; but the treatment is evidently in strong contrast. Mr. Hunt's designs are simple, — perhaps too simple to hold their own satisfactorily on so large fields, which they but incompletely fill, and against the extreme richness that surrounds them. They are entirely on one plane, almost devoid of background, and contain but few figures. The Kensington painting is apparently a crowded composition, on a scale to provoke comparison with Raphael's School of Athens, the figures being arranged in several planes, those in the foreground larger than life. It typifies the industrial arts applied to war, and represents an Italian armorer's yard in the fifteenth century; and is, it would seem, the most ambitious picture painted by any English artist of this generation. It is a court-yard shut in by a battlemented wall and Gothic gateway, behind which rises a background of Italian houses, tower, and dome, interspersed with cypress and orange trees. The yard is filled with customers, trying on armor or inspecting weapons, with a group of girls embroidering on one side, and smiths hammering in a workshop on the other; while men come and go on the steps leading to the gate, through which appears a knight on horseback, and groups of busy workmen or customers line the balconies and terraces of the near buildings on either hand. The painting has naturally attracted much attention, and is said to be full of variety and animation in the figures, and of splendor of color in the costumes and accessories, for which the subject certainly gives room. It is painted by a new process called spirit fresco, which, according to the *Builder*, should be done by laying the colors, mixed with a vehicle that contains oil of spike and a small amount of wax, upon a very dry and porous surface of plaster, into which the colors sink.

VISITORS to New York as well as her citizens will be glad to know that the Metropolitan Museum of Art, after the labor of many months spent in getting its collections in order, is to be opened on the first of April. A museum is a thing of slow growth: none start at once into completeness, but this already has material that deserves serious study in its pictures and ceramics, and one possession at least, the Di Cesnola collection, that foreign museums envy it. Its opening will renew the regret that the Castellani collection was allowed to go back to Europe; and in view of the opportunities that might be given to American scholars by the juxtaposition of the Cypriote and Phœnician relics with those from Central America, American scholars will the more lament that Mr. Lorillard's expedition and its prophetic spoils should go to the credit of the French Government. For the greater *éclat* of the opening a loan collection of Egyptian and other antiquities will be added to the displays of the Museum itself.

THE long-delayed Hudson River Tunnel seems at last to be making progress, the shaft in Jersey City being closed in and the work of extending the drift under the river fairly begun. The tunnel is to run from the foot of Fifteenth Street, in Jersey City, where the working shaft is now built, to the opposite foot of Leroy Street in New York, but the ends will be extended for some distance before they come to the surface at Jersey Avenue and Washington Square. The distance under the river is about three quarters of a mile, but the whole length between the termini will be two miles. The lowest point will be one hundred and two feet below the surface of the river, and only twenty beneath its bed. The channel is near the New York shore, and from it the tunnel will rise each way in a continuous grade. The brick-lined shaft, now open, is a cylinder thirty feet in diameter and sixty deep. From here it was first proposed to carry a single tunnel wide enough for a double railroad track, but the instability of the soil through which it is to be driven led to a more cautious plan, and the tunnel is to be built with a double bore, two cylinders of twenty-one feet diameter being carried side by side, and each containing one line of rails. The soil makes great care necessary in the construction, consisting as it does alternately of sand and mud, excepting for about four hundred feet, where the tunnel runs through rock.

THE softness of the earth makes it necessary to excavate under pneumatic pressure, and the bore is kept filled with compressed air, the tension of which supports the earth at the head of the tunnel. Duplicate engines force air into the tunnel, where men work night and day in three gangs, the sides of the bore, as fast as it is excavated, being plated with boiler iron, within which is built a ring of hard bricks, a yard thick, laid in cement mortar. The workmen enter and leave by an air-lock which discharges into the shaft, and the excavated earth, softened with water and brought to the mouth of the tunnel, is blown out into the shaft, through pipes, by the tension of the imprisoned air. The work is to be done by electric light. As yet only two or three hundred feet have been pierced, under a forced pressure of less than an atmosphere. The most serious difficulty will be when it comes to excavating beneath the channel, with a roof of only twenty feet of soft earth or mud, under a pressure of three atmospheres.

THE suit of Mr. E. E. Myers, architect, of Detroit, against the Indiana State-House Commissioners, claiming damages for unfair action in the competition of plans by which the architect of the building was chosen, and for mutilation of the plans of the plaintiff, has just been brought to a hearing in the U. S. Court at Indianapolis. The important part of the testimony, says a correspondent of the *Cincinnati Commercial*, is the deposition made by Mr. James K. Wilson, one of the experts employed by the commission in the competition, in obedience to the requirement of the legislature. Our readers may remember the excitement made by this competition, the ill blood that was stirred by it, and the complaints of bad dealing that were brought against the commissioners: certainly, if we may make the obvious inferences from Mr. Wilson's testimony, they showed a great determination to "fix things" their own way. The plans, says the testimony, were sifted down to five by the experts, of which Mr. Lee's was by them rated first, Mr. Myers's second, Mr. Eppinghausen's third, and Mr. May's, the selected architect's, fourth. The experts, however, decided that none of the plans was a suitable one to adopt without modification, and the

committee thereupon directed Mr. Wilson to try to perfect the five plans, beginning with that marked *Lucidus Ordo*, which was Mr. May's. But when Mr. May's was thus perfected, which was done by Mr. Wilson under protest, the commission directed him to go no farther, and the drawings of the corrected design were taken and put away with the others. Afterwards, as we know, Mr. May's design was chosen. We are not told that the commissioners knew the authorship of the designs, which were sent in under motto, but it would, perhaps, be stretching a point to believe that they did not. Nor does the testimony declare explicitly that the alterations made by Mr. Wilson were adopted into the accepted design, a thing which has been charged before.

THE POSITION OF THE FRESH-AIR INLET.¹

THE walls of our building, having been made impermeable to air, and all cracks or accidental openings having been carefully closed, our fresh-air supply may be accurately calculated and controlled, and the heating surfaces over which it is conducted may be utilized to the best advantage.

The size of our heating surface having been determined by the amount of fresh air required to be warmed, and this amount again by the maximum number of persons and gas-burners to be supplied, it only remains to fix upon the best point or points in the room for the fresh-air delivery. Here we enter a long-contested battle-field. Whatever means be employed to warm the air before its introduction, it should enter and be distributed in such a way as to serve all without inconveniencing any. As a general rule, and *always* where an open fire-place is used, the entrance should be at or near the ceiling, whatever system of heating or cooling the fresh-air supply be adopted, and whether, upon entering, it be cooler or warmer than the air already in the room. If it enter warmer, it will rise at once to the ceiling, even if it be first introduced at the floor, so that there is no advantage, in the way of heating the floor, by having the hot-air registers in or near it. This may be easily verified by burning some damp straw in the fresh-air box or flues of a furnace and observing the course taken by the warm air thus rendered visible, as it issues from a floor register. It will be found to shoot upwards in a round column to the ceiling as represented in Fig. 146, more or



Fig. 146.

less rapidly according as its temperature exceeds more or less that of the surrounding air. Outside of this column the air will be no warmer at or near the floor than if no register there existed, until the heated air at the top descends in regular strata to the bottom. In fact, one of the best places to draw off the colder and fouler air from such a room would be through an opening placed directly by the side of this hot-air supply register in the floor. If, on the contrary, the fresh air introduced be cooler than that already in the room it will, if it enter at the floor, escape at once at the fire-place opening or at any other foul-air exhaust-flue which may be placed near the floor, without rising to the level of the heads of the occupants, and be lost. But if the entering air be cooler than the air of the room it will greatly inconvenience those who may be seated near the inlets, where these inlets are at the bottom of the room, especially in large rooms, as in public halls, school-houses, and theatres; whereas, if the supply registers be at the top and exhaust registers at the bottom, no such inconvenience will be felt. No opening for extracting the products of respiration should be allowed above the level of the heads of the persons occupying the room. If this rule be ignored the fresh air will not reach the occupants, and no ventilation will be for them effected. Fig. 147 shows what would

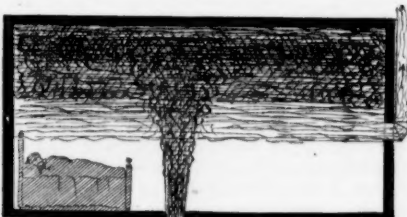


Fig. 147.

be the result in a bedroom where the exhaust register was placed

above the head of the sleeper. The warm-air supply register is here represented in the floor. If it were in the ceiling the results would be the same. The hot air first forms itself along the ceiling in an even horizontal stratum, just as oil lies on the surface of a body of a heavier fluid, such as water. As more hot air enters, the first descends and gives place to it. The lower, cooler, and heavier strata fall; they seek their own level just as would strata of light and heavy liquids. Air does not follow so docilely and obligingly the paths laid out for it by the would-be ventilators, when they explain their patent arrangements by little arrows meandering about snake-like in pursuit of a "draught," or heated exhaust flue. It does not "head" directly to the exhaust register even if the so-called "draught" in it be ever so strong. The lower strata only flow out at these exhaust openings just as the lower strata of water in a bucket would flow out of a hole bored in the side near the bottom. We must always bear in mind that it is not the lighter column of air in the chimney pulling up the heavier air in the room, but rather the heavy air in the room pushing up the lighter column in the chimney. There is no suction such as the word "draught" would imply, but a simple uplifting, by the cooler masses of air outside of the house and within the room, of the lighter strata or column in the exhaust flue. The word "draught" is a misnomer and is responsible for much of the confusion existing upon the subject. With an exhaust opening placed as shown in Fig. 147, or worse still at the ceiling, where these openings are usually put (though fortunately they are seldom operative on account of the want of motive power), the supply of fresh air might be enormous and yet the sleeper suffer from want of it.

Where a room is heated by a stove and no fresh air is introduced, this stratification of the air is broken up, as shown in Fig. 148, and the motion becomes more complicated. The currents may be illustrated by heating with electricity, or otherwise, a piece of metal at

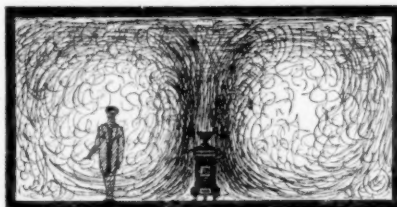


Fig. 148.

the bottom of a glass box filled with water containing some coloring matter, and throwing the reflection of the water by means of a lens and calcium-light upon a screen.

These all seem like facts simple and reasonable enough. Why then such a diversity of opinion regarding the location of ventilating openings? It is because in ordinary buildings the question of the disposal of the products of respiration is complicated with those of the gas-burners, while the two should be kept entirely distinct, and a separate and opposite system of ventilation provided for each. To carry off the products of gas combustion openings above the head are necessary. When these openings are placed in the ceiling, as is customary in this country, the upper pure and warm strata of air are impoverished by the products of gas combustion, and it is assumed that the only cure is to draw it all off as fast as it is generated. The products of respiration do not rise at once to the ceiling, as do those of illumination. The breath is directed downwards by the form of the nostrils and it becomes so quickly mixed with the surrounding air that before it has time to rise again to any considerable height it has attained the general temperature and follows the general movement of the latter, whatever that movement may be. Were the heat and impurities of gas combustion carried off at their source, and not allowed to affect the general atmosphere of the room, our problem would be at once simplified. The fresh, warm air at the top of the room would be kept pure until it descended to the level of the occupants, when it would perform its office and pass off through the exhaust registers below.

ANOTHER LAW-BOOK FOR ARCHITECTS.¹

A SERIES of papers lately published in the *Builder*, concerning decisions of courts in cases affecting buildings, forms the basis of a book whose value to the profession will be far greater than its diminutive size, the result of extreme condensation, would at first suggest. This little treatise contains, as it says, a digest of all the cases which have yet been decided in regard to the erection of buildings. Using the very judicious system common in legal text-books, principles are briefly stated, followed by references to all the cases bearing on the subject, so that the text-book is at the same time an index; the architect who reads it attentively can in an hour's time obtain a general view of all the legal reefs which beset his path, and if with his eyes thus opened he finds himself at any time drifting toward any particular one, a second reference to the book will direct him to the larger works, reports of trials, for instance, in which he will find all that there is to be known on the doubtful point.

¹ This paper by the writer of the Open Fire Place articles will be incorporated with those articles in their separate form.

² A Digest of Cases relating to the Construction of Buildings, the Liability of Architects, Surveyors, and Builders in Relation thereto, etc. London: Reeves & Turner. 1879.

For example, the important principle is stated that where there is a clause in a contract agreeing that materials shall become the property of the party of the first part as soon as delivered on the ground, this clause will prevent any creditor of the builder, even the party who furnished him the materials, or the builder's trustees in bankruptcy, from claiming materials so delivered, and four cases bearing upon the subject are cited for the instruction of those who may have occasion to look further into this interesting subject. Some of the points represented as established are important. Under the head of "Duties of Architect," we find, "Any surreptitious dealing between one principal to a contract and the agent of the other principal is a fraud on such principal cognizable by a court of equity, and entitles the first-named principal to obtain full redress for such fraud, or to have the contract rescinded, and to refuse to proceed with it in any shape."

It was proposed not long ago to make by Act of Parliament such "surreptitious dealings" a misdemeanor, to be punished in a criminal action, but this seems not yet to be the law. However, the remedy in equity for such petty breaches of trust would probably be quick and sure, and all good architects would rejoice to see it extensively applied.

Another rule, which will be new to many, is that when work has been inefficiently done, or not executed according to the terms of the contract, the house owner may, when the time for final payment arrives, make a suitable deduction from the payment, and if the building should be so badly done as to be unfit for its purpose, the contractor is not entitled to any remuneration whatever. It would be an interesting question how much a contractor should receive who laid a house-drain, for instance, of broken pipes, without cement in the joints, and then put a wooden floor over it, and completed the house.

Some precedents of pleading for such cases, forms of building leases and other agreements, the schedule of charges of the R. I. B. A., and two good forms of contract make a useful appendix to a useful little work, whose only fault is its brevity. To our mind, its scope might be very much enlarged with advantage. In Messrs. Jenkins and Raymond's excellent little work on building contracts nearly twice as many cases are cited as in the book before us, although the former treats only of a portion of the subject. As these gentlemen well say, in the numerous and complicated relations of architects with persons and corporate bodies, of all kinds, cases arise almost daily where an authority to which they may immediately refer for information as to the proper mode of completing an agreement or meeting some emergency is of great value. It is not that architects are in danger of ever trying to be their own lawyers; on the contrary, as they themselves find their best and most considerate clients to be those who know something of their own profession, so they will be more disposed to defer to competent advice in the important interests which often devolve upon them, and will be able to present their case more intelligently and fully for knowing something of the way in which courts have treated others in similar situations.

PROPORTION AND ORNAMENTATION IN ARCHITECTURE.¹

BEFORE we pass altogether away from the consideration of the technical rules of architecture, it may be desirable to pause for a short time in order to examine one other point affecting our art, namely, Proportion, — a matter obviously of great importance, and which is not included in any of the principles to which I called attention in my previous lectures.

Now proportion in an abstract sense is one of those things upon which every one feels competent to pronounce an opinion. We know how readily we declare our judgment that anything, from a great building to a teacup, is well proportioned or the reverse. We have, in fact, certain canons of taste acquired intuitively and stored up in our minds which we apply (not always rightly, of course) to this question of proportion. It is not that any particular form is good and another bad in itself, for, under different circumstances, the same form may be both one and the other, but that we have, from associations, brought ourselves to an unexpressed conviction on the subject of proportion which we, or some of us at any rate, are slow to express on any other subjects which we have not specially studied.

The reason of this confidence may, perhaps, be found in the reflection that our ideas of proportion are based on our acquaintance with the human figure. Nature, in that case, teaches us the science of proportion, and we apply her lessons to the artificial productions of art. It is in this way that we find ourselves attributing to the Doric order the masculine attributes of sturdy strength and vigor, while the Corinthian indicates feminine grace and appropriate decoration. In architecture, when proportion is mentioned, it may be considered under two heads: first, as it appears to the instructed, and, secondly, as it appears to the uninstructed, observer. To the first, proportion will mean much more than to the last. It is not sufficient for him that a building should please as a whole. He knows what should be the relative size of every detail, — what ratio the base should bear to the shaft, the shaft to the capital, and so forth. Any departure from recognized rules is to him a solecism and an offence; it is like a false quantity to a scholar, a *lapsus lingue* to

an educated man. The ordinary and not specially instructed observer sees none of these things. It is nothing to him whether a Grecian Doric column be used with a base, or a Corinthian column without one. The relative proportions of mouldings to each other have no significance for him, nor does he appreciate the differences of style which strike at once the more educated critic. Nevertheless, he will tell you whether a building is, in his opinion, well or ill proportioned, and on such a question the popular judgment is seldom wrong. We may conclude, therefore, that there is a science of proportion, and that some perception of this important element of success in architecture is innate in the human mind, just as a sense of harmony may exist without any technical knowledge of music. Proportion thus assumes a position of great importance in architecture, and deserves attentive consideration at our hands.

Many rules have been propounded for determining what is and what is not good proportion; thus it is suggested by Mr. Fergusson that the height of a room should be equal to half its width, plus the square root of its length. And, again, that the best Gothic architects based their proportions on the equilateral triangle. I must confess, however, that these and other similar *dicta* have not carried conviction to my mind, though some merely conventional rules may be found in practice to secure agreeable results. A satisfactory proportion of a room may, for example, be obtained by first deciding the width, then drawing a line from one of the corners, so as to form a triangle, and making the length of the room equal to the line so drawn, being the hypotenuse of such triangle. I do not, however, propose now to discuss the difficult question of proportion, as applied by arbitrary rules to plans of buildings. I rather wish only to point out here, first, that good proportion is a recognized necessity in architecture, and, secondly, that it rests upon certain principles which cannot be departed from with impunity. The eye soon learns to accept such principles, and, as a general rule, any unusual proportion, whether of length, width, or height, is found objectionable. It is impossible, however, for an architect always to proportion his designs according to rule, nor would it be at all desirable that he should do so. Great effects are often produced by genius, notwithstanding the disregard of rules; and in spite of rules which serve to guide ordinary cases, the limits are wide within which freedom of action may be practised. During and after the days of Palladio and Vignola, the proportion of every moulding to be used with the five orders was discussed and settled as if it were a matter of exact science, and as if nothing should be left to the skill and discretion of the architect in individual cases.

In mediæval days proportion was not subjected to such definite rules, or at least no record of them can be discovered, but it seems clear, from the remarkable similarity of principle which is found in the works of the time, that a science of proportion was recognized and carried out with more or less precision. Thus we find the width of our cathedrals almost always divided into three parts, with a central nave and two aisles, and the walls of the central division composed again of three distinct features, namely, the nave arch, triforium, and the clerestory. Various proportions were given to these parts of the design, but from a comparison of the best specimens, something like the following rule of composition may be deduced: The height of the aisle arch is half the total height of the nave, while the triforium and clerestory occupy the upper division. The latter may then be divided into three parts, one of which is given to the triforium, and two to the clerestory. Not only does this arrangement of parts appear reasonable and pleasing, but it establishes a system of proportion based on the numbers 1, 2, 3; and it has often been observed that a proportion which can be traced to a definite system, so that each part may be a multiple of each other part, is more satisfactory than one which admits of no such simple illustration. In a like manner, observation may show that uneven numbers will please in architecture more than even numbers. Other things being equal, a composition with three or five windows, grouped together, will produce a better effect than one with two or four. A flight of three steps is better than four, and one of five than six. A room will be more cheerful if it have a central window, than if there is a pier with the same amount of open space arranged in two windows, one on each side of it. In a panel of tracery, or a balustrade, an uneven number of divisions is to be preferred, which will allow the central space of such panel or balustrade to be occupied by a void rather than a solid. It would not be difficult to multiply examples of this class of architectural science which come under the general description of proportion. Experience and habits of close observation, fostered by the practice of taking careful measurements of existing buildings of high merit, will enable the architectural student to analyze this difficult science, and so prepare him to avail himself in his own designs of the experience of others. He may be sure of this, that unless a building be well proportioned, it will fail to please, whatever may be the merits of the detail of its parts. He cannot regulate the actual size of his work, as this must depend on site, cost, and other circumstances beyond his control, but he has the responsibility of so proportioning the parts of his design that difficulties may be conquered and deficiencies supplied. If he be fortunate enough to obtain the element of size by being entrusted with a large building, he must not throw away so great an advantage as has been done at St. Peter's. If, in the contrary case, he has to deal with small dimensions, he must make the most of them by even a more careful application of the science of proportion.

¹ A portion of the fourth and undelivered Royal Academy lecture, prepared by the late Professor Barry.

We may now proceed to take into consideration the subject of architectural ornament, and, to do so the better, will divide it into two heads, — constructive and decorative, — dealing first with the constructional part of the subject. Architecture as a fine art is essentially a decorative art, for she has to ornament the bare construction of works carried out for utility alone. A builder may erect a house square and comfortable, but it is not a work of architecture. It may be sensible in arrangement, warm, and weather-proof, but it has no beauty, and displays no art. The latter is shown in the application of ornament. Not, be it observed, in the mere addition of carving, color, or whatever may be thought to be ornament, but by giving dignity and beauty to the forms of construction, and by subordinating construction to artistic feeling.

It is important to bear in mind this distinction. Many excellent persons seem to consider that any structure may be made ornamental by plastering it with so-called ornaments, as we cover a Twelfth-cake with sweetmeats. If a railway bridge be pronounced hideous, we are told that it is easy to make it slightly by spending money on bosses, panels, and cast decoration, and sticking all this on the bald nakedness of the original design. No mistake can be greater than this. In architecture, we cannot separate the useful from the beautiful in this manner. In making his design, the architect must ever bear in mind how it is to be carried out, and in arranging his construction, he must remember from the first that it must please the eye as well as satisfy the conditions of stability. If the bridge be ill-proportioned or badly placed, no amount of applied decoration will redeem it from ugliness, or entitle it to be called a work of architectural art. If such a square builder's box as I have just mentioned is to be brought within such a definition by ornament, the ornament must be reasonable, and such as arises naturally from the circumstances of the case. A porch would thus be an ornament in this sense, or a projecting window. Chimneys may be broken into masses of agreeable aspect, or moulded into beautiful forms. The walls may be crowned with cornices, and the lines of floors marked with string-courses, or gables and dormer windows may break a too great plainness of roof. All these things are ornaments if rightly applied, and as such are among the legitimate resources of architecture. In private buildings, any added features, such as porches or bay-windows, will owe their origin to their obvious utility; and if they are not reasonable, they will not be considered ornamental. For public edifices, dignity and impressiveness are also required, and so may justify the addition of ornamental features, for which usefulness cannot give a complete reason. Porticos, turrets, and spires may come under this definition, and we cannot afford to surrender such important elements of architectural design.

Decoration of necessary construction may also be seen in the contrivances of design which enable the architect to group together in a pleasing form necessary details, such as windows. The mediæval architects were masters in so doing, as we see by tracing their system of fenestration from Norman days to the latest Tudor. The simple lancet thus gave rise to the graceful triplet, and to the famous group of beautiful windows known as the Five Sisters at York. The elaborate tracery windows which were afterwards used were only a development of the system of grouping exemplified by these earlier specimens. We see also in the Italian Gothic palaces of Venice, as the Ca d'Oro, how much effect can be obtained by the simple expedient of grouping the windows together instead of dotting them all over the front with equal intervals between them. Nor were the best Renaissance architects backward in recognizing the merits of this treatment. At the Farnese Palace at Rome the central loggie, though open to grave objections of detail, redeem the façade from monotony; and at the Vendramini and Camerlinghi Palaces at Venice the windows are so grouped as to be very pleasing. In modern architecture we have an instance at our doors of the satisfactory result of window grouping in the Travellers' Club-House in Pall Mall. In this example the contrast may be clearly seen of the two systems of uniform regularity and of partial grouping by comparing the elevation towards Pall Mall and that which faces the gardens at the back of the club-house. The former, while well proportioned and correct, has never roused enthusiasm, while the latter has ever been regarded with pleasure, and referred to as a success. Of the five windows of which the dimensions of the front allowed, three are gathered together so as to form a central group, while the other two windows are treated singly and placed about half-way between the centre triplet and the angles of the building. The centre assumes thereby an air of dignity combined with elegance, and gives a concentration of constructional decoration on which the eye rests with all the more pleasure from the circumstance that by grouping together three out of the five windows a greater plain surface of wall is obtained on each side of the central composition, the effect of which is consequently materially enhanced by contrast. Further examples of results equally satisfactory may be quoted from Transitional or Elizabethan buildings, such as Longleat House, in Wiltshire, where, in spite of great regularity of plan, advantage is taken of the internal distribution of the rooms to obtain variety by duplicating windows, and gathering them into bays. Enough, however, has probably been said on this illustration of the nature of architectural ornament constructively used. The use of columns instead of plain piers is another instance of decorated construction, the round or moulded form being more graceful than a simple rectangle, while being at the same time quite as useful. A column, indeed, is even more truly constructional in

supporting a superincumbent weight than a pier of square section or plan; for in case of any partial strain or settlement, the angles of the pier are the first parts to show signs of weakness and to disintegrate. The column, properly used, is, therefore, in such cases, an object of perfect utility as well as of beauty. How great that beauty may be made by the use of beautiful materials, delicate decoration, moulding, and carving, we all know from many a noble example. The column being constructional, its parts are so likewise. The moulded and projecting bases carry down the pressure to the ground, and cover an extended bearing surface, while above, the capital, either moulded or carved, spreads out to receive the lintel or the arch which requires support. Brackets are, again, constructional as well as decorative, serving, as they frequently do, as springers for vaults or supports for roof-beams or principals. An extended use of such features has become common in much of our modern revived architecture, and as there may be some temptation to exaggerate its use from the convenience it affords, it may be as well to suggest a word of caution on the subject. A corbel which is placed high up and near the roof, and over the centre of an arch, to carry the springing of a vault, has an obvious fitness, for no other detail would serve the required purpose as well. It is different, however, when we find a chancel-archway made of the greatest possible width at the floor level, while above, heavy groups of mouldings form a ponderous arch, resting at the springing on corbels of great projection, while, below them, we have, possibly, diminutive shafts, resting in their turn on smaller corbels. In such a case the corbel has not the obvious justification which applies to the other position just described, as it appears in the place of mouldings or columns which would discharge the duty allotted to it in a manner more truly constructional and satisfactory. The mediæval architects made their corbels, as indeed they did all their construction, beautiful, as we may see, for instance, at Ely; but, to be beautiful, architecturally, there must be a good reason for their use. They will often be admissible when so placed that they cannot easily be seen in profile when they will appear to less advantage if brought into great prominence, as in the position I have mentioned. They serve, in any case, to further illustrate the constructive element of architectural ornament.

THE ILLUSTRATIONS.

NEW COLLEGE BUILDING AT GEORGETOWN, D. C. MESSRS. SMITH-MEYER & PELZ, ARCHITECTS.

GEORGETOWN College, founded in 1788, is located west of the city, on a hill 150 feet above the Potomac River. Formerly the college consisted of a dozen buildings, built irregularly, at different times, without general plan. The hill-top was occupied by four larger buildings, — three on the south side, and one, about 156 feet off, on the north side, leaving an open court east and westward. It fell to the architects to build on the east side a connection between the north and south buildings, which should become the principal building of the college.

The walls are built solidly of a blue gneiss rock from the upper Potomac, with bluish gray Ohio freestone and North-river blue stone for the cut-work. The court-front is of front-brick (not pressed), to correspond with the adjoining old buildings, with freestone sills, mullions, weatherings, etc. The ceilings in the principal rooms and halls will be finished in wood. The walls of the corridors adjacent to the class-rooms and those of the staircases will be left in brick, which are laid with struck joints. All corbels, columns, and a great part of the sills of the interior are of freestone, built in place. All the constructive wood-work in the interior is of Southern pine and oak, planed, chamfered, and carved, and built in place. All cast and wrought iron work exposed to the weather is galvanized. The metal work of the roofs and towers is made of tinned copper, the gutters and conductors of plain copper, and the ridges are covered with lead.

The extreme length of the building is 312 feet. The central tower is 200 feet high, and will be used as a ventilator and will be provided with a clock. The vacuum system will be used. The heating will be done by warm water in coils which are placed in the window recesses, where they draw the fresh air from the outside through the hollow iron sills of the window-frames. The finished floors will be laid on sleepers which are placed upon the rough floors, and bedded in deafening mortar.

DESIGN FOR A CATHEDRAL AT DEMERARA, BRITISH GUIANA, SOUTH AMERICA. MR. BRUCE PRICE, ARCHITECT, NEW YORK, N. Y.

BUNGALOW AT MONUMENT BEACH, MASS. MR. W. G. PRESTON, ARCHITECT, BOSTON.

OLD TILES.

In the old colonial towns of New England the eager searchers after antique furniture and china have met with good returns, and many an old mahogany chair and claw-foot table, well-turned brass andirons, and equally handsome fenders, have been brought from garrets, where they had led a useless life for generations. But the demand has increased so rapidly, and the search has been so persistent, that now it is difficult to find a house of the last century that has not been ransacked from garret to cellar. Every village and hamlet has been explored, and even the isolated farm-houses on

Block Island have been subjected to the scrutiny of the bric-à-brac collector; till now, if anything really worth having is found, it is hardly possible to get it at a reasonable price. To-day one must pay far more for a cracked dish than it was worth when new a hundred years ago.

Curious and beautiful are the interiors of many of these old houses, and it is not surprising that the cultivated taste of to-day takes delight in copying many of their details — in reproducing old colonial mantel-pieces, corner cupboards, spiral balusters, and the free use of tiles.

It was a very common thing, a century or more ago, to introduce tiles everywhere in the better class of dwellings, particularly around the fireplaces, and in the skirting of halls and living-rooms. In Newport there were many such examples. The Redwood house was ornamented in this way, and to a greater extent than in many other instances. The tiles, either pink or blue on a white ground, were carried around nearly all the rooms, in place of a base or mop-board. Many of these tiles have been carried away, others have been destroyed in the attempt to get them out, and not a few have had nails driven through them. In the old house that was General Prescott's headquarters, on the corner of Spring and Pelham Streets, and in the old Seixas house, on Washington Square, once the residence of the Jewish banker of that name, and after that the property of Commodore O. H. Perry, there are tiles about the fireplaces that were painted over long ago by some vandal, who would have whitewashed a fresco by a Guido or a Raphael.

In many instances these old tiles have been preserved as heirlooms. Your correspondent has a set that has been handed down through four generations — tiles that are vastly superior to the old Dutch tiles; for they were among the first that were imported after the discovery of a process by which designs could be transferred from copper-plate to an unglazed surface. Two of these tiles are caricatures of cooks — one French and the other English: John Bull, with his sirloin, fat capon, and tun of beer; and his *vis-à-vis* engaged in skinning a cat, with a bunch of frogs, a string of onions, and a pump for the details of the picture.

Collectors of old tiles have endeavored to preserve the history of those in their possession. Mr. Robert S. Barker has specimens from the two Wanton houses, and from the Redwood house. The latter are of the variety known as "basket tiles," which are now rarely seen. They take their name from a basket of flowers, in colors, in the centre of each tile. Those from the Governor Wanton house are blue and white. They are above an average of the best make of their kind, and come under the head of bat printing.

Tiles are distinguished as "press printing" and "bat printing," the former being much the oldest. In press printing the design was put directly upon the bisque, which accounts for the crude manner in which they are drawn; but in 1767 Sadler, a potter, discovered that designs printed from copper plate could be transferred to the face of a tile, which was then glazed in the usual way. This process is known as "bat printing," and it at once did away with the old method of decorating. To one skilled in this matter it is easy to distinguish between the two by passing the hand over a tile; but it is not necessary to resort to this, for a very slight examination brings to light the superior finish of a Sadler.

There are tiles in two or more colors besides the basket tiles. The designs are transfers, but they are not as good as Sadler's, though in his manner. Over the transfer, colors have been washed with about as much skill as a boy displays who has just come into the possession of a color-box and brushes. But they are interesting, in that they form a class by themselves.

The best tiles, as a general thing, are of one color — black, blue, or pencil, on a white ground. Press tiles usually give us scenes from the Scriptures, or Æsop's Fables, and curious is the treatment of these subjects. The execution is feeble, even rude; but the manner in which the story is told arrests attention. In one, a group of men and angels are mixed up with locusts and scorpions, of an extraordinary size and in the most extravagant positions; but for a text in one corner the design, the opening of the bottomless pit, would be unintelligible. In the Temptation on the Mount, Satan resembles an ape, and in the Betrayal the artist has been minute to a degree that leaves nothing wanting. Judas is in the act of kissing the Saviour, and a soldier, with out-stretched arms, is pressing forward; while Peter has Malchus down, and is cutting off his ear with a sabre. Malchus, judging from his costume, must have been the high priest's jester. In the Ascent of Elijah, the prophet seems to have had as much trouble as did Phaeton in the management of his steeds. The parable of the mote and the beam was a favorite subject with the designers. Curious, indeed, is the minuteness with which the mote is given, while the beam, a huge bit of timber, tells its own story. But the crowning effort of the artist is seen in "Lot's wife turned into a pillar of salt" — a half-nude figure, on a pedestal in an open plain, having for a background Sodom and Gomorrah, sending up great volumes of smoke that remind one of Manchester and Pittsburgh, which cities, I hope, will take no offence at any allusion to them in this connection.

On tiles of a later date than those made by Sadler one may often meet with designs as good as anything found on old Liverpool ware. In a majority of cases they were made at some factory in England, but the earlier varieties were brought from Holland. Large quantities were shipped to this country, and from the sea-port towns of

New England they were not only sent inland, but also to the West Indies, where it is still a common thing to see them. There was a large trade between Amsterdam and Newport, on the one hand, and Newport and the West Indies on the other: and rarely did a vessel clear for the latter ports without taking out an invoice of Dutch goods, which had been received in exchange for American products.

The early importation of glazed ware was not confined to tiles, but it embraced all the varieties of delft, and here and there one comes upon a specimen in regard to the origin of which there can be no question. Some of the most interesting are in the form of gally-pots, used by druggists. In Taylor's store, on Thames Street, there are a number of such pots, known to have belonged to Dr. William Hunter, who came to America in 1752 and settled in Newport.

CHAMPLIN.

CORRESPONDENCE.

BRICK BUILDINGS.

PARIS.

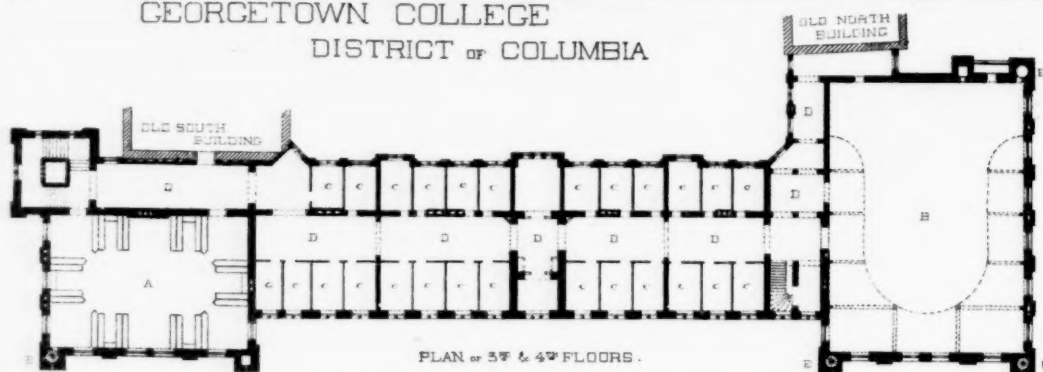
NAPOLEON was wont to boast that he had found Paris of brick and would leave it of marble. He did not say whether brick stood for republican ideas, and marble for the Empire; but certainly since the war, and especially during the past few years, Paris architects have begun to show a liking for brick buildings, and for private dwellings brick with stone finish and a liberal sprinkling of bright-colored tiles seems to be quite the fashion. This is true in the quarters where English and American residents abound. The French affect to quietly snub their neighbors across the Channel in art matters, yet they do not object to receiving an idea from them occasionally.

The Place Malesherbes is formed by the junction of the Boulevard of the same name with the Avenue de Villiers. In this vicinity are several examples of brick construction which are well worth study. The large Ecole Monge is one of these. Stone is used for the springing-blocks of arches and window-sills only. The vertical divisions and window arches are of brick of a reddish brown color, giving a dark chocolate effect at a distance. Between the windows are panels of a very rough brown stucco, with borders of the same material, but smooth and white. The flush bands and string-courses are of brown brick, set on edge or slightly corbelled out. Over each window is a diamond-shaped plaque of terra-cotta, with figures in two shades of light brown. The cornice is formed by ordinary yellow brick, with deep red and a few black brick forming geometrical patterns. The roof is of ordinary red tile, projecting very boldly over the wall, with no fascia mouldings, after the manner of the Florentine villas. The colors of the different materials harmonize very nicely, and quite redeem the building from being plain or commonplace, though there is not a particle of carved work about it.

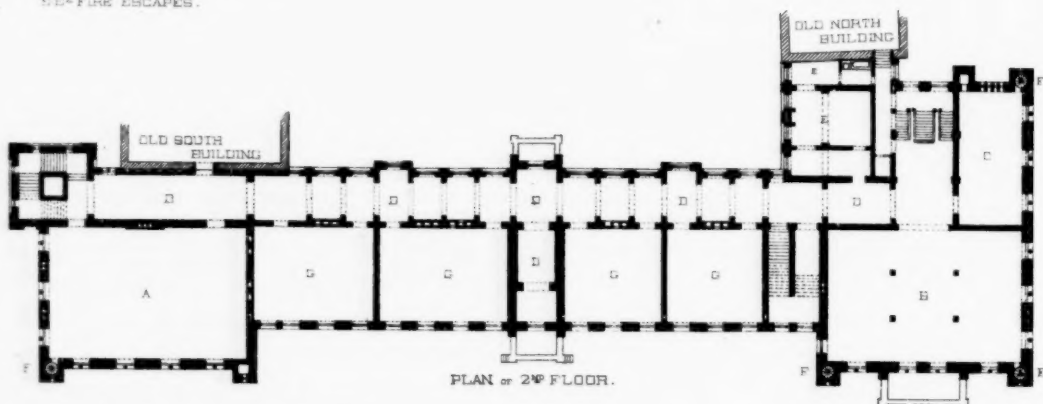
Diagonally opposite this building are several artists' studios, one of which is quite neatly designed. It has but two stories. The *rez-de-chaussée* is of stone, heavily rusticated, with a narrow door in the centre. The large studio window occupies nearly the whole width of the floor above, the walls being of red brick with stone finish very boldly used. An adaptation of a Roman Doric entablature serves as a cornice, above which shows the red tile roof. The details are simple, but carefully chosen, and the effect is quite elegant.

No. 2, Place Malesherbes, is a house in which stone is used only for basement course and sills, but the brick is used in such a quiet, sensible manner, that the result is very attractive. Ordinary dull red brick is used for wall surfaces, while the corner pilasters, belt-courses, and ornamental parts are of very light gray. The cornice is slightly corbelled out and a rather plain roof and belvedere appear above. Instead of the ordinary wooden rolling shutters, the windows are provided with blinds of straw matting, striped vertically with deep red and yellow, which roll up into a hood over the door and look much better than the ugly *jalousies* which so often disfigure Paris buildings. On the adjoining Rue Legendre is one of the best examples of colored brick and stone work that the writer has found in Paris. Judging by the array of drawing boards that can be seen through one of the basement windows, it is the residence of an architect. The house, be it remarked, is quite American in general appearance. There is a basement story of light bluish-gray stone, the joints strongly marked. The main floor is of light yellow sandstone in courses about five inches high. The entrance is in the centre of the façade, and is reached by a flight of eight steps. One window is on either side, filled with small panes of glass. The same arrangement is used in the second story, but the central window over the doorway is in three compartments and filled with stained glass. The wood-work about windows and door is painted a dark, rich brown, contrasting finely with the deep red curtains which show from within. Over the door-way is an ordinary classic hood supported by consoles. A wide flush band runs from the plain window caps to the top of the door-way, carved with a graceful Greek fret pattern. There is no other decoration about the lower story, except that above each window is carved a single lily in bold relief on the wall. The second story is of stone with intermediate courses of light yellow brick and stone caps and flush bands as below, but plainer. Above this is a high band of light yellow brick, with diagonal patterns of deep red, while over each window is set a medallion head, painted on terra-cotta upon a strong cadmium ground. The attic story is quite low, the wall being of courses of stone alternating with narrow lines of yellow brick. The cornice is of plain stone, with brackets close together

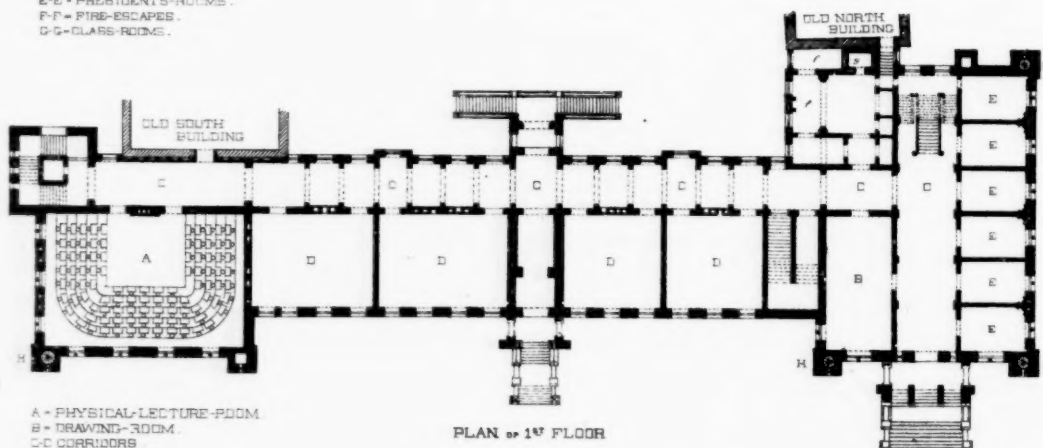
GEORGETOWN COLLEGE
DISTRICT OF COLUMBIA



A = LIBRARY
B = AULA-MAXIMA 52 feet HIGH
C = STUDENTS-ROOMS.
D = CORRIDORS.
E = FIRE ESCAPES.

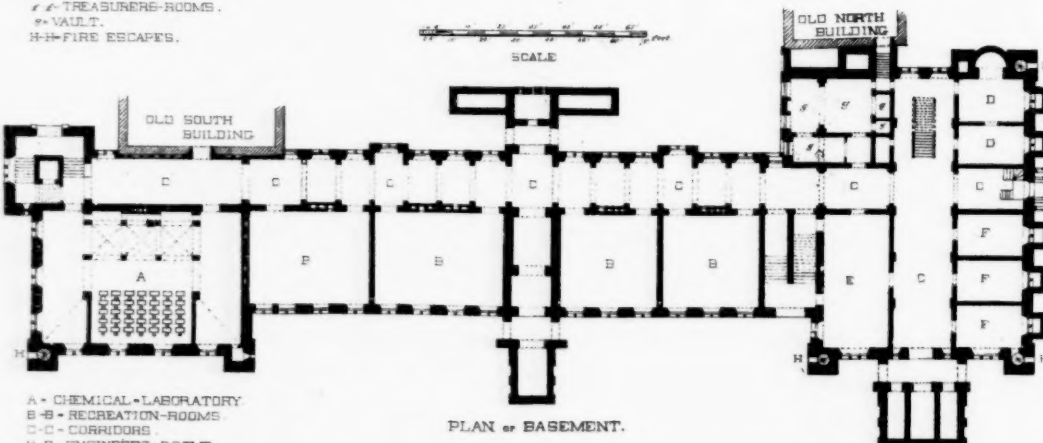


A = UPPER PART OF PHYSICAL-LECTURE-ROOM.
B = MUSEUM.
C = DEBATING-ROOM.
D = CORRIDORS.
E = PRESIDENTS-ROOMS.
F = FIRE-ESCAPES.
G = CLASS-ROOMS.



A = PHYSICAL-LECTURE-ROOM.
B = DRAWING-ROOM.
C = CORRIDORS.
D = CLASS-ROOMS.
E = PARLORS.
F = TREASURERS-ROOMS.
G = VAULT.
H = FIRE ESCAPES.

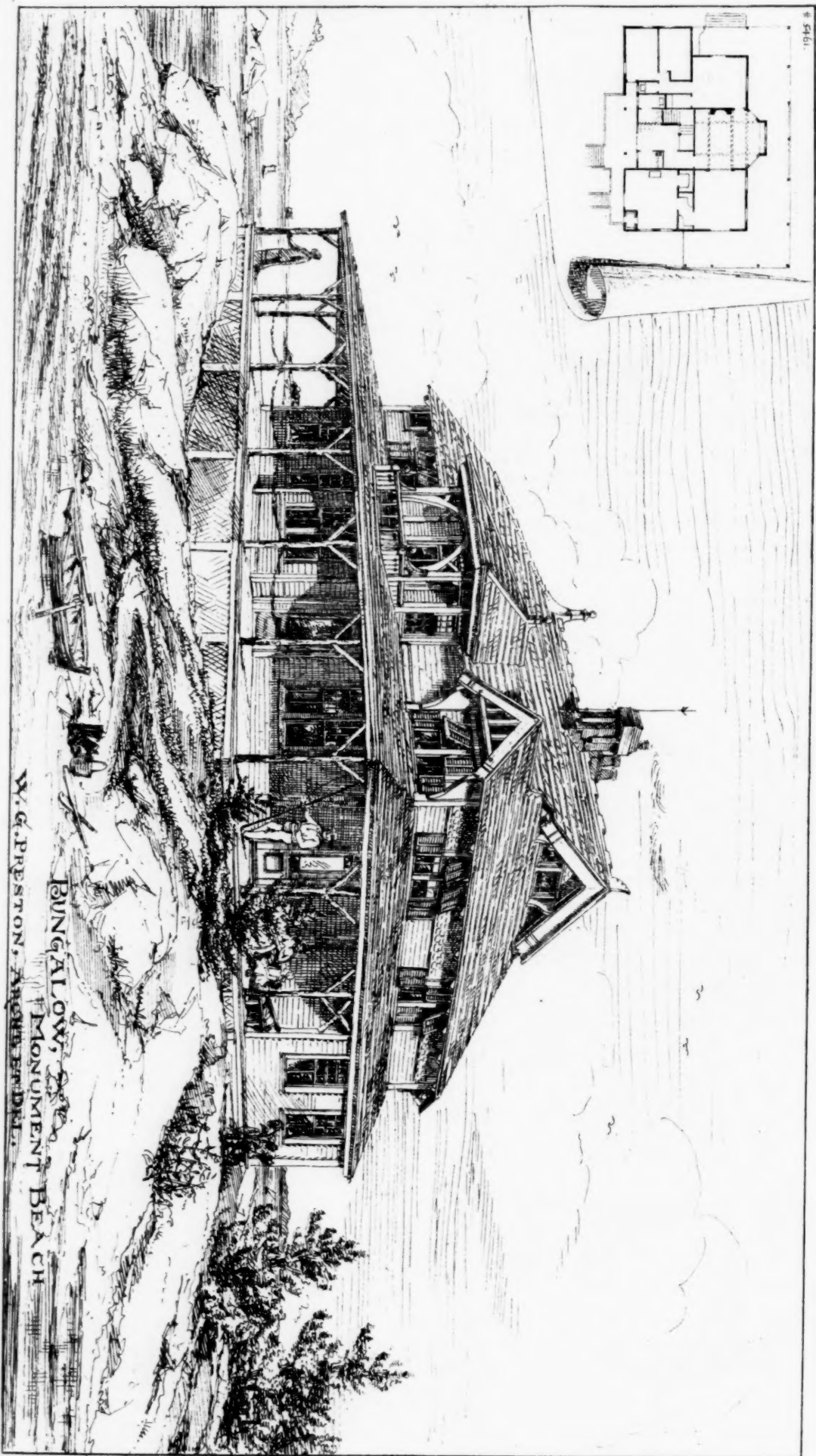
SCALE
1" = 20' Feet

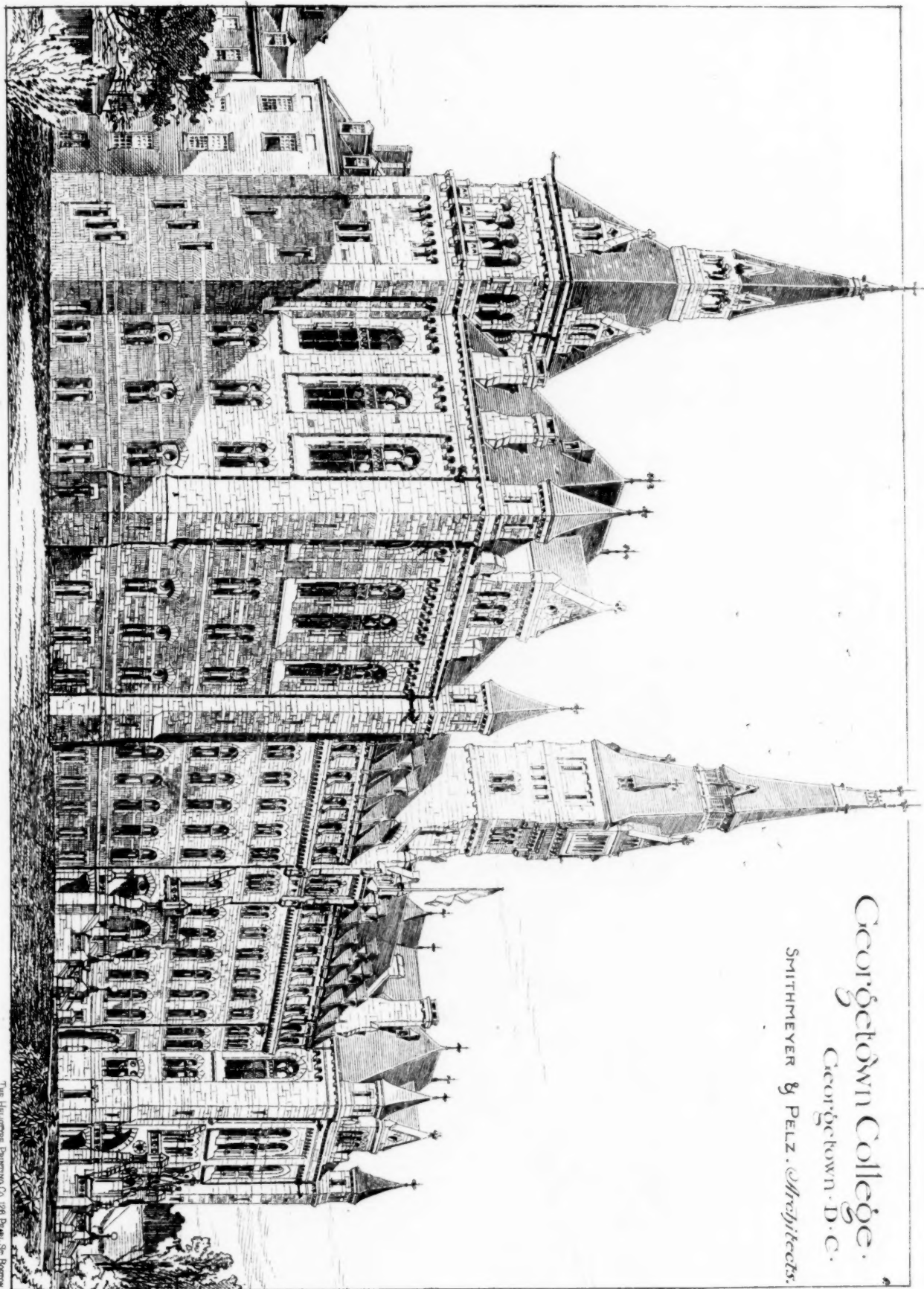


A = CHEMICAL-LABORATORY.
B = RECREATION-ROOMS.
C = CORRIDORS.
D = ENGINEERS-ROOMS.
E = EXPRESS-ROOM.
F = STORE-ROOMS.
G = LINEN-ROOMS.
H = FIRE-ESCAPES.

SMITHMEYER & PELZ
ARCHITECTS
WASHINGTON D.C.







Georgetown College.

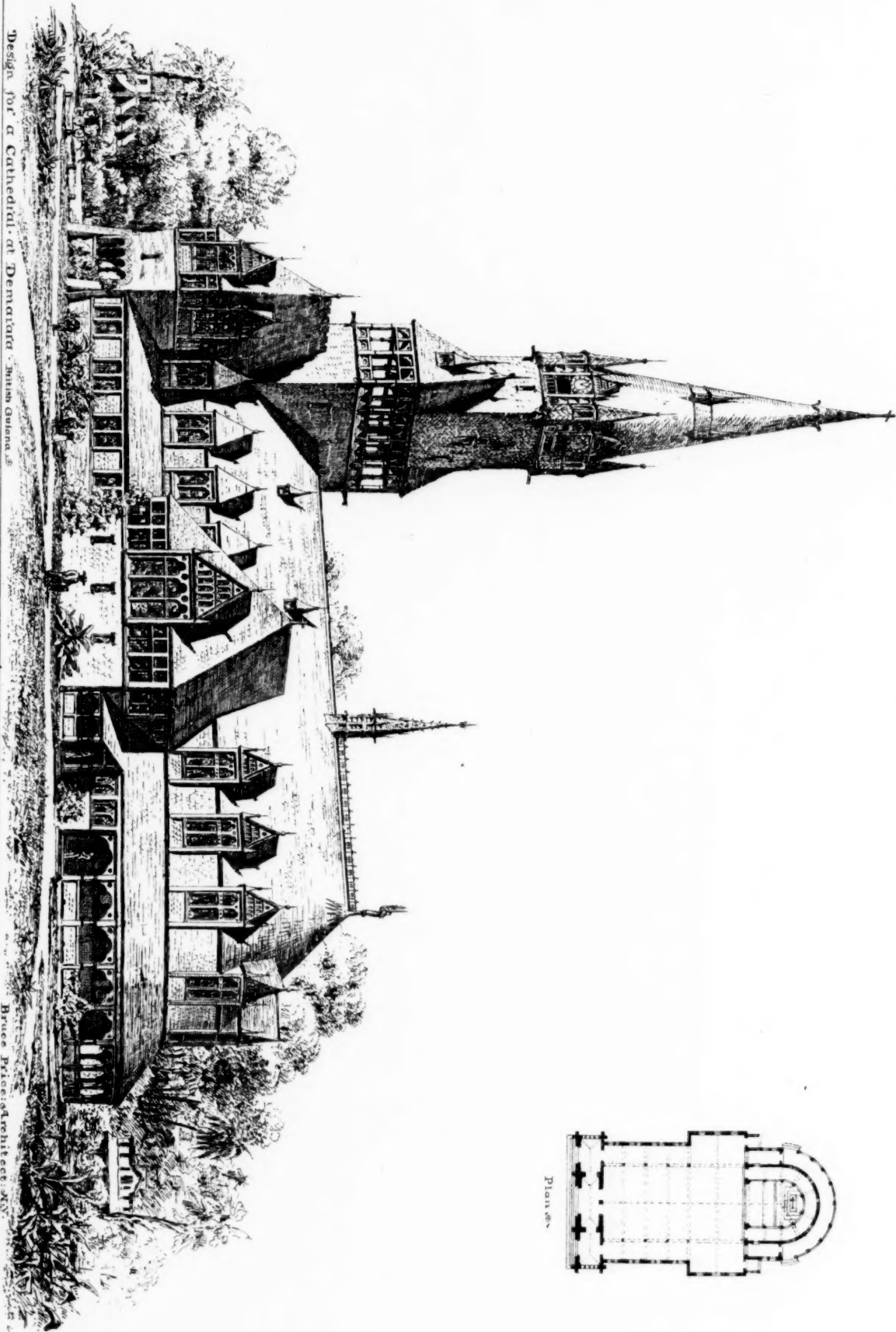
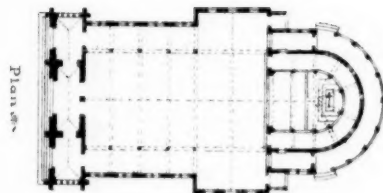
Georgetown, D. C.

SMITHMEYER & PELZ, Architects.

Design for a Cathedral at Demerara, British Guiana.

Bruce Price: Architect.

The Highlands Printing Co. 128 Pearl St. Boston.



adorned with small plaques of bright yellow, marked with deep purple figures. A red terra-cotta *château* of very neat design forms a broken sky-line. The whole appearance of the building is very good, and quite artistic, the colors giving a very soft, harmonious general effect, and the few carved ornaments being well chosen, while the patches of bright color given by the terra-cotta plaques add quite a sparkle to the design.

The vicinity of the Place de Bitché, south of the Arc de Triomphe, is another locality which seems to be favorable to the growth of brick structures, one street being lined with them on both sides for quite a distance. This would be natural enough in England or America; but in Paris, where the best of building stone is so abundant and cheap, it indicates something else than mere necessity in the choice of materials. At the corner of the Place and the Rue de Galilée, is a bold attempt at using red brick and stone, only in part successful, the harmony between the masses being poorly established, though the general effect from a distance is not bad. One noticeable feature is that all the windows are filled with glass of a very decided green tinge. In striking contrast is a house on an adjoining street, strongly Gothic in feeling, showing a high roof with tall stone dormers and a bold gable on the right filled with oaken open-timbered work, presenting quite a good effect. The windows are double, square headed, with heavy transom bars, and the mouldings at the sides are carried up above to form a pointed arch. They are filled with small rectangular lights of green, white, and clear glass set in leads. The wall-space between the windows is covered with rough brown stucco, contrasting well with the smooth yellow stone. This is really the rear of the house, the entrance being on another street; but it is much more interesting from this side. It lies back a little from the street and has a cozy, home-like look about it that finds a soft spot in the heart of an Anglo-Saxon. Modern French architecture will not always satisfy, and it does one good to come upon a bit of individuality like this.

Individuality abounds in this street. The appearance of the adjoining house is heightened wonderfully by the use of a little color. It is an ordinary three-story French *hôtel*, with no *rez-de-chaussée*. The lower stories are entirely of stone, with marked horizontal joints. Over the heads of the upper windows are set some pieces of bright faience, in green, cadmium, and brown, — the green predominating, — which harmonize fairly. The walls of the attic story are of deep courses of strong yellow brick, alternating with narrow courses of strong red. A capping course between the windows is formed by broad bands of stone in which are set tiles in the same colors used below, but with brown predominating. The *château* is of red terra-cotta of simple design. The effect of the colors is quite pleasing and harmonious.

Farther down the same street is a private residence quite happily designed in Gothic; not such Gothic, however, as some French architects misuse, nor such severely correct work as the feeble imitators of Viollet-le-Duc try to produce, but a free and very reasonable adaptation of Gothic ideas to the wants of a modern habitation, bringing in the effect of color united to carefully studied details and good workmanship. Most of the wall-surface is of stone, but a line of color is introduced under the lower string-course by using red and yellow brick set on end upon a course of dark chocolate-colored bricks. The arch of the low entrance door-way is of deep red brick, with stone key-stone and skew-backs. Between the windows of the upper stories, the walls show yellow and pale red brick. Above the lower windows is a band of strongly colored tiles in yellow, brown, white, and Antwerp blue, blue predominating. Under the cornice is another line of color, — red, yellow, and black brickwork. On the right, the façade shoots up above the cornice into a high gable with heavy coping stones, the tympanum being filled with yellow brick and single plaques of pale blue terra-cotta set into the stone under the apex and at the springings of the gable. The general design is a very satisfactory one and shows much thought.

On a street running parallel to the last is another building worthy of attention. The basement is of regular blocks of yellow, spongy-looking stone, with white joints. On the right is a rectangular red brick tower with corbelled stone cornice, capped by a pyramidal roof and neatly designed finial. Small windows filled with diamond-shaped panes and a little stained glass follow the line of the stairs, while the rest of the front is taken up by a large studio window, the walls being of yellow brick. Over each window is set a frieze band of faience with arabesques in shades of brown and white on an intense ultramarine ground. These set off the building very well, and give it quite an individual character.

With one or two exceptions, all of these buildings have been built within the past few years, and the best are but just completed. They show a move in the right direction and are full of ideas for those interested in color decoration as used externally upon edifices.

C. H. B.

PUBLIC MONUMENTS IN ITALY AND THE UNITED STATES.

It is instructive to put in contrast the different ways of erecting national monuments as practised in Italy and America, with especial reference to those now begun or proposed to the great founders of the national unity of each country — Washington and Victor Em-

manuel. The feeling and intention which give rise to each are identical, but the modes of executing vary as widely as the distance between the art-experience of the one land and the inexperience of the other. We seize the idea enthusiastically, make it popular by means of the press, obtain a crude, hastily-conceived design from some incompetent source, praise it in the papers, and call on the public, not to criticize, but to subscribe for it, and the Government to adopt it — the whole inception and execution being the immature fruit of a few minds well-intentioned but uncultured in this particular direction, although, perhaps, wise in every other. The beginning and preparation of so important an enterprise being thus inadequate to its end and purpose, it is not surprising that after its first impulsive start, the monument lags in construction, dissatisfaction is aroused with its design, and lastly begins the criticism which should have been sounded to its utmost depths before a single dollar had been expended or a stone laid. Thus has it happened with our great national monument, begun chiefly on the idea of raising the highest shaft in the world to our greatest citizen, as indicative of his moral and civil height above all other men in our own eyes. The result has been so towering a blunder as to both design and execution that the country is greatly exercised as to what to do with it, whether to pull it down, disguise it under some other construction, or let it go up as begun, shortened somewhat of its height as first contemplated. We have got a big, disagreeable blunder on our hands, instead of the noblest monument of the world, as was desired, simply because we did not look before we leaped, to use the common expression.

Now there comes forward a host of architectural projects and prescriptions to mend matters and cure our monumental invalid — in fine, to put him fairly on his legs for a fresh start. But the people at large are weary both of looking at the ungainly mass of stone that thus far represents the primitive idea and of hearing about it at all; for it is a confessed mortification and failure. So far from glorifying Washington, it has rather the contrary effect. The virgin bloom of the genuinely spontaneous idea born in the heart of the nation has passed away, at least for this generation. If completed at all, the monument has to depend on a sense of patriotic duty and the pride of not abandoning a nation's project. It has become a question of the will instead of the affections. And this results from beginning at the wrong end. Those who are conscious of this unwelcome fact are now striving to remedy it, as far as can be done artistically, by bringing forward a variety of designs for its completion, to be sanctioned by the opinion of experts and the good sense of the people. In the main they are very crude and hastily considered, some being borrowed from ill-selected and put together Old World forms, while others are the offspring of an ardent struggle for fresh creations born of New World ambitions, frequently quaint and inevitably semi-barbarous, but more or less original, *i. e.*, without precedent in architecture. These attempts show a healthy current of invention setting in the right direction, and augur well for future deliberation and sagacious decision before beginning any new enterprise of a similar character. Indeed, this costly mistake has been a useful lesson. In our coming adventures of this sort we shall probably follow the example of Italy, and look before we leap.

Let us see what Italy does on similar occasions. She is now about erecting a monument to Victor Emmanuel at Rome, to cost 9,000,000 francs. First, and very properly, she raises the money by subscription, the Government guaranteeing to make up this sum if the gifts of the people should fall short. Secondly, she invites all the world to compete for the designs, without any limitations as to character and invention and form, provided it expresses the nation's feelings toward its patriotic, gallant, and honest King, and does not exceed in estimates the sum allotted, which is quite sufficient to erect a monument worthy even of the city of the Caesars, and the time of Augustus. Thirdly, there are to be three munificent premiums of 50,000, 30,000, and 20,000 francs awarded to the authors of the best three designs. This is tempting enough, I should think, to excite the ambition of some of our American artists to bear away at least one of these prizes in honor of the New World genius. Fourthly, and most wisely, the jury that decides is to be composed of delegates of the Government, representatives of the art institutions of Europe (not Italy alone), and of the competing artists themselves, who will thus have a voice in the decision. No better plan for obtaining impartial authoritative decisions in so complicated and important a matter could be devised. Ignorance, jobbery, and self-conceit are eliminated as far as can be, and the money provided in the outset, so that if a monument creditable to Italy is not the result, it must be due to the inadequacy of the whole world's talent in this line at this time, not Italy's only. — *James Jackson Forces in the New York Times.*

LUMINOUS PAINT.

ATTENTION has been recently attracted to the luminous paint which was patented in 1877 by the late Mr. W. H. Balmain, and which has been lately employed for rendering clock-dials self-luminous in the darkness. The present invention is the outcome of the life-study of Mr. Balmain, who, unfortunately, has not lived to see his discovery brought into general use. Possessed of ample means, it appears that he was in no hurry to make his process known, and as a matter of fact, after he had brought it to such perfection as justified him in patenting it, little if any effort was made to introduce

the paint. Although the invention is a patent, the actual process by which the paint is prepared remains a secret, though other inventors have introduced a compound by which the clock-dials are painted, and for the license to use which they pay a royalty to the representatives of Mr. Balmain. The luminous paint is to a certain extent based on what is known as Canton's phosphorus, a sulphide of calcium, which has the property of phosphorescing in the dark; but the modern compound is made principally from that cheap substance chalk, and, if we may judge from the specimens we have seen, is a long way in advance of any of the phosphorescing powders known in the laboratory of the chemist. Messrs. Ihlee & Horne, of 31 Aldermanbury, E. C., are the agents of the late Mr. Balmain, and have devoted considerable time to devising methods of practically utilizing the paint, although until a syndicate is formed (in consequence of the death of the inventor) the paint will not, we presume, be brought into the open market. That, however, will shortly be done, and meantime the paint is being experimented with in various ways. It is in use on more than one man-of-war for lighting up magazines and dark passages, and one of the London Dock Companies is about to introduce it into its spirit and wine vaults. The compound is made into a paint by the addition of a varnish such as copal, and is then ready for coating the surface it is desired to render luminous, or the powder may be dusted upon a previously-varnished surface. The powder may be also mixed with substances employed in forming solid objects, such as cellulose, papier-maché, artificial ivory, and other similarly-manufactured materials, which are capable of being worked into designs suitable for various purposes of decoration and ornamentation; and they can also be mixed with ether and collodion, and rolled into sheets for cutting up. Mixed with stearine, paraffin, glue, or the water-glasses, the phosphorescent powders may be used for many purposes, and can be combined with glass itself, and worked up into the various forms which that substance is capable of taking.

Painted on cardboard about 18 in. by 10 in., and framed, it forms the Aladdin's lamp, supplied to H. M. S. Northampton, by Messrs. Ihlee & Horne. Painted on glass through stencil-plates, it is used for illuminated numbers to house-doors, for notices of apartments to let, and it can of course be employed for the name-plates of streets, for use in coal-mines, and for warning-boards in all dark passages where it is not desirable to introduce a gas-jet. Match-boxes are coated with it, and their position rendered visible in the darkest room; while photographs can be supplied with a luminous background. For railway-carriages which, having to pass through a tunnel or two, are necessarily furnished with lamps during the whole journey, the luminous paint will yield all the light that is needed. Experiments are being made to ascertain the effects produced by different grounds and vehicles upon the powder, and these necessarily occupy considerable time; but sufficient has already been done to disclose the fact that the luminous paint has a wide field of usefulness open to it. Sheets of cardboard placed in a window and exposed to the daylight will absorb sufficient to give a pleasantly luminous effect for five or six or more hours, while half a minute's exposure to such a light as that of burning magnesium will charge them to saturation. When produced on a manufacturing scale the paint will be comparatively cheap, and will no doubt have an extensive sale, for, although many uses have been already found for it, they are only a percentage of the possible number. — *The Building News*.

BREATHING HOLE CAVE.

A PARTY of coal miners have recently been examining a cave in Venango County, Pa., which has long been known to exist, and was called the "breathing hole," from a warm air being constantly emitted from the opening in the ground. After descending an incline for about two hundred feet their way was blocked by an accumulation of boulders thrown down from above. On removing these the passage was continued, but raised abruptly about fourteen feet, opening into a long irregular room fifty feet wide and more than one hundred and fifty feet long. Countless stalagmitic formations of every imaginable shape and size were scattered about the floor of the cavern, the roof and sides being limestone. The most wonderful thing was the finding of bituminous coal on one side of the cavern, which had been brought there from another section of the cave. Coal ashes, or burnt clay, were also found. Another passage was found in which there was an abrupt descent of about a dozen feet. Passing down, they found themselves in another immense room, where more coal was found. Another split in the rock, and a passage led to a room about forty yards long, and the explorers found themselves on the edge of a precipice. Descending, they entered a long narrow tunnel, apparently without end either way. The bottom was covered with a soft sticky mud, but coal cropped out along the sides of this tunnel; and it became evident that this was an actual coal mine that had been worked, and the perpendicular sides, which were gray with age, left standing. The vein was eight feet three inches in thickness, and as the prospectors deemed it valuable, they secured a lease of three hundred acres, and commenced operations; but it was soon discovered that the whole side of the mountain at some remote period, owing to a convulsion of nature, had apparently slipped off and sunk downward, and thus had sealed up and concealed the seam of coal. Subsequent explorers

found, upon removing the mud and loose stones near where the explorers first entered, a flight of stone steps connecting with the passage above. The steps are worn in the centre to a depth of nearly three inches, indicating long use. On either side of the stairway are two columns of stone neatly dressed, placed there to support the roof. In no place were there any timber supports in the passages that radiate in all directions for two thousand feet into the mountain. The only tools or implements of any kind found are a number of curiously shaped wedges, made of a metal of which, if it is not, closely resembles copper and is very hard. They are eighteen inches in length and two and one half inches in diameter, and rounded at the head, flattened toward the centre to nearly four inches in width, and tapering to a wedge about one and a half inches broad at the small end. Four of these wedges have been found in all — one in the débris at the foot of the stairway and three at the fall of the coal at the extremity of one of the chambers, driven half their length into the coal near the top of the vein. Two of these have been picked out by the miners, and the other still remains where the mysterious hands that drove it left off their labors. No other tools of any description have so far been discovered, but further investigation may bring more curiosities to light. Everything visible goes to show the great antiquity of the place. As to who the miners were or the lapse of time since this work was done it is simply conjecture. The surface of the mountain and the country on that side of Big Sandy for several miles would indicate to the most casual observer that it had never been occupied since the country has been known to Europeans, the surface being rough and rocky. What is now supposed to be the same coal vein, about six miles west of here, has been worked for several years. — *Baltimore American*.

SOME INSTANCES OF WIND-PRESSURE.

ATLANTA, March 12, 1880.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, — Reading some of the late articles on the Tay Bridge disaster I am reminded of some instances of extraordinary action of the wind that have come under my own notice. In 1858 I travelled in the backwoods of Canada after a severe storm (near the Georgian Bay). The country was nearly all primeval forest, and looked as if gusts of wind had come along and, wherever they struck, thrown down every big tree in their way. Nothing stood up except young saplings which would bend and spring up again. The edges of the windfalls were sharp and made the country look like scattered clearings in the forest. In London, Ohio, I saw, in 1867, a monument in a cemetery, consisting of the ordinary die and spire. The spire-top was eight inches square; a small piece was put on with plaster at the top to form the plinth for an urn. The urn was round, and about the form and dimensions shown¹ (simply turned in the round), a dowell-pin in the bottom projecting four inches. The urn had been lifted off the monument and laid on the ground about four feet from the monument. The dowell-pin was not bent, and the little piece cemented on was not moved or scratched. There had been a wind-force capable of lifting a round marble urn over four inches directly upwards (to clear the dowell-pin)! If I had not seen it I should at once rank it with Munchausen and his horse tied to the church steeple, but this was evidently a square lift!

J. M.

AMERICAN BUILDING MATERIALS.

STEATITE OR SOAPSTONE.

STEATITE or soapstone abounds in some places in the central parts of Arkansas. This State has three thousand miles of water navigation, and the Arkansas River, flowing through the whole width of the State, from west to east, affords at all times good boatable water for the floating of barges and flat-boats, that could carry to markets in the Southern and Eastern States large quantities of rocks and other building materials, which, of admirable kinds and in great variety, Arkansas can supply. The Arkansas soapstone or steatite can be quarried with great ease, works well under tools, and can be sawn with a common saw into flags, blocks, and slabs of any desired size and shape. For linings of furnaces, cook ranges, foundry cupolas, chimney backs, and stoves, there is nothing superior. The chips, débris, and dust of steatite quarries are materials that come into play in many ways. Steatite dust makes the best machinery lubricant now known. Excellent steatite beds, in vast size, also exist in Northern Georgia and in Central Texas. The steatite quarries of Vermont, New York, Pennsylvania, Maryland, and Virginia have long been known and used.

ALABASTER.

Some very beautiful varieties of alabaster are abundant in the central parts of Missouri. Slabs and blocks have been quarried out and dressed, which take a fine polish and have a good effect. The stone is so soft and smooth-grained as to admit of being cut with a penknife, or shaved with a chisel or plane. Mantels, table-tops, window-casings, balustrades, ewers, urns, and all kinds of large or small ornamental objects can be made of these alabasters. The alabaster beds occur in immense thicknesses, frequently twenty to sixty

¹ We omit our correspondent's sketch. It shows the urn to have been about two feet high.

feet in depth. They occur as cave formations, of which the caves are sometimes a mile or two in length. The alabasters are of different colors, which vary in the different kinds from clear amber to dark coffee or dark wine color. The beauty of alabaster marble lies in its peculiar translucency and semi-transparency. Very little or no practical attention has yet been given to the alabaster marbles of Missouri. Similar formations are known to exist in Arkansas, where the quantities are apparently inexhaustible, and they range through several counties. Southern California contains vast quantities of beautiful kinds of alabaster. Colorado, particularly the southern half, has likewise some very fine varieties. Heretofore the finest alabasters were procured from Italy and Spain. Some purple and delicately veined qualities are obtained from other parts of the north-shore countries of the Mediterranean Sea.

HYDRAULIC CEMENT ROCKS.

This class of materials in the United States is found in several different geological systems. The chief sources of supply are from the lower, middle, and upper silurian systems and the carboniferous system, or the stratifications of the coal fields. In New York, Pennsylvania, Maryland, Virginia, and Tennessee, the hydraulic cement mills get their rock from the limestones which belong both to the Trenton Group, the base of the entire silurian system, and the Onondaga Salt Group and the Clinton Group, which belong to the middle of that large system. In the valley of Virginia, running from the Potomac to the mountains of Tennessee, various limestone strata in the silurian and carboniferous systems contain excellent hydraulic bands. This is likewise the case in Western Maryland and West Virginia. In Ohio, Indiana, and Kentucky, and in Illinois, Missouri, Arkansas, and Kansas, admirable hydraulic limestones abound in both the silurian and the carboniferous systems. Immense beds are often seen cropping out along the borders of the coal fields in the West. This also occurs at the East in the great Appalachian coal field. Of late years, explorations in Texas have shown the existence of vast repositories of such useful rocks there also. Particular mention may be made of those stratifications which occur in the Gulf front of Texas, and are also abundant in the interior, in what may be called the midland tier of counties, running from the Red River southwestward to the Rio Grande. As the coal fields of the trans-Mississippi belt of States run actually for nearly one thousand seven hundred miles, — or from Wisconsin to Mexico, and across the Rio Grande into that republic, — so, likewise, these valuable rock masses, the hydraulic limes, prevail in numberless localities all along the same great belt. These resources are of considerable value in the present and future works of engineering and architecture in America. As yet they have made no figure in the books of scientists; but as public works progress, they cannot remain long neglected.

THE AGALMATOLITE OR "INDIAN IMAGE STONE."

This peculiar material is found quite abundantly in South Carolina and in some parts also of North Carolina. It has handsome light colors, and lies disposed in great, thick beds which are easily approachable, and the material works well, so as to lift out of the quarries and ledges in sizable masses. It is soft, smooth, and extremely fine-grained, and is in many ways adapted for modelling carving, sculpture work, and statuary, in the almost countless places where inside architecture requires delicate capitals, brackets, and other enrichments. It is supposed that its name, "Indian image stone," arises from the fact that the aborigines were in the habit of using it for some of their vessels, their pipes, and occasionally their images. The agalmatolite is a member of the great metamorphic system which is so widely spread throughout the Southern States. This system of rocks begins in New England, and then sweeps southwest-by-south, through some fifteen States, for over 1,200 miles. Along its course are numerous exposures of the serpentine rocks of which this appears to be a variety.

THE "COTTON STONE" OF MISSOURI.

This is a beautiful rock of great softness, whiteness, and fineness of grain. It is a member of the great silurian system, which constitutes so large a part of the States of Missouri, Arkansas, and Kansas. It is a beautiful magnesian limestone, and occurs usually in flat or broadly undulating beds, extending for miles in various directions. It occasionally crops out of the sides of the hills and the ridge-spurs of the Ozark Mountains. The beds of the "cotton stone" are one foot or more in thickness. It is common near some of the lead and zinc mines in the central belts of the State of Missouri, and the miners, in exploring the level of mines, or the metal formations, are very apt to strike with their tools this particular rock, which lies both above and below the level of the metallic deposits. It has been thought that the origin of the name cotton stone, which seems to be traceable to the miners, was determined by the extreme whiteness of the rock, and by its toughness, tenacity, and peculiar character on being struck by a pick, since it yields very slightly, and somewhat as would be the case if a dense mass of raw cotton tightly compressed were similarly struck. This interesting rock is favorably exposed in numberless places in more than thirty counties in Missouri, which are traversed by main lines of railways. Its extreme whiteness, its prevailing color, is one of its especial values and advantages. The qualities of the cotton stone

and the way it works under edged tools indicate that it can be utilized in various branches of architectural work and ornamental art. The structure of the material is quite uniform, and it can be cut and carved in one direction as well as in another, and it may be, perhaps, claiming not too much for it, to assert that it is eminently suited to some kinds of sculptured work, and especially for statuary. The cotton stone is naturally outcropping in the lead and zinc regions of Central and Southeast Missouri.

THE "YELLOW SLATE CLAY" OF NORTHWEST GEORGIA.

This material is unlike any other yet seen or known in any part of the United States. The Slate Hills are conspicuous in a series of counties running across the northern half of Georgia. The slates are geologically of the same paleozoic age that distinguishes the slates of Eastern Pennsylvania, Eastern New York, and Vermont. They all belong to the metamorphic system, — that is, occurring intermediate, in a local as well as paleozoic sense, between the granitic or azoic system to the east, and the formations of the secondary system and tertiary or carboniferous system to the west. The Slate Hills of Northern and Northwestern Georgia rise to the altitude of 300 to 400 feet above the plain of the country around, and this plain is about 1,300 to 1,600 feet above the level of the ocean. The slate is of several good colors, bluish-black, red, brown, and purplish, and also a handsome green. It is uniform in stratification, and all these several colors alternate with each other in the different parts of the hills, so that quarries opened in any one place will usually yield advantageously all the various colors and shades. The inclinations of the strata are generally at such angles as are favorable for quarrying, the dip being from 35° to 60°. The faces of many of the hills are continuous, broad, steep, and smooth planes, consisting of slate in immense tables, and from the fact that the quarries can be worked entirely above water level, and so as to be in every way accessible, it is obvious that the labor and cost of excavating and removing the slates are matters of very little moment. A considerable industry has sprung up here, beginning soon after the close of the late war, and in Polk County quite a thrifty village, Rock Mart, derives its prosperity from its population being employed in the quarries. At various places among the Slate Hills, the colors of the slates have undergone changes which occasionally effect also the composition of the material. This is frequently seen to be a modification of the slate strata into a very peculiar substance that may be best named and described as a "yellow slate clay." It occurs in thick strata, disposed in layers, thick and thin alternately, and all of the strata possess a homogeneity of structure. The prevailing color of the "yellow slate clay" is a handsome shade between that of yellow ochre and orange mineral. The material can be dug out in very large flakes of almost any thickness or thinness. It can be dug and lifted out with common tools, and never requires any blasting, and as it has a very peculiar and uniform dampness throughout, it lifts easily from its beds, and holds together quite well while the workman splits it into thinner flakes and plates, and then cuts them into smaller squares.

This cutting can be done by ordinary saws and chisels, or even by a common hatchet. If cut out in the sizes of ordinary building brick, and set aside to dry, they rapidly harden, and then bear a very close resemblance in form and color to the "Milwaukee brick" of Wisconsin. The yellow slate clays also take a fine polish, even by dry-rubbing only, and when polished they show a very delicate series of layers, so alternating in hues and shades as to be somewhat ribbon-like. These layers, all of them yellowish, are very thin, — say from one thirtieth to one fourth of an inch thick. Blocks of brick size have been cut from these broad flakes, which maintain their shape and color, and show no sign of tendency to disintegration or exfoliation.

W. G. ATKINSON.

THE DENVER COURT-HOUSE COMPETITION.

DENVER, COL., March 16, 1880.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, — Your Denver correspondent, in the issue of February 28, says that all the architects in Denver are at work on the competitive plans for the court-house. This is a mistake, and a slur upon the profession in Denver which they do not deserve. The architects who have built up Denver have too much pride in their profession to slaughter it by such ignoble treatment as the County Commissioners demanded, and they have let the court-house competition alone.

A.

NOTES AND CLIPPINGS.

AMERICAN ART FIFTY YEARS AGO. — The following letter, written to Joseph Hopkinson, president of the Philadelphia Academy of Fine Arts, will explain itself: —

WASHINGTON, 22d December, 1834.

MY DEAR SIR, — The discovery of the unrivalled superiority of the North American school of painting of the present age was not less surprising nor less delightful to me than to yourself. When I heard myself sharply reproved for intimating a doubt whether it would be expedient peremptorily to prescribe that four American artists should be engaged to paint four very large historical pictures of American history to animate the four empty frames of the Rotunda, I was myself prepared to give the whole job to Allston, if he could be scoured into a performance of the contract

of undertaking it. I had seen several fine portraits by Inman, and tolerable likenesses by others, but of the abominable historical paintings by the artists, whose names you have seen enumerated in the *Intelligencer*, I had no knowledge until I heard the proclamation in the course of the debate in the House. I had almost concluded my best escape from the unlucky exposure of my ignorance would be to withdraw my proposed amendments and apologize to the Raphaels and Michael Angelos and Rubenses and Murillos of our own country now living for the sin, pardonable if it could be, of never having seen or even heard of their Transfigurations, or Descents from the Cross, or other master-pieces crowned with the admiration of the present age, or reserved for the enchantment of centuries to come. But I was a little ashamed even to sound my own retreat, and on allowing the vote to be taken, found to my utter astonishment that a large majority of the House voted for my amendment.

I made no reply to the champions of our native artists. It would have been a very ungracious office for me to decry them, and one which I think nothing could tempt me to assume. I would cherish like the apple of my eye every particle of national fame that we have a right to demand, believing that as regards the fine arts we have none to spare, and for one I have no disposition to claim more than is honestly our own. The majority of the House appear to be sober enough in their opinions on this subject, but the resolution has not yet passed. There may be some doubt whether it will be adopted at all. There are diversities of opinion with regard to the selection of subjects as well as of painters, and party feeling has already mingled in the debate. I shall regret the loss of the resolution, for its passage might operate both as encouragement to the arts and as a reward of merit. But in this as in all such cases that I have ever witnessed, you start with public spirit and you land in a job. You wish to reward transcendent merit, and you have a swarm of bees alighting upon you equally ready to favor you with their load of honey from the thighs or a thrust of the sting from the tail. As for transcendent merit, "Each mother asks it for her booby son." If instead of our pictures for the Rotunda we wanted 400 chefs-d'œuvre, I have no doubt we should have a resolution imperatively requiring that one painter should be selected from each congressional district, and that three fourths of the whole number would be found sons or brothers or cousins to the members from the district, all of course from that richest mine in the world, since the death of the old masters.

Yours very faithfully,

JOHN QUINCY ADAMS.

A COLORADO GLACIER.—A gentleman who has during the last two years traversed the mountains around Leadville, and penetrated almost every one of their secret recesses, informs a *Herald* reporter that there is within twenty-five miles of this city one of the most interesting curiosities of nature, a veritable glacier, presenting all the characteristics of the glaciers of Switzerland, in both magnitude and motion, its progress being gradually down the gulch. The scene of this curiosity is located in the Mosquito range, about fifteen miles north of the pass. Our informant says that he first discovered it about three years ago, while out on a prospecting tour. It was then about a mile in length, and at the bottom of the gulch presented a sheer precipice of ice not less than one hundred and fifty feet in height. Later in the season the place was visited again, and it was found that the great mass of ice had melted until at its face it was not more than one hundred feet high, the loss from the surface reducing its length to about half a mile. Again, early the following year, the place was visited, and the glacier was found to have regained its bulk, showing that the accumulation of ice and snow during the winter was about one third its gross bulk. The rocks on the side of this immense mass of ice show the marks of attrition, proving beyond all controversy that the glacier is in motion. Indeed, the earth at the foot of the glacier heaved up in great masses shows that it is gradually moving down into the valley. During the summer a large stream of water flows from the face of the icy cliff. Our informant is of the opinion that the glacier, as it progresses out of the deep gorge in which it was formed, will slowly melt away, and that it will not last many years. It is out of the way of ordinary travel, and the route to the scene is exceedingly difficult, so that it is not likely to be visited except by prospectors and hunters. — *Leadville (Col.) Herald*.

WELLS IN THE AMERICAN DESERT.—It has lately been proposed to sink experimental artesian wells upon the now arid public lands for purposes of irrigation. There are 900,000,000 acres in the arid region, which includes Arizona, Dakota, Idaho, Montana, New Mexico, Utah, Wyoming, Colorado and Nevada, and portions of California, Kansas, Nebraska, Oregon, Washington, Texas, and the Indian Territory. Not one per cent of this land has yet been sold by the United States, and it must remain unsold for years to come unless some means is found to supply it with water. Government surveys show that 200,000,000 acres of this tract are mountainous, where even with an abundance of water agriculture would be impossible. An equal amount consists of lava beds—"bad lands" without soil or vegetation and desert plains of drifting sand. This leaves an area of 500,000,000 acres of plain and valley land, susceptible of high cultivation and wanting only water. Under the most favorable condition probably not more than three per cent of this land can be reclaimed by the utilization of rivers and small streams now available. The remainder, to some extent, is utilized for pasturage, but the growth of grass is so scanty that it requires from fifteen to twenty-five acres for the support of each head of cattle, and for this reason the land of course could not profitably be sold. In Colorado alone are 40,000,000 acres of this land, capable of producing from twenty-five to thirty bushels of wheat per acre if irrigated. The people of the West desire Congress to appropriate \$50,000 for boring artesian wells, the land being the property of the Government. Private enterprise will not undertake the experiment, but let the practicability of irrigation by artesian wells once be established, and private purchasers will be found who will carry on the work of boring at their own expense. Some of the ablest geologists in the country have expressed the opinion that flowing wells can be obtained in many localities on the plains east and west of the Rocky Mountains, and the Commissioner of Agriculture, under whose auspices special attention has been given to the subject, has recommended that artesian wells be sunk. — *New York Tribune*.

FORGED ANTIQUITIES.—Over fifty forged Babylonian terra-cotta inscribed tablets made at Bagdad, bearing dates from Nebuchadnezzar to Darius, have been thrown on the London antiquarian market.

NORWEGIAN AND SWEDISH FORESTS.—A rough estimate of the value of the Norwegian forests has put them down at about 550,000,000 of francs, or £22,000,000; and according to the last census, 13,638 persons were occupied in the wood-cutting and the rafting, the greater part of the men being unmarried and between 20 and 30 years of age. A curious calculation was made in 1870, as to the distribution of the forests in regard to consumption, when it appeared that out of 446 communes or parishes, 102 had a good deal more building timber than was sufficient for their own wants; 129 had as much as they wanted and no more; while 215 had not sufficient, and were compelled to buy. In the matter of firewood, 139 parishes were more than amply provided for; 173 had just enough; and the remaining 134 had to buy. The exportation of timber from Norway has doubled during the last quarter of a century, the principal ports for the timber trade being those on the Skagerak, to the east of Cape Lindesnaes; while the ports on the west and north of it scarcely send away more than four per cent of the whole. By far the largest quantity (about 78 per cent of the whole) is sent away from the ports between Skien and the Swedish frontier. The following are the proportions of the different timbers exported in 1870 and 1875:—

	1870. Per cent.	1875. Per cent.
Rough or squared timber.....	30.6	38.7
Sawn timber.....	48.6	37.9
Planed timber.....	10.9	14.5
Small, for fire or pit wood.....	7.7	5.7
Small, cut for staves, etc.....	2.2	3.2

The latter item consists principally of birch wood, and is insignificant, by far the largest portion of the exportation being composed of fir and pine. The following table shows the average rate of timber exportation between 1870-74, in stères (1 stère equals 1½ cubic yards):—

	1870-74, in stères (1 stère equals 1½ cubic yards):—	Per cent.
Great Britain.....	1,308,400	55.3
France.....	321,600	13.6
Holland.....	267,900	11.3
Germany.....	190,000	8.1
Denmark.....	134,100	5.7
Belgium.....	90,500	3.8
Other countries.....	35,000	2.2
Total.....	2,347,500	100.0

The average value of timber exported between 1871-75 was 61,000,000 francs per annum, at the average price of 20s. 9d. per stère. There are also exported about 250,000 kilogrammes (1 kilogramme equals 2½ pounds) of oak bark every year, together with an average of 4,500,000 kilogrammes of wood pulp for paper-making. This branch of trade, however, is increasing, and in 1878 it amounted to more than 19,000 tons,—a very large amount, seeing how recent is the commencement of the trade of making wood *pâte*, few of the factories dating further back than 1870. Like the Norwegian forests, those of Sweden are composed principally of different species of fir and pine, birch, alder, and aspen trees, with the oak in the provinces south of the Dalelf, and the beech in the still more southern districts. In addition to the true forest, almost all the large properties, whether state or private, possess immense pasturages, more or less wooded with the trees above mentioned, as well as with ash, elm, maple, lime, etc., while some localities in Middle and Southern Sweden possess large plantations of mulberry trees. It is somewhat difficult to give an exact computation of the Swedish forests, as Lapland, which contains large woods, partly the property of the state and partly that of private individuals, has not been yet surveyed. Swedish territory, deducting the rivers and fiords, occupies 40,672,000 hectares (1 hectare equals 2½ acres), from which should be subtracted 4,693 hectares for fields and cultivated land, leaving 35,979,000 which may be classed under forest land. But a great proportion of this is rough and desolate moorland, strewn with great rocks and intersected by bogs and marshes, so that we cannot place the true forests at more than 16,443,000 hectares, or about 40 per cent of the whole country; and at least two thirds of this are situated to the north of the Dalelf, the southern provinces being comparatively sparsely wooded. Of all the rough and forest land, 5,221,500 hectares belong to the state (about 15 per cent), and the remainder of 30,757,500 to private owners. — *Journal of the Society of Arts*.

FEBRUARY'S FIRES IN CHICAGO.—The following is the report of fires for the month of February, 1880, as furnished by the Fire Insurance Patrol reporter: Total number of alarms, 52; second alarms, 3; second and third combined, 1; stills, 44. The causes reported are as follows: False, 17; chimney fires, 12; spontaneous combustion, 6; communicated, 5; children with matches, 3; supposed incendiarism, 3; tramps, 3; defective chimney, 3; sparks from chimney, 2; ignition of clothing from stove, 2; explosion of kerosene lamp, 2; overheated kiln, 2; and 1 each overheated chimney, upsetting lamp, cigar stub left on bed, ashes from tobacco pipe, chimney without flue-stopper, ignition of wood partition from boiler, unknown, ignition of flue curtain from gas jet, boiling over of a kettle of lard, ignition of escaping gas, finishing rags too near stove, mixing bay rum near stove, rats with matches, spring placed in pot of grease for tempering, explosion of gasoline tank, leaking rubber gas tube, improperly constructed foundation of boiler, hot ashes deposited in wooden box, match or cigar-stub deposited in waste basket, hot journal, explosion of pot of varnish, smoky chimney, lighting fire with kerosene oil, hot ashes deposited against burner, defective flue, hot flat-iron, defective stove-pipe, defective fire-box, match taken up in carpet-sweeper, ignition of hyperion oil in lamp and probably from watchman dropping spark from lamp or pipe. Of the buildings, 21 were brick, 5 were stone, and 31 were frame; and were occupied as follows: Dwellings, 30; barns, 6; rag stores, 3; grocery stores, 2; furnished rooms, 2; tannery, 2; meat market, 2; offices, 2; furniture stores, 2; warehouses, 2; planing mill and box manufactory, 2; picture-frame manufactory, 2; and one each saddlery, powder store, sidewalk, tug-boat, blacksmith shop, wagon repository, barbers' fixtures, Metallic Packing Company, oil store, dry goods (retail), cement warehouse, feather store, dry goods (wholesale), brick-kiln, tenement, railroad supply factory, flour and feed mill, and paint and oils. Total insurance involved, \$715,500; total loss, \$54,385.32; total loss to insurers, \$36,396.32. The above is a correct list of insurance involved; but the loss does not include the Empire warehouse, which is not settled. February, 1879, 47 alarms, 76 stills, \$739,103.35 insurance, \$66,767.71 insurance loss; February, 1880, 52 alarms, 44 stills, \$715,500 insurance, \$36,396.32 insurance loss.

BUILDING INTELLIGENCE.

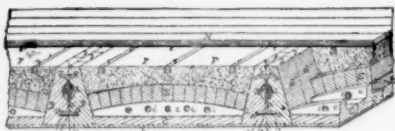
[Reported for the American Architect and Building News.]

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

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

223,275. FIRE-PROOF BUILDING. — Edward M. Butz, Allegheny, Penn. A A are metallic I-beams, supported in the walls of a building as usual. These girders are enclosed on all sides, both upper and lower flanges, a, a, and top and bottom surfaces, with fire-clay tile, B. Grooves, b, are made across the inner face of each tile, corresponding in size and depth to the upper and lower side flanges, a, a, of the girder, and the rest of this face is so shaped that when



the tile are placed upon the opposite sides of the girder, as shown, they shall meet above and below the girder. By arranging these tile along the length of the girder, and luting with fire-clay the joints between tile, the girders will be wholly encased on all sides. Channels, d, are made along the inner face of the tile, which afford continuous air-passages along either side of the web a', and may communicate, by flues in the walls, with the outer air, and thus serve to maintain the normal temperature of the girders. The lower edges of the tile are thicker than the upper, so as to serve as skew-backs to support the work between the girders. This consists of tile C, having arched-back ribs, c. The edges of these tile rest upon the skew-backs d', and when arranged in place, side by side, the lower faces form a practically continuous surface. The curve on the upper edges c is the same as that of the arches d, and they may serve as centres for turning such arches. These arches may be built of brick, and are supported by the skew-backs d'. Air-chambers D are thus formed between B, C, and c, which materially protect the under side of the arches E against heat; also, passages c', in any desired number, are made through the ribs c, and thus establish air-communication between the chambers. The spaces above the arches E, in line with the top of tile B, are filled with concrete, F. If a tile floor is desired, a thin layer of cement is first prepared on the surface of the bed formed by F and B, and the tile are laid in this cement in the usual way. In case a floor of boards, H, is desired, strips z, of dovetail form in cross-section, are embedded in F. A layer of asbestos sheets, s, are arranged over the entire surface, and boards are then laid on the surface thus prepared and securely nailed to the strips z.

- 223,470. SHUTTER-FASTENER. — Charles Garlick, Syracuse N. Y.
 225,472. STEAM-HEATER. — Samuel F. Gold, Englewood, N. J.
 225,473. ELEVATOR. — John A. Groshon, New York, N. Y.
 225,474. WOOD-CUTTING TOOL. — Freeman Hanson, Hollis, Me.
 225,484. HEATING STOVE. — Oscar W. Noble, Wakefield, Mass.
 225,485. PARALLEL PLIERS. — Erastus N. Parker, Springfield, Mass.
 225,488. PUMP. — Julius A. Pease, Chelsea, Mass.
 225,490. HOLLOW AUGER. — Edward C. Stearns, Syracuse, N. Y.
 225,503. SINK-TRAP. — Edward W. Anthony, Boston, Mass.
 225,508. EARTH-AUGER. — Andrew L. Collins, Kansas City, Mo.
 225,541. SASH-FASTENER. — James W. Todd, New Rochelle, N. Y.
 225,558. SASH LOCK AND LIFT. — Edward J. Brooks, Orange, N. J.
 225,563. COMBINED ANVIL AND VISE. — Wm. E. Canedy, Rochester, Minn.
 225,570. WINDOW-SASH. — David W. Clark, Tidioute, Penn.
 225,582. CURTAIN-ROLLER. — Joseph Fisher and John Gamble, Harrison, N. J.
 225,598. KILN FOR BURNING BRICK, POTTERY, ETC. — Napoleon B. Heafer and Edgar M. Heafer, Bloomington, Ill.
 225,618. MARBLE VENEERING. — Thomas C. Lamb, Chicago, Ill.
 225,646. ELEVATOR AND FOUNTAIN. — Amos A. Sanford, Montclair, N. J.
 9,119. POST AND PILE DRIVER. — (Reissue.) William A. Newton, Pappinville, Mo.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS. — The following building permits have been issued since the last report:
 Charles Rockefeller, 7 two-sty brick dwells., Woodyard St., between Harlem Ave. and Lanvale St.
 Henriette Smith, two-sty brick dwell., 286 North Gay St., between Mott and Aisquith Sts.
 Walter Dulany, three-sty brick dwell., cor. Charles and Townsend Sts.
 D. Howard Tuxworth, three-sty brick dwell., No. 237 North Gay St.
 John McShane, two-sty brick building, Calvert St., between Lexington and Saratoga Sts.
 Mrs. Mary D. Gaehele, three-sty brick dwell., 346 Lemon St.

Harriett Raston, two-sty brick building, cor. Eastern Ave. and Durham St.

J. Southgate Lemon, 5 four-sty brick warehouses, on Buchanan Wharf, near Pratt St.
CHURCH. — Drawings have been prepared, by J. A. & W. T. Wilson, architects, for the First Colored Baptist Church, on the corner of Caroline and McKeldry Streets. It is to be 52 by 87 feet. It is of brick, with sandstone finish, and is to comprise chapel and Sunday-school room in first story and audience-room above. Work is to be commenced at once.

SCHOOL-HOUSES. — The Council Committee on Education have decided to report favorably the ordinances appropriating \$15,000 for an English-German school in South Baltimore, \$10,000 for a colored school in Northeast Baltimore, and \$15,000 for a new building for Male Grammar School No. 7, to be built on the corner of Burk Street and Eastern Avenue, making a total of \$40,000 for new school buildings.

Boston.

BUILDING PERMITS. — Since our last report the building permits granted are as follows: —

Brick. — Emerald and Middlesex Sts., 6 tenement houses, about 25' x 38'; four stories; F. A. Richardson, owner and builder.
 Walnut Ave., cor. Dale St., 9 dwells., 22' x 35'; three stories; Wm. E. Griffin, owner.
 108 Newbury St., for E. W. Cushing, 1 dwell., 23' x 42'; C. Chipman, builder; G. A. Avery, architect.
 Plimpton St., 1 drying-house, 24' x 50'; B. D. Whitcomb, owner and builder.
 845 Albany St., for Sylvester Bowman, 1 stable, 40' x 67'; Wm. Morse, builder.
 Wood. — East Sixth St., 2 dwells., 19' x 32'; Wm. T. Eaton, owner and builder.
 Parsons St., Ward 25, 1 carpenter shop, 23' x 29'; J. W. Cushman.

Metropolitan Ave., for L. C. Wolkins, 1 machine shop, 24' x 65'; A. Rogers, builder.
 249 Princeton St., Ward 1, for T. Sheffield, 1 dwell., 21' x 32'; G. W. Hargrave, builder.
 Montana St., Ward 21, for A. M. Gardner, 1 dwell., 28' x 32'.

Repairs and alterations very active.

SLAUGHTER-HOUSE. — The Boston & Albany Railroad Company proposes to build a large slaughter-house in East Boston.

Brooklyn.

BUILDING PERMITS. — Willoughby St., 1 four-sty factory, 50' x 97'; owner, A. P. Stevens & Co.; architect, Carl F. Eisenach; builders, Owen Nolan and L. W. Seaman, Jr.
 Prospect Ave., cor. Fourth Ave., 1 three-sty frame store and dwell., and 4 three-sty frame dwells., 16' x 40'; cost, each, \$2,500; owner, D. S. Arnott, 705 Fourth Ave.
 Bushwick Ave., 1 two-sty frame store and dwell., 20' x 39'; cost, \$1,800; owner, C. Roth, 91 Graham Ave.; builders, Andreas Vath and John Rueger.

Seventh Ave., cor. Lincoln Place, 5 three-sty brown-stone dwells., 20' x 45'; cost, each, \$7,000; owner, William Flanagan, 429 Flatbush Ave.

Vanderbilt Ave., cor. Bergen St., 1 three-sty brown-stone stores and flats, 20' x 45'; cost, about \$7,000; owner and builder, W. C. Donnellon, 4 Jefferson Park; architect, Robert Dixon.

Pacific St., cor. Henry St., 2 one-sty brick stores, 20' x 14'; cost, \$1,000; owner, James Ruthven; architect, Carl F. Eisenach; builder, Samuel R. Goodsell.

Henry St., 3 one-sty brick stores, one 18' 6" x 45', one 16' 6" x 45', and one 13' 6" x 11' 6" x 45'; cost, \$2,000; owner, James Ruthven; architect, Carl F. Eisenach; builder, Samuel R. Goodsell.

Graham Ave., cor. Mauger St., 6 one-sty frame stores, 12' 6" x 38'; cost, \$4,000; owner, Daniel Mauger, Grand St.; architect, John J. Clyde; builders, Jenkins & Gillies.

Broadway, 1 two-sty frame store and dwell., 18' x 52' 4" x 35' x 40'; cost, \$2,300; owner, F. Herr, 778 Broadway; builders, Johnson Brothers.

Park Ave., cor. Franklin Ave., 1 three-sty brick store and dwell., 20' x 50'; cost, \$5,500; owner, A. E. Hodder-son, 122 North Portland Ave.; architect, S. Harleson; builders, J. Lambert and W. M. Zang.

Floyd St., 1 two-sty frame dwell., 19' x 40'; cost, \$2,000; owner, George Loeffler, 140 Floyd St.

ALTERATIONS. — Atlantic Ave., No. 123, one-sty brick extension, 30' x 39'; cost, \$1,500; owner, James Thompson, 121 Atlantic Ave.; architect, Carl F. Eisenach; builders, Kelly & Zang.

Fulton St., No. 287, add one story; cost, \$1,300; owner, S. A. Willoughby, Saratoga, N. Y.; builders, Wright & Brook.

Myrtle Ave., No. 175, two-sty brick extension, 10' x 20'; cost, \$1,000; owner, John Van Glabu, 175 Myrtle Ave.; architect, J. D. Reynolds; builders, Morris & Selover.

Sanford St., Nos. 222 and 224, two-sty brick extension, 30' x 16'; cost, \$1,500; Philip Camminoni, 222 Sanford St.; architect, S. H. Osmon; builder, R. R. Kelly.

ASYLUM. — Messrs. Parfitt Brothers are the architects of the proposed extension of the Home for the Destitute, on Butler Street. It will cost about \$40,000.

HOSPITAL. — Ground will soon be broken for the new Eastern District Hospital and Dispensary, which is to be built in South Third Street.

Chicago.

MATERIALS. — Wages remain stationary as yet. Bricklayers have given notice that they shall ask for \$3 on and after April 1. While but few of the craft are or will be employed at that time their demands will be complied with. A general advance of wages cannot take place until new brick are manufactured. Our last year's stock of Chicago brick, and all brick within reasonable transporting distance, are about exhausted. Building operations are therefore substantially at a standstill until brick come in, May 10, say. In the mean time every body will have got ready, and will be anxious for a good start at that time. There will be more work than men to do it, and strikes and higher wages the inevitable result.

Milwaukee.

BUILDING PERMITS. — Permits issued since the last report: —

Aldenburg & Boltes, chair factory; cost, \$19,000.
 H. Schlenstedt, store; cost, \$8,000.

H. Schlenstedt, block of dwellings; cost, \$9,000.

A. Kloses, addition to store; cost, \$2,800.

R. Nunemacher, addition to dwelling; cost, \$1,200.

Dr. Robinson, double brick dwelling; cost, \$13,000.

L. Boyington, store; cost, \$1,200.

Hanbutt & Co., stable; cost, \$3,000.

C. Schuckett, frame dwelling; cost, \$3,000.

F. Stone, frame dwelling; cost, \$3,500.

Wm. H. Goese, frame dwelling; cost, \$2,300.

New York.

BUILDING PERMITS. — Seventy-fifth St., for A. Droste, dwell. and stable, 20' x 25' 6"; brick; Wm. Jose, architect; cost, \$3,800.

Sixtieth St., for John Goerlitz, Julius Boeckel, architect, four-sty brick tenement-house; cost, \$8,000; 25' x 50' 6".

Seventy-fifth St., for M. Moss, M. Fainey, architect, brick factory, 20' x 38'; cost, \$2,000; J. H. Slocum, builder.

One Hundred and Fifty-third St., for Wm. Eggalin, Jno. C. Stickler, builder, frame dwell., 21' 6" x 28'; cost, \$1,000.

One Hundred and Fifty-sixth St., for Michael Homer, J. C. Stickler, builder, frame dwell., 20' x 28'; cost, \$1,500.

Christie St., No. 139, for Harry Miner, Wm. Graul, architect, brick tenement with stores, 23' 4" x 85'; five stories high; Henry Wallace, builder; cost, \$11,000.

Seventy-fifth St., cor. Second Ave., for A. Droste, brick flats and stores; five stories high; 25' 6" x 70'; Wm. Jose, architect; cost, \$18,000.

Avenue A. — Ninth Ave., Nos. 81 and 83, four-sty brick dwell. and store, two-sty brick extension on rear, 24' x 40' and 50'; cost, \$4,000; owner, — Sieman; architect, Wm. Merritt.

Second Ave., No. 1107, store front in basement story; cost, \$2,000; owner, Joseph Hutter; builders, Hanlon & Ryan.

Grand St., Nos. 285 and 287, new store front and interior alterations; cost, \$3,500; owner, Johanna Lichtenstein; architect, Wm. Jose.

Front St., No. 151, interior alterations and general repairs; cost, \$3,000; owners, John Jewett & Sons; architect, H. W. Clements; builders, Meeker & Hedden.

First Ave., cor. Twenty-eighth St., five-sty brick factory to be raised one story; also, six-sty extension, 50' x 42'; cost, \$18,000; owner, Solomon Loeb; architect, H. J. Schwarzman; builder, Marc Edlitz.

Fifth Ave., No. 237, one-sty brick extension on rear, 15' x 35'; new store front on first story; cost, \$5,000; owners, Everall Bros.; architect, Thos. Steub; builder, John Downey.

Seventh Ave., No. 329, new store front on first story; cost, \$1,000; owner, Mrs. Butt; architect, Henry Spear; builder, Freeman Bloodgood.

Washington St., Nos. 370 and 372, rear part to be raised to four stories and part of rear wall rebuilt; cost, \$1,500; owners, T. P. Rogers & Son; builder, H. M. Rogers.

Third Ave., one and two-sty frame stable, a two-sty extension on rear, 28' x 85'; cost, \$1,500; owner, Chas. Rivinius, Jr.

Pearl St., No. 299, three-sty brick factory to be raised to four stories, new store front and interior alterations; cost, \$3,300; owners, Emil Calman & Co.; builder, John G. Porter.

Fifty-first St., No. 28, W., three-sty brick extension on rear, 9' 3" x 20'; cost, \$3,800; owner, Sidney G. Hartshorn; builder, Charles Burk.

Broadway, No. 1263, new store front on first story; cost, \$1,200; owner, William Britten; builder, Samuel Lowden.

Fiftieth St., No. 425, W., to be extended 8' 2" on front, internal alterations; cost, \$3,000; owner and builder, John F. Moore.

Eighth Ave., No. 643, two-sty brick store, damage by fire to be repaired; cost, \$3,320; owner, M. McFarlane; builder, Henry Wallace.

An extension is to be built to No. 13 W. Forty-sixth Street, for Mr. Thos. Walter. Mr. J. W. Firson, architect.

A new wing is to be built to the house No. 1 Washington Square, consisting of dining-room, reception-room, and hall, and the house will be remodelled. The Elizabethan style will be followed. Messrs. Gambrell & Eicken are the architects.

Interior alterations are being made in the offices of Hatch & Foote, No. 12 Wall Street, which will cost \$6,500. Mr. Carl Iffler is the architect.

An extension is to be made to the residence of Mr. J. Bryan, corner Madison Avenue and Seventy-fifth Street, to cost about \$6,000.

APPRAISERS' STORES. — Mr. Jackson, local superintendent of repairs on United States buildings has prepared plans for a new four-story building for the appraiser's department.

BANK BUILDING. — The First National Bank and the Bank of the Republic have accepted the designs of Messrs. Peabody & Stearns, of Boston, for the building to be erected for them on the corner of Wall Street and Broadway. It will cost \$500,000, and will have a frontage on Broadway of 71 feet 8 inches, and a depth on Wall Street of 91 feet 6 inches.

CHURCH. — An extension is to be made to the Church of the Beloved Disciple on Eighty-ninth Street, embracing a choir-room and study. Ohio stone will be used. Mr. J. W. Firson is the architect.

FLATS. — Work has just commenced on the flats to be built on the corner of Fifty-second Street and Broadway. The building will be eight stories high, the first story will be stone, above brick and terra-cotta. The style is Queen Anne, and the cost will be about \$120,000. Mr. Ferdinand Meyer is the owner; Messrs. Lamb & Wheeler, architects.

GRANITE WORK. — The Park Commissioners have accepted the designs of Messrs. Gambrell & Eicken for the pedestal for the statue of Wm. Cullen Bryant, which is to be very richly ornamented. Also for the pedestal of Ward's statue of The Early Pilgrims.

HOUSES. — On Sixty-ninth Street and Madison Avenue six houses are to be built for Mr. Anthony Mowbray. Two will be of brick and stone, and four brown-stone.

OFFICE BUILDING. — On the lot Nos. 21 and 23 W. Twenty-sixth Street an office building is to be built for the Astor Estate. It will be of brick and granite. Mr. Thomas Stent, architect.

STORES. — Mr. Wm. Shickels is preparing the plans for the

store to be built, for R. Arnold and Henrietta Constable, on Twenty-third Street. It will be six stories high and have a frontage of 99 feet 6 inches on Twenty-third Street, and 70 feet on Twenty-fourth Street. It is to be of brick and stone, and will cost about \$150,000.

On Green Street, corner of Houston, a 60 feet front store is to be built of brick and terra-cotta, at a cost of about \$35,000. Messrs. Gambrell & Ficken, architects.

On White Street a store, 25 by 76, is to be built from design of Mr. J. Morgan Slade, to cost about \$20,000. The first story will be iron, above brick and stone, with eight iron columns.

Philadelphia.

ADDITIONS.—*Ludlow St.*, cor. Thirty-first, 1 three-sty addition to factory, 48' x 90'; owners, Goodell & Waters; builder, Chas. D. Supplee; day's work.

44 North Thirty-eighth St., addition 20' x 40'; three stories; E. W. Woolman, owner and contractor; cost not given.

ALTERATION.—Messrs. Wilson Bros. & Co. have drawn plans for the alteration and extension of Mr. J. J. Morton's house, on the corner of Nineteenth Street and Green Street. New brown-stone fronts will be built.

ASYLUM.—A new building is being built for the Pennsylvania Industrial Home for Blind Women.

FACTORIES.—*Montgomery St.*, cor. Randolph, 1 four-sty factory, 54' x 95'; owner, C. A. Blessing; no contractor.

Taylor St., near Kensington Ave., two-sty factory, 30' x 90'; contractor, R. J. Whitesides & Son; cost not given.

Unity St., cor. Baker, two-sty factory, 47' x 175'; owner and builder, Charles Cranshaw; cost not given.

FREIGHT-HOUSE.—The Old Navy Yard, one freight-house, 443 by 50 feet; owners, Pennsylvania Railroad Company; contract, not yet awarded.

HALL.—*Germantown Avenue*, south of Norris Street, one four-sty hall for Liberty Council No. 11, W. A. M., 40 by 84 feet; cost, \$8,000.

HOUSES.—No. 3823 *Lancaster Ave.*, 1 three-sty stone dwell., 20' x 70'; owner, Peter Weber; not awarded.

Tanner St., cor. Twentieth, 6 three-sty houses, 15' x 40'; contractor, Geo. H. Brinkworth; cost, about \$11,000.

Fortieth and Aspen Sts., 5 three-sty dwells., 18' x 50'; J. F. Winner, contractor; cost, \$25,000.

The house on the corner of Fifty-fourth Street and Columbus Avenue, destroyed by fire a year ago, is to be rebuilt for Mr. Rife. Messrs. Wilson Bros. & Co. are preparing the plans.

INSURANCE BUILDING.—The result of competition for plans for the North American Insurance Company has not yet been made public.

STABLE.—*Twenty-second Street*, south of Market, three-story stable, 150 by 104 feet; owners, Adams Express Company; builder, George Watson; cost not given.

St. Louis.

BUILDING PERMITS.—Twenty-eight permits have been issued since our last report, of which nine are for frame structures of slight importance. Of the rest, those worth \$2,500 and over are as follows:—

Owners.	Use.	Stories.	Rooms.	Cost.
J. N. Barley.	Dwelling.	3	9	\$4,000
F. R. Rehman.	Dwelling.	2	12	3,500
Lauenberg Bros.	Dwelling.	3	10	5,000
Mrs. M. N. Bust.	Dwelling.	2	12	3,500
Dr. J. H. McLean.	Store.	3	9	5,500
Mrs. E. McKee.	Store and Dwelling.	3	10	5,000
A. S. Morrison, V. S. Penquet.	Store.	3	9	9,000

General Notes.

ADAMS, MASS.—Mr. S. C. Earle, architect, of Boston, has prepared plans for the new Church of St. Mark.

AMHERST, MASS.—Mr. Geo. Cutler has his brick block nearly completed; cost, \$8,000; W. F. Pratt, of Northampton, architect.

ATLANTIC CITY, N. J.—A cottage is to be built for Mrs. Woelppel, opposite the Lippincott Villa. Messrs. Wilson Bros. & Co., of Philadelphia, architects.

BANGOR, ME.—The plans for a new opera-house have been received. The seating capacity will be 1,233. The building will be on Main Street, and work will probably begin at once.

BUFFALO, N. Y.—The design of George Keller, of Hartford, has been adopted for the soldiers' and sailors' monument.

BURLINGTON, IO.—Mr. C. A. Dunham, architect, has the following work on hand:—

An addition to Thomas Hedges' block, 34 by 40 feet, one story; estimated cost, \$2,000.

House for W. O. Ware; wood; cost, between \$5,000 and \$6,000.

Cottage for I. H. McPortland; cost, \$2,000; two stories; wood.

An addition and other improvements upon a cottage for Chas. Wundt; estimated cost, \$3,000.

The Burlington Steam-Heating Company are now building a boiler and fuel room, 60 feet by 117 feet 6 inches, of brick, 18 feet high.

M. C. McArthur is building two stores, 40 feet front by 30 feet deep, three stories high; brick.

John Burg has contracted to put another or third story upon his wagon shop, 30 by 80 feet, of brick.

Work on the new court-house will be resumed on the 1st of April.

CAMBRIDGE, MASS.—The present members of the Harvard Hasty Pudding Club have subscribed over \$2,000 to start a fund for building a club-house.

CEDAR RAPIDS, IO.—It is said that Hon. George Green will build a theatre this summer large enough to seat 2,900 persons.

CLEVELAND, O.—The Case Avenue Presbyterian Church is to be built of stone, at a cost of \$25,000. Mr. Joseph Ireland, architect.

FISHER'S ISLAND, N. Y.—Mr. Geo. H. Bartlett is building four summer houses, from plans by Mr. Evan Burdick, of Norwich, Conn.

GARDNER, MASS.—Mr. V. W. Howe is building a frame house on Main Street; cost, \$6,000.

Mr. I. F. Thompson is building a three-tenement frame house on Chestnut Street. Fuller & Delano, of Worcester, Mass., architects.

GARRISON'S, N. Y.—A tower and residence is to be built for Wm. H. Osborne, Esq., of New York. It will be of

rough stone, with cut-stone finish, in the French Gothic style. Mr. J. Morgan Slade, of New York, is the architect.

GREENSBURG, IND.—The County Commissioners have decided to build a new jail.

HADLEY, MASS.—Dr. Bonney is building a house here. W. F. Pratt, Northampton, architect.

HARRISBURG, PENN.—Mr. F. E. Davis, architect, Baltimore, is preparing drawings for a new school-house, to be built here, 108 feet front by 123 feet deep, two stories high. It will cost \$16,000.

HARTFORD, CONN.—A frame house is building on Vanderbilt Hill, West Hartford, facing Farmington Avenue. It is 105 by 108 feet, two stories high, with a gambrel roof, surrounded by an octagon tower 85 feet in height and 22 feet in diameter; cost, \$5,000.

There are four houses building on Prospect Avenue, for Wm. A. & H. W. Kwing; two of them are of brick, in English cottage style, costing \$12,000 and \$7,000 respectively. The frame houses are for Geo. Foster and Geo. E. Hatch, costing about \$10,000 and \$5,000 respectively.

Mr. Wm. B. Windsor is building a brick stable on Main Street, 50 by 60 feet, costing \$3,000. Mr. John C. Mead is the architect and contractor.

Mr. John C. Mead also has plans in hand for several buildings, among which is one for Mr. George Kellogg, to be built on Asylum Avenue, of pressed brick, and Portland brown-stone finish, costing about \$9,000.

A frame house for C. C. Mullan is to be built on Gillett Street, costing about \$6,000.

Mr. Wm. M. Miller is building a frame house on Washington Street, costing about \$6,000; S. W. Lincoln, architect; John C. Mead, builder.

HIGHBRIDGEVILLE, N. Y.—The building and stable of the Second Police Precinct is to be altered and repaired.

INDIANAPOLIS, IND.—Plans of the two new school houses proposed to be built during the coming summer are now on inspection at the offices of the school commissioners. One is to be at the corner of East Vermont and New Jersey Streets. The other will be on Beeler Street, near Seventh.

Building permits were issued by the City Clerk of Indianapolis during the first two months of 1880, for the erection of buildings and other improvements, amounting to \$37,500 more than the permits issued during the corresponding months last year.

The Public Library Committee has accepted the plans for the new library building prepared by C. A. Wallingford. The building will be 120 by 39½ feet, two stories high, constructed of brick and stone. The building is to be ready for occupancy by September 1; estimated cost, \$14,000.

JEWETT CITY, CONN.—Rev. Thos. B. Jaynt is completing a frame house on Main Street; cost, \$4,500; Samuel E. Allen, of Williamantic, Conn., architect.

KANKAKEE, ILL.—The Illinois Central Railroad will probably build a round-house here the coming summer.

LANSING, MICH.—A botanical laboratory is building for the Michigan State Agricultural College, from designs prepared by Messrs. Watkins & Arnold, architects; cost, \$6,500.

The cost of Michigan's new State Capitol is said to have been \$15,000 under the estimate.

LEXINGTON, KY.—John W. Leil is to build a brick store near the post-office.

LYNN, MASS.—The laying of the corner-stone of the new Y. M. C. A. building will take place March 30.

MILLBURY, MASS.—Mr. Peter Simpson, Jr., has plans being drawn by Fuller & Delano, of Worcester, for a house and stable in this village; cost, \$15,000.

MONTEREY, CAL.—The Southern Pacific Railroad Company is building a three-story hotel, 400 feet long, in the Monterey Grove.

NEW HAVEN, CONN.—There is a great scarcity of building brick in New Haven. The North Haven Yards are unable to meet the demand, and the price has advanced from \$8 to \$11 per thousand.

NEW MILFORD, CONN.—A new Episcopal church is to be built here, at a cost of about \$30,000.

NEWPORT, KY.—It is reported that the Masons are to build a new temple.

NEWPORT, O.—The Masons of this city contemplate building a grand temple, and are negotiating for the purchase of the lot on the northwest corner of Mayo and Saratoga Streets.

NEWPORT, R. I.—The ground for the cottage for Mr. Christopher C. Baldwin, of New York, has been broken.

NORTHAMPTON, MASS.—Mr. W. F. Pratt has plans in hand for Mr. L. B. Williams' frame house, Mr. W. T. Clement's house, Mr. Andrew Wood's house; C. H. Dickinson's store, Beiding Brothers & Company's new silk mill, to be of brick, four stories high, 140 by 44 feet.

Geo. G. Baker, Rockville, Conn., is the contractor for mason-work, and C. Butler Smith, Northampton, for the carpenter-work.

NORWICH, CONN.—Mr. S. L. Geer is building a frame house on Franklin Street, from plans by Mr. Evan Burdick.

Mr. Burdick also has plans in hand for one four-tenement brick block, also one double brick house.

Mr. Palmer Smith is building a three story block of brick and marble, fronting 62 feet on Franklin Street, to be used for stores and tenements. Mr. Evan Burdick, architect.

Mr. John M. Brewer is about building a two-story frame house on Cliff Street.

ORANGE, MASS.—Mr. J. W. Wheeler is about building a frame house and stable, costing \$12,000. Plans are now in the hands of Fuller & Delano, of Worcester.

PHILLIPS, WIS.—The new court-house for Pierce County is to be built here.

SACO, ME.—In addition to the big pier to be built at Old Orchard Beach by New York parties, the Legislature has granted a charter to a company,—land owners at Old Orchard,—who propose to build a large pier, starting at Union Avenue, and extending 1,500 feet into the sea. The pier is to be 100 feet front and built of solid masonry. The company's capital stock is \$100,000.

SPRINGFIELD, ILL.—A new jail, town-hall, etc., will soon be built from plans by Mr. F. S. Allen, architect; cost, \$7,000.

VERMILION, KY.—To-day bids are received for improving and building the Woodford County Court-House in this city.

WARASH, IND.—The Presbyterians are to build a new \$17,000 church this summer.

The old jail is to be torn down at once.

WARE, MASS.—Mr. L. W. Robinson is building a brick block, to be used for stores.

WAVERT, MD.—Messrs. J. A. & W. T. Wilson, of Balti-

more, architects, have made drawings for an addition to the country house of Mr. Thos. J. Wilson, near Waverly, Baltimore County. It is 22 by 24 feet, and three stories high, of brick, and is at present under contract.

WESTBORO, MASS.—Rev. C. J. Cronin is building a frame house on Main Street, cost \$5,000, from plans by Fuller & Delano, of Worcester, Mass.

WEST HARTFORD, CONN.—Mr. James M. Thompson is building a stable at West Hartford Centre, costing about \$5,000; Mr. John C. Mead, architect and builder.

WESTVILLE, CONN.—A store and tenement is building by Colonel Sperry above the raceway, near the bridge.

WILLIAMSBURG, MASS.—H. M. Porter is building a new store for himself, from plans by W. F. Pratt, of Northampton.

WILLIAMTIC, CONN.—Mr. Samuel E. Allen has plans nearly completed for a three-story block for Mr. Dennis Shea, to be built of brick, with marble finish, fronting on Main and Union Streets; stores on first floor and tenements above.

Geo. M. Harrington, of this place is about to build a frame cottage; Samuel E. Allen, architect.

WINDSOR, CONN.—The Methodists have raised \$4,000 for a church.

WORCESTER, MASS.—Messrs. Fuller & Delano have plans nearly ready for a brick building, 100 by 32 feet, two stories, to be used for the insurance patrol.

The question of building a temporary hospital, at a cost of \$40,000, is much discussed.

Industrial.

BRIDGEPORT, CONN.—The Bridgeport Cartridge Company is to build an addition sixty feet long.

BRUNSWICK, ME.—The cotton factory is to be enlarged, and the box factory rebuilt. About twenty tenement-houses are to be rebuilt.

CHICAGO, ILL.—The Union Rolling-Mill Company will soon build a large wire mill, at a cost of \$300,000.

CLEVELAND, O.—Proposals for building two eight-room school-houses were received March 19.

DANIELSONVILLE, CONN.—The Quinebaug Company will probably build a two-story brick mill, 95 by 445 feet, at a cost of about \$60,000.

DANVILLE, N. H.—Collins' shoe manufactory is to be enlarged to double its present size.

EAST LIVERPOOL, O.—Knowles, Taylor & Knowles have concluded contracts for their large additions, which will require 1,000,000 of bricks, 175,000 feet of joist, and 45,000 feet of flooring boards. The new buildings will measure 110 by 223 feet.

EAST MERIDEN, CONN.—An addition, 60 by 50 feet, is building to the Parker spoon-works.

FALL RIVER, MASS.—The Flint Mill Corporation is preparing to build a cotton house.

FISHERVILLE, N. H.—A large cotton-mill is to be built here.

GARDNER, MASS.—Messrs. S. Bent & Bros., chair manufacturers at South Gardner, are at work on the foundation for a new factory, the main part to be 54 by 49 feet, two stories high, with basement.

HILLSBORO, O.—Messrs. Inskip, Austin & Buck are preparing to build a three-story brick flouring mill, corner of West and Beach Streets.

HOLYOKE, MASS.—John B. Munn, of Northampton, and Charles Baush, will build a foundry near the river road, below Chase's lumber yard, 80 by 40 feet in size, with two smaller ones.

KEENE, N. H.—The Troy Blanket Mill Co. are immediately to enlarge their mills.

MOORE'S, CONN.—A three-story addition, 40 by 50 feet, is to be made to the Chaffee Mill.

MONTAGUE, MASS.—J. S. Richardson has commenced the foundations for his new mill.

NATCHEZ, MISS.—Joists are being laid for first floor of the Rosalie Yarn Mill.

The 6,000 spindle addition to the Natchez Cotton Company's Mill is about to be placed under contract.

NANTIC, CONN.—The Sturtevant Woolen Mills are to be rebuilt.

NORTHUMBERLAND, PA.—Robert Chase & Co. are rebuilding their mill.

OAKVILLE, CONN.—A building 70 by 40 feet is to be built in place of the old sander factory.

PATERSON, N. J.—The works of the Danforth Locomotive and Machine Company will be rebuilt.

PIQUA, O.—The proprietors of the new paper-mill are getting ready to put up their buildings.

TAUNTON, MASS.—The Whitenton Manufacturing Company is building a new weaving mill 360 by 151 feet, one story and full basement.

VOLUNTOWN, CONN.—Ira G. Briggs & Co. are about to enlarge the Beachdale Mill, by an addition 42 feet in length.

WATERBURY, N. Y.—A dye house, 60 by 100 feet, is about to be built for the Waterloo Mfg Co. from designs of Mr. J. Morgan Slade, of New York.

WILMINGTON, DEL.—It is said that the Jessup & Moore Company will spend almost three quarters of a million upon their new paper-mill.

Bids and Contracts.

BURLINGTON, IO.—J. Burnham has contracted to build a ware-room, 43 by 50 feet deep, 25 feet high, of stone, for storing flax seed for his mill.

DENVER, COL.—Emmet Anthony, architect, Denver, has completed the plans for a store for John D. Alkire. The contract is awarded to I. C. Kelsey; cost, \$10,000.

EAST LIVERPOOL, O.—The contracts for a two-story brick school-house, containing eight school rooms, basement, entry halls, belfry, etc., were let by the Board of Education on Monday, the 22d inst.

FALL RIVER, MASS.—Mr. Wm. Beattie has the contract for the stone-work for the new building of the Dufree Mill Corporation.

LAWRENCE, MASS.—McClallan & Goodwin, of Chicopee, have contracted with the Washington Mills to build a new mill 324 by 84 feet, to be finished, ready for machinery, by July 1.

TRENTON, N. J.—Contract has just been awarded by J. H. Whitaker, architect, for a four-story store, with offices over, on East State Street, near the First National Bank; press brick front, stone finish; John Barnett, Esq., owner; William Johnston, mason contractor; Cubberly & Rafer, carpenters; contract price, \$6,900.

Also, several pottery buildings (brick), for Messrs. Dale & Davis, to be built at the junction of the D. & B. B. Railroad and Prospect Avenue; contract price, \$22,517; Captain R. S. Johnston, mason contractor; William Mutchler, carpenter contractor.