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THE School-House Competition of the *Sanitary Engineer* has brought out, it is said, one hundred and eighty plans, from architects in various parts of the country, which are exhibited in the Academy of Design, pending the decision of the Committee of Award. It was none too soon to direct attention to the question of school-houses, if we may judge by the complaints against those of New York which we read in the newspapers. It would seem that there was nothing, indeed, for which the city had made a less satisfactory provision, a fact which may indicate that, after all we have heard, those who have in past times had the distribution of her expended moneys have not taken the full measure of their opportunities. The mass of her 140,000 school-children are crowded together in the most extraordinary way. At a meeting of the Sanitary Reform Society, for examination of the plans, it was said that some school-houses which had been built for eight hundred pupils were occupied by not less than twenty-eight hundred. In some of the wards the attendance has almost doubled since ten years ago, without increase of the accommodation which was then thought necessary. As the *Times* said a few days ago, this crowding is likely to continue while the schools are open to children from four years old. It is a great mistake to receive children of this age into the same schools, or even the same buildings, that are usually provided for children a few years older. The age, however, is one at which poor mothers are apt to find their children peculiarly in the way, since they are troublesome to take care of, and can be put to no possible use. So that, so long as there are not infant schools for them, they are likely to crowd the others.

WHEN there is so much negligence in the accommodation, it is not surprising that the school-houses are ill ventilated and badly lighted. The *Times* tells us that in school-house No. 8, for instance, is a room in which two hundred and twenty children are stored, who have to read and write by gas-light, except during the brightest hours of the sunniest days; and that in another school-house, No. 70, the children in several rooms cannot see to read and write in stormy weather. In several others of the buildings the class-rooms have to be lighted by gas either all the time, or a great part of it. Naturally enough, the eyesight of both teachers and pupils suffers. In school-houses built about closely with high buildings, it goes without saying that ventilation as well as light is wanting, and the committee of the Board of Education which lately reported on the matter is doubtless justified in saying that the prevalence of lung diseases is in part attributable to the bad air which children breathe at school. The committee adds that "when children are packed into a small room, with about thirty cubic feet of air to each, ventilation is impossible even by keeping every window in the room wide open: yet this state of things exists in many of our public schools." We should like to believe that there was a clerical error in this statement, allowing, as it does, for each pupil, only a floor space of three square feet, including passageways, for a room ten feet high; and a fifth part, or less, of the cubic space which he ought to have. As for the air that is to supply the unfortunates thus hived, it is often forced up through furnaces from damp cellars, or blown in from close yards defiled with privies and other nuisances. Americans are taught to believe

in universal and compulsory education. This is doubtless a good thing *per se*, but if it is to mean compulsory vitiation of their bodies by foul air, and perhaps compulsory contamination by infectious diseases, it might be better to relax somewhat the rigor of the school laws, and limit the number of scholars which each building shall contain. The community which enacts that its children shall be sent to its schools is at least bound to see that the schools into which it forces them are not unwholesome.

WHILE Congress and the Washington Monument Committee are struggling with the national monument to Washington, and the people of Philadelphia are laboring, or resting, over theirs, a proposal has come up to build one in New York. Last year ex-Governor Seymour suggested the idea of a memorial of Washington's first inauguration, in New York, in a letter to the *Evening Post*, and it has germinated so well that schemes for carrying it out have apparently sprung up in two places at once. The New York Chamber of Commerce proposes, we are told, to appoint a committee of leading merchants, bankers, and business men to confer with the authorities of the United States, or of the city, and secure a site for a monument. Meanwhile, however, this movement has been anticipated by a number of gentlemen, who have begun to form a general committee to consist of one hundred and eighty members. Among the names given for members of this committee we find those of Messrs. Tilden, Thurlow Weed, Charles O'Connor, August Belmont, Edward Cooper, Jay Gould, Samuel Ward, James Gordon Bennett, and others, who may also be classed as leading merchants, bankers, or business men. These associate themselves with a more definite purpose to "erect a suitable monument to mark the spot on Wall Street now occupied by the United States Treasury building, where George Washington first took the oath of office, and in the presence of both houses of Congress inaugurated the government of the United States under the federal Constitution." A general meeting is to be called to consider the plan which is proposed, — to set up on the eastern and western buttresses of the Sub-Treasury two colossal bronze groups, one of Hamilton and Clinton, and the other of Washington and Livingston, the buttresses themselves being encased in bronze and enriched with mouldings, bas-reliefs, figures of eagles, and inscriptions. For this project it is proposed to raise a subscription of fifty thousand dollars. The Chamber of Commerce, as appears from an article in the *Evening Post*, is not so decided in its intentions, and inclines to have "no connection with the house over the way," but to pursue an independent aim, and probably a different form of monument. We may trust that out of these two movements there may in some way come one memorial that will be a credit to the city, and that time may be taken to decide with deliberation and care what the form of the monument had better be. We have not heard the name of "the well-known sculptor," but one has a natural temptation to look with some anxiety for the appearance of any monument the form of which is taken as a foregone conclusion.

THE discussions of the Inter-Oceanic Canal problem seem to be drifting entirely away from the fundamental question of the natural fitness and practical convenience of routes or methods, and bid fair to become altogether political and personal. M. de Lesseps is said to be on the point of visiting the United States, bringing the estimates which result from his surveys of location, amounting to about one hundred and fifty millions of dollars, with the hope of inducing Americans to subscribe one half of it. Of the alternative methods proposed for obviating the danger of floods in the Chagres River, the favorite is said to be that of a great reservoir in the upper valley, guarded by sluice-gates. The tolls on vessels that pass through the canal are estimated at fifteen francs (three dollars) per ton. Appearances are that M. de Lesseps is likely to be disappointed if he expects any cordiality of reception, either from politicians or from capitalists. To raise one hundred and fifty millions of money for a project of which the profits are remote and uncertain is not easy, under the most favoring circumstances, in a country in which people are beginning to look forward, as they do now again in ours, to a quick and liberal return for their money. The political outlook is even less encouraging. The Secretary of State is said to hesitate to commit himself to a decided policy as yet, and to prefer to wait and see the Panama scheme die of

inaction. The President, however, it is reported, has a very strong opinion in favor of enforcing the Monroe doctrine at once and so emphatically as to warn the French off from any attempt to build the canal. It is expected that he will send a message to urge this view upon Congress. Congress itself, so far as appears, and the political press of the country, seem pretty well united in opposition to what, unfortunately for a fair discussion of its merits, presents itself as a foreign scheme, and to be drifting rather helplessly, through an unconsidered and negative preference, into support of the project which is noisily put forward as the American one. The promoters of Captain Eads's scheme, it is said, are improving the opportunity to press his floating-dock railroad bill with all the influence of a powerful lobby.

It does not seem to us that the American attitude in this matter is a graceful one. It is unfortunate for us that the two questions have become inextricably confused which ought to have been kept entirely apart — the questions where the canal should be, and who should control it. Whatever may be the importance, the wisdom, or the appositeness of the Monroe doctrine, the location of the canal is a matter to be considered quite independently of it, and should be decided by a different authority, so far as concerns the actual formation of opinion. If it is essential for the United States to control the canal when it is built, it was essential for them to be beforehand in determining the best route for it and to preoccupy it. It was also a natural duty to warn people of our determination to have control, and forestall their waste of money and effort in undertakings which we were unwilling to let them carry out. But while others worked we slept, and now we are waking up to a desire to prevent them from gathering the possible fruits of their labors. When Europeans were trying to rouse us to cooperation in a work which the commercial needs of the world were found to require, we lay still and would do nothing. When it was apparent that the question would be decided at the French congress, we sent delegates, who brought us back their opinion that the decision of the congress was foolish and impracticable, and had been prearranged, and that their own way was the only way; but no action was taken here. When at last we found that a serious attempt was making to carry out the decision of the congress, we began to discover that we were more interested in the canal than anybody else. At first the American delegates to the congress instructed us that their plan was the American plan, and our Congress was beset to provide for the construction of a canal accordingly. Now congress and the press are instructing us that we must not let Europeans carry out their plan in any case. In the mean time our people are as far as ever, we suspect, from an intelligent idea of what is really the best plan. If we could take an opportunity, in the midst of the political din, to adequately examine this question, we might bring ourselves into a proper position to decide these others, — whether we must, for the sake of our policy, interfere and ruin an undertaking which we have allowed to go so far without protest, though we were vitally interested in it; or whether we shall leave it to die the natural death to which the unwisdom of its conception entitles it, while we ourselves carry out the wiser scheme; or whether, finding it on the whole more promising than any scheme we have to substitute, we shall by purchase acquire a controlling interest in it, and see it carried through under our protection. Perhaps the least creditable attitude into which we can put ourselves is that of the dog in the manger.

It is said that Signor Brumidi's continued prostration, the result of the accident that happened to him some months ago while he was working on the frieze of the rotunda at Washington, has led the Committee on the Library to think seriously of appointing a successor to carry on the work. The painter who will occur to most persons as the one who would naturally have been called upon for this work is the late William M. Hunt, whose work at Albany would have made a fitting preliminary to the larger and more conspicuous task. Now that we have lost Mr. Hunt, it was natural that the committee should turn to Mr. La Farge; and this, we are told, they are considering, though Mr. Vincenzo Steipevich, a Venetian painter living in New York, is also mentioned for the work. We know nothing of Mr. Steipevich's qualifications, but should hardly suppose that Mr. La Farge, or any other artist who was really able enough for the work, would be inclined to follow closely in the track which Signor Brumidi has marked out. His designs are, as we have mentioned, for a series of paintings in mimic bas-relief rep-

resenting scenes in the history of the country. Eight or nine of them, incidents of its discovery and early settlement, are already on the wall, although unfinished. Cartoons for the others are under way. The paintings were intended as a temporary substitute for a sculptured frieze which should in due time replace them; but this imitation of sculpture is distasteful, — would be so, we presume, to most of our readers, — and we have therefore argued against the desire to see Brumidi's work carried out here. At the same time it would be a superfluous disappointment to an artist who has given the greater part of his life's work to this building to see the part of it on which his interest was chiefly set given over to be replaced by another hand, while his own was still able to hold a brush, or even during his life. Brumidi's cartoons may be considered of value even if they are not to be reproduced in the place he intended them for. While we should not wish to see another artist employed to paint them on the frieze in the Capitol, and while we should yet be glad to see Mr. La Farge or a painter of his capability appointed to decorate the rotunda, one may well prefer to wait for it, and may like to see Brumidi retained in his position so long as he himself feels the desire and power to work, and indeed so long as he is left to this generation. There is no great haste to finish this part of the work; and the modest stipend that is assigned the artist is not too much for the Government to allow to one who has served it with zeal through many years, without enquiring too anxiously how much work he is at present able to accomplish.

THE English building journals bring more exact accounts than we have seen before of the death of the late Professor E. M. Barry. It was probably the result of a disease of the heart, and very sudden. He had continued working as usual up to the very moment of his death. His third lecture to the students of the Royal Academy had been delivered on the previous Thursday. On Tuesday, the 27th ult., he had been busily at work all day at his office, — arranging, among other things, the diagrams for his fourth lecture, which was to have been given on Thursday evening, — and in the same evening attended a meeting of the council of the Royal Academy, of which he was treasurer. While speaking on some resolutions he suddenly fell to the floor, and died in a few moments. His physician had already warned him of the necessity of interrupting his work; and he had proposed, so soon as his course of lectures was finished, to go abroad for relaxation and change. The notices of his life in the English papers give hearty testimony of the esteem in which he was held in his profession, at once for his attainments, and for his personal qualities as well as his artistic powers. He was held in honor abroad as well as at home, being an honorary member of the Academy of Vienna, and of the Academy and the Society of Architecture, at Amsterdam. He also received a medal of honor at the Paris Exhibition of 1878, having the year before been awarded the English Royal Gold Medal. Here is occasion for us to correct a blunder into which we fell in our notice of Mr. Barry's death, a fortnight ago, in which we spoke of Mr. Barry as having been president of the Royal Institute. His older brother, Mr. Charles Barry, who survives him, was Sir Gilbert Scott's successor in the chair of the Institute, of which Mr. Edward Barry at the time of his death was one of the vice-presidents. We fear that we may have fallen into a like error in ascribing to him the alterations of Burlington House, of which we find no mention in the list of works now ascribed to him. We wrote from recollection, for correcting or verifying which we have not our usual means at hand, owing to the loss of our files of the English journals in the fire of last January.

ROMANESQUE ARCHITECTURE. V.

[From an article by Mr. E. A. Freeman. See pages 28, 37, 45, 55, ante.]

IN Germany then the Primitive style was not so much displaced as improved, and no hard line can be drawn between the earliest buildings of the country and the latest in which no signs of the coming Gothic have begun to show themselves. In other countries, the latter half of the eleventh century is marked by a distinct change of taste, and in England we find a distinct displacement of one style by another, just as there was a partial displacement of one language by another. The art of Normandy became the fashion just as the speech of Normandy did. In Aquitaine it is hardly possible to avoid seeing the working of an influence from a more distant quarter, the result of an acquaintance with Eastern forms, Byzantine and Saracenic. In Italy the change took the shape of a falling back upon earlier forms which brings the architecture of the eleventh and

twelfth centuries far nearer to classical models than the architecture of the intermediate ages. But everywhere the latter half of the eleventh century is a time of great architectural developments. The age when men's minds were stirred up to and by such events as the struggle between Pope and Cæsar, as the first preaching of the Crusades, as the great advance of the Christians in Spain, as the Norman conquests of England and Sicily, was an age which could hardly fail to leave its mark on art, as well as on every other fruit of man's intellect. It is no slight sign of the times that the mighty temple of Pisa was reared as a trophy of victories won by her gallant citizens over Saracenic enemies in fellowship with Norman allies.

In Italy then the change took the form of a revival. Between the days of Ravenna and the days of Pisa and Torcello a style had been worked out in the great churches of Milan and Pavia, in which the massiveness of the square pier seems to have reached its height, and in which fancy ran wild in the strange and grotesque designs of the capitals and other ornaments. Such a style, which seems to have developed its characteristics as early as the ninth century, had much in common with the Northern Romanesque, to which it doubtless suggested ideas. The interior of Saint Ambrose at Milan, so far as it remains untouched by the changes of the twelfth century, looks like a rude foreshadowing of one of our own Norman buildings. It must have been a distinct reaction, a conscious falling back on the more graceful forms of earlier times, which led to the restoration of the basilican type at Lucca and Torcello. The massive and cavernous forms of Saint Ambrose and Saint Michael were left to the nations beyond the Alps, and Italy again fell back on forms essentially the same as those of Spálato, till her national architecture perished in the vain attempt to transplant the Gothic of the North to an unkindly soil.

Beyond the Alps, the national styles which arose at this time differ, as I have already said, far less in their detail than in the general design and composition of their buildings. It is true that as the traveller goes northward, he finds detail growing less and less classical at every step. Aquitaine is more classical than France, France than Normandy, Normandy than England. But these differences are, after all, not very important. They are hardly more striking than the local varieties of style which we find in all times and places; the component parts of an Aquitanian building would often seem quite in their place in England. But the general effect and spirit of an Aquitanian church, with its wide and often aisleless body, its cupolas, its barrel-vaults, its pointed arches introduced when there is not the slightest sign of approaching Gothic, make the buildings of Southern Gaul as unlike as possible in general effect to anything to which we are used, in Northern Gaul and in England. Where arcades are used, the rectangular pier, but in a less massive form than those of Germany, is preferred, as in the great abbey of Saint Sernin at Toulouse; a church which, built in the eleventh century, exhibits an earlier form of Aquitanian art, and which in its own class may almost rank with Durham and Pisa.

Meanwhile in Northern Gaul the familiar Norman style was growing up. We can trace its growth in its own country from churches like Bernay and Jumièges, where traces of the Primitive style still linger, to the fully developed Norman of William's own St. Stephen's, and thence to the more gorgeous forms of Bayeux in the next century. The introduction of this style into England is, as I have already said, a matter of recorded history. It made its first appearance in Edward's church at Westminster, which was rising in the new style while Olda was building his lowlier minster at Deerhurst in the style of his forefathers. The Norman Conquest confirmed the victory of the new fashion, but the two styles went on side by side almost to the end of the eleventh century. The churches of bishops and abbots, the castles of the king and his nobles, were built in the style of the conquerors, while the primitive forms of the vanquished still lingered on in lowly parish churches. Coleswegen at Lincoln built his churches in the ancient style, while the Norman minster and castle were rising above his head.¹ Ealdwine repaired the churches of Benedict Biscop at Jarrow and Monkwearmouth in a style not widely differing from that of their first founder.² And he did so barely twenty years before William of Saint Carilef began to crown the peninsular height of Durham with the noblest work of Northern Romanesque. The existence of two styles of architecture side by side, just like the existence of two languages, of two legal and social systems, is exactly what we should look for in such a state of things. Yet so hard is it for some minds to understand the nature of an argument that the fact has actually been turned the other way. The fact that some "Saxon" buildings are later than the Norman Conquest, as some Norman buildings are earlier, has been used to show that England had no distinct style of architecture before the Norman Conquest. Yet the fact that Coleswegen and Ealdwine built their churches in the elder style, while buildings in the newer style were rising everywhere around them, is a far more distinct proof that there really was a distinct earlier style, and that men were conscious of the difference, than any number of examples actually of earlier date.

By the end of the twelfth century, then, the new local forms of Romanesque were fully established in most parts of Western Europe. The relations of these styles to the contemporary Saracenic architecture, the stages of the Transition between Romanesque and Gothic,

that is, the steps by which the architecture of the round arch gave way to the architecture of the pointed arch, hardly form part of my present subject. My business has been to plead for Romanesque as a true and independent style of architecture, to plead for it as a style of unsurpassed historic interest. I know not what may be the feelings of others, but to my own mind Romanesque is the most historic of all styles. A Romanesque church or castle always seems to carry me nearer than any other building to the men who dwelt or worshipped within its walls. In a grand Gothic building, the purely artistic effect is so perfect, so entrancing, that it is hard to turn our thoughts from the art to the history. Take the two minsters at Rheims. The metropolitan church is one of the noblest triumphs of human skill; for that very reason it is less easy to enter thoroughly into its historic interest than it is in the Abbey of Saint Remigius. In the cathedral, the perfect harmony of pillar and arch and vault, the glorious colors of the windows, above all at the happy moment when the rays of the setting sun stream through the great rose, hardly leave us the will to think of the long series of pageants on which the painted forms in those windows have looked down, or even on that great day of all when the Maid stood, with her banner in her hand, beside the King whom she had led thither to his crowning. In the abbey, grand and solemn, yet strange, uncouth, and disproportioned, every stone seems to speak of its historic associations. Pope and Cæsar, Bishop and Abbot, rise up before us almost in their personal presence as they came together on the great day of its hallowing. We go back even to days earlier still, to days before the foundations of the present pile were laid, to the long array of princes and prelates who found their resting-places on that spot, and to the one day in all recorded history when a lawful Emperor received the crown of Augustus within the limits of the Western Kingdom. In the like sort, William and Lanfranc live at Caen, Odo lives at Bayeux, and William of Saint Carilef lives among the mighty arches of Durham, while later founders have reared works so perfect in themselves that we hardly stop to think of those who reared them. In a wide view of history, no time has a higher interest, no time is richer in instruction, than the long ages which pass on, like a stately procession, from the days of the Cæsars of Illyricum to the days of the Cæsars of Hohenstaufen. And alongside of the study of law, and language, and religion through those long and eventful ages, the study of their material works will form no unworthy companion. From the marble campanile of Pisa to the rude tower of Saint Regulus overlooking the Northern Ocean, each building has its tale to tell us: each brings home to us, in a way which earlier and later buildings hardly can bring home to us, the thoughts and deeds of the men who lived and died, who fought and wrote, beneath their shadow.

THE INTER-OCEANIC CANAL.

In the January number of the *North American Review* appeared an article covering some fourteen pages, by M. Ferdinand de Lesseps, on the Inter-Oceanic Canal, wherein he discusses the surveys already made by the United States Government, afterwards speaking of the later French expeditions under MM. Cécier, Wyse, and Reclus, at the Atrato-Tyra and the Aspinwall-Panama regions. Then, in a popular style, he endeavors to explain the decision of the International Congress at Paris, and why the Panama line, recommended by Lieutenant Wyse, was adopted rather than that from Greytown to Brito via Lake Nicaragua, favored by the American delegates.

In the February number of the same review appears a counter article of fifteen pages by Admiral Ammen, U. S. N., looking at the subject from the Nicaraguan point of view, analyzing and rather demoralizing many of M. de Lesseps's statements. Both gentlemen have, however, made somewhat broader assertions than circumstances warranted (evidently unintentionally), thereby weakening their case, and at the same time laying themselves open to criticism.

The vital difference of opinion is simply whether it is best to construct a canal with locks or not. If it is proper, then it is competent to consider the expediency of the Nicaraguan route, or some modification of it. If locks are not permissible, the Aspinwall-Panama route may be the best or may not: it is possible to construct a canal on any of the routes offered; whether it is wise to do so remains yet to be proved.

M. de Lesseps starts off with the assertion that the Government of the United States has expended five millions of dollars on its exploring expeditions, then urbanely tells us that these expeditions have been under the direction of its most distinguished navigators and engineers, have been very well conducted, etc. Admiral Ammen steps up promptly and suggests that ninety thousand dollars would be nearer the true figure, and backs up his remarks with apparently convincing details. In regard to the other portion, how does M. de Lesseps know about the competency of the navigators and the engineers employed? Did he ever examine them? Admiral Ammen, Commanders Selfridge and Lull, Lieutenant-Commanders and Lieutenants Hubbard, Hitchcock, Collins, Moser, etc., are naval officers, educated at Annapolis, where the course of civil engineering is limited. They are doubtless fine naval officers; they are certainly highly cultivated and agreeable persons to meet, they are unquestionably industrious and painstaking, but have they ever been heard of before as civil engineers competent to pass judgment upon or locate a canal costing in round numbers a hundred millions of dollars? Mr. Men-

¹ See Norman Conquest, iv. 219.

² Ibid. iv. 696.

ocal is the only professional engineer who makes statements on the American side.

On page 3 M. de Lesseps says: "In the examination made of different projects in the United States, the only plan thought of has been to make use of inland waters for constructing a maritime canal, and they have entirely neglected to study the methods by which they would secure a constant level of sea water for the purpose of navigation in a channel, from one ocean to another." Admiral Ammen shows distinctly that this is at variance with the true facts of the case, and from M. de Lesseps's own article it seems to be a palpable error.¹ Admiral Ammen then states that the special commission, composed of able engineers, appointed to personally inspect the routes over which it was supposed actual lines of location existed, made inspections to form an opinion as to the relative cost of execution, and found that the "Nicaragua route located by Commander Lull presented all the elements of calculation for an engineer." What does this mean? What are the elements of calculation referred to?

Admiral Ammen writes: "In April of 1866 a M. Gogorza sought my acquaintance and informed me that he knew a low line of levels across the Isthmus of Darien. . . . During the fall of 1876, after I had prepared a paper which was read, October 31, before the Geographical Society of New York, the Secretary of State presented me a pamphlet by M. Gogorza, who at length had given the world his great secret." Mr. Ammen must have fallen into error here, for the pamphlet in question was in possession of the Selfridge expedition of 1869 and 1870, and discussed at that time. [The writer understands that it was sent by the Emperor Napoleon to President Grant, and from him, by special messenger, to the Selfridge expedition, then at the Isthmus.] M. de Lesseps, on page 6, says: "As the plan of a canal without locks could not be realized at this place [Atrato-Tyra] I decided that some other locality must be sought for. It was then that Mr. Wyse and M. Reclus, availing themselves of the resources offered by the Society of Explorations, presided over by General Tün, and accompanied by the staff already mentioned, as well as by M. Werburghé, a very distinguished young traveller, who went with them at his own expense, set out on their expedition. They returned with the outline plan of a canal from the Gulf of Limon to Panama, without locks, crossing the Cordilleras either with a tunnel or a surface cutting.

"These explorations furnished all that was wanting to an exact knowledge of the American Isthmus throughout its entire length. From the combined labor of Americans and Frenchmen it was now possible, with entire certainty, to solve the question of an inter-oceanic canal." On page 8, "Moreover, is it to be supposed that the accomplished American engineers who selected the line Colon-Panama for the construction of the railway did so at hap-hazard? Was it not, on the contrary, because they recognized at the outset that this was one of the least elevated points on the Isthmus, and therefore the best adapted for their purpose?" This is exceedingly crude, and probably of little real value.

To say that the slight exploration made by these gentlemen furnished all that was wanting to an exact knowledge of the Isthmus throughout its entire length means one of two things — either that nothing whatever was wanting, or that the entire explorations are worthless. As for the Panama Railroad line, the writer does not remember at this time about the actual surveys made for that corporation, but is under the impression that the Panama Railroad grant, permitting them only to construct railroads and canals across the Isthmus of Darien and Panama, has, since the location of the railroad, been carried as far down the coast as Cape Tiburon, and by a line from that point to the junction of the Chucunaqua River and San Miguel, indicating that the corporation would, at all even's, a little rather not have any canal or railroad started within these limits without their permission. The engineers of the Panama Railroad should be better acquainted with the relative values of routes near their railroad than other people, but to suppose that these gentlemen recognized at the outset that this was one of the least elevated points on the Isthmus seems as probable as that they were influenced in their choice by divine revelation. As a fact, the Isthmus has never been surveyed. Some few lines have been roughly run from tide-water to tide-water, but of the six hundred and odd miles between Greytown, the proposed Atlantic station of the Nicaragua route, and the Napipi River, proposed by Commander Selfridge, nobody with a true knowledge of the facts can claim that over five or ten miles have ever been thoroughly reconnoitred. M. de Lesseps's statement that an exact knowledge of the American Isthmus, throughout its entire length, has been obtained, deceives nobody except those persons who do not keep posted. His opinion as an engineer, particularly as regards canals, in general, ought to be, and doubtless is, very valuable; but statements like the above are unsound and cannot fail to be detrimental to his professional record.

The United States coast-survey officers who accompanied the expeditions can probably give more valuable opinions than any one, — perhaps than Mr. Menocal. Not one word has been uttered by them, or by the army engineers, to show that they consider that the preliminary work has even been carried on in the proper manner — much less that data have been obtained sufficient to base an opinion on that deserves confidence.

A canal will be built, unquestionably; it may be at Colon-Panama,

possibly at Nicaragua; but neither should be seriously considered until several years of accumulated field notes, taken by competent engineers on some comprehensive plan of the entire Isthmus, shall demonstrate, beyond a peradventure, the superior fitness of one particular location over all others. Up to the present time the Panama and Nicaragua lines have been more carefully surveyed, and seem less expensive than any others — that appears to be the sum total of our knowledge.

Mr. Menocal and all the others deserve great credit for their efforts; but it is difficult to understand how engineers, working under the direction of naval officers, no matter how competent, will ever be able to obtain results sufficiently valuable to definitely fix the preference of one route over another.

It may be worth while here to refer to perhaps the most successful — certainly the best known — of American engineers, James B. Eads.

In the daily papers of January 21, under Washington news, appeared the following paragraph: "Mr. Wells (Democrat), of Missouri, introduced a bill incorporating the Inter-Oceanic Transit Company. It creates J. B. Eads and associates a body corporate, to be known under the name of the Inter-Oceanic Transit Company; authorizes such company to acquire such rights of way, by negotiation or treaty, as it may need to accomplish its object; secures to such company, if need be, the cooperation of the United States; provides that it shall commence the work within two years, and complete it within seven years, from the passage of this act, in which case no rights shall be granted by the United States to any other company or corporation within fifty years; authorizes the President to detail two ships of war to assist said Eads in making such full and complete details as may be deemed necessary, and appropriates \$2,000,000, to be immediately available to defray all expenses attending such surveys." Mr. Eads is known to favor a railroad rather than a canal, not perhaps so much from an intimate knowledge of the Isthmus, as on the general principles that he thinks the idea practicable. The scheme has been pronounced entirely visionary on all sides; but inquiry shows that the opposition consists simply in the fact that it has never been done yet. Now everybody, Admiral Ammen included, will acknowledge that, other things being equal, a thorough cut canal would be preferable to any arrangement with locks, — it would be exceedingly interesting to suddenly find both canal schemes entirely eclipsed by a railroad. B.

FRESH AIR IN OUR DWELLINGS.²

In attempting to combine in one apparatus the open fire-place and the modern furnace the first question governing the form of the apparatus which must be answered is, How much space should be allowed for the circulation of fresh air about the radiating or heating surfaces?

Deprived of food we can live on for weeks, but deprived of air we die in three minutes. Nature has, in the construction of our bodies, devoted half the space in the main trunk to the machinery for the supply and distribution of fresh air. The working of this machinery heaves the entire frame, giving it the only regular and constant motion apparent, and producing the only regular and constant sound audible to our senses. It occupies the central position in the body and has in its service the two most prominent features in that seat of honor, the face; that is, the nose and the mouth. Yet in our artificial habitations the machinery devoted to ventilation, if allowed a place at all, is treated with contempt and crowded into whatever chance space may be left for it after the work of building is done. Its inlets and outlets are disguised or hidden as things of which we should be ashamed rather than treated after the example set us by nature, as the leading decorative features of the edifice.

In the process of breathing, the blood is exposed to the action of atmospheric air, during which exposure it undergoes certain changes. "The blood from the right side of the heart when it enters the lungs is of a dark red color. It is then dispersed in a state of most minute subdivision through the ultimate vessels of the lungs, and in these vessels is brought into contact with the atmospheric air, when it becomes of a bright red color. In other words, the blood changes in the lungs its *venous* appearance and assumes the character of arterial blood. The blood, thus arterialized, returns to the left side of the heart, from whence it is propelled through the arteries of the body. In the minute terminations of the arteries the blood again loses its florid hue, and, reassuming its dark red color, is returned through the veins to the right side of the heart, to be exposed as before to the influence of the atmospheric air, and undergo the same succession of changes." (Prout.)

"The water given off by the lungs is not pure water, such as is liberated in the process of distillation or evaporation, but is contaminated with the most offensive animal effluvia. M. Leblanc states that the odor of the air at the top of the ventilator of a crowded room is of so noxious a character that it is dangerous to be exposed to it even for a short time. If this air be passed through pure water the water soon exhibits all the phenomena of putrefactive fermentation. The water of respiration, thus loaded with animal impurities, condenses on the inner walls of buildings and trickles down in fetid streams. In the close and confined dwellings of the poor this vapor condenses on the walls, the ceiling, and the furniture,

¹ We are disposed to differ here. It did not seem to us that Admiral Ammen made out his case very well. — EDS. AMERICAN ARCHITECT.

² This paper by the writer of the Open Fire-Place article will be incorporated with those articles in their separate form.

and gives that permanently loathsome odor which must be familiar to all who take sufficient interest in the poor of large towns ever to enter their dwellings. Take up a chair, and it is clammy to the touch, and the hand retains the ill odor.

"How much disease and misery arises from this cause it would be difficult to state with any approach to accuracy, because the causes of misery are very complicated. In the evidence taken before the House of Commons, on the health of towns, in the year 1840, the medical witnesses stated that scrofulous diseases were the result of bad ventilation, and that in the case of silk-weavers, who pass their lives in a more close and confined air than almost any other class of persons, their children are peculiarly subject to scrofula, and softening of the bones. Dr. Arnott stated that an individual, the offspring of persons successively living in bad air, will have a constitution decidedly different from that of a man who is born of a race that has inhabited the country for a long time; that the race would, to a certain extent, continue degenerating. Defective ventilation deadens the mental and bodily energies, it leaves its mark upon the person so that we can distinguish the inhabitants of a town from those of the country. This witness, in alluding to the want of knowledge among all classes on the subject of ventilation, states that he had heard at the Zoological Gardens of a class of animals where fifty out of sixty were killed in a month from putting them into a house which had no opening in it but a few inches in the floor. 'It was like putting them under an extinguisher; and this was supposed to be done on scientific principles.'" (Tomlinson.)

"One of the most obvious effects of an insufficient supply of air is the discomfort occasioned in those who are not habituated to the deprivation. This discomfort is an evidence of positive injury, and may increase till headache, prostration of strength, gastric disorders, and fainting occur. Closeness of air, not producing such marked symptoms, may cause dyspepsia and impairment of the general nutrition, — symptoms which are now recognized as related to the development of phthisis." (Lincoln.)

The amount of pure air required for comfort, as judged of by different persons through their senses alone, varies with individuals, and with the same individual at different times, and this to such an extent that their judgment cannot be relied upon. An atmosphere which may seem to one perfectly pure and agreeable, may to another, with a more sensitive nose, be extremely nauseous. "It is curious," says Lange in his work on ventilation,¹ "that the peasant (whose custom of living in the air of the open fields would make it seem most incredible) should be often the very one to insist upon an atmosphere indoors actually dense. In the winter the entire household, as well as a part of the stock of domestic animals, live together in a single small room, where all the cooking is done, and the peasant smokes his far from savory pipe. He seems to feel himself quite at ease, only when, as the saying goes, 'he can cut the air with a knife.'"

It is necessary, therefore, to refer to a more competent judge than our sense of smell in investigating the purity of the air we breathe.

The air of an ordinary living-room is altered by the occupants in two ways. First, by a change in its constituents, the oxygen being slightly diminished, while the carbonic acid and moisture are considerably increased; and second, by an addition of matter in the form of organic exhalations whose chemical composition and proportions are still unknown.

The chief constituents of air are nitrogen, which forms its largest part, oxygen, and carbonic acid. The former need not be considered in connection with ventilation. The air of a dwelling-room contains no more nitrogen than that of the open fields.

The relatively small abstraction of oxygen renders the consideration of this component also unimportant. The carbonic acid, though not the injurious element of the air of our houses, impoverished by ordinary respiration, furnishes the best means now known of measuring its impurity. Pettenkofer found that he could remain for hours in air containing 10 parts per thousand of carbonic acid without inconvenience. Forster states that he experienced no trace of difficulty in breathing during a stay of ten minutes in air containing 40 parts in a thousand. Hirt says that workmen in mines do not suffer as long as the proportion of carbonic acid does not exceed 7 parts per thousand. In our dwellings such high proportions of carbonic acid are obtained only in exceptional cases.

The harmful element of air consists in the organic impurities coming from respiration, as well as in the carbonic oxide of combustion, and the organic impurities are particularly injurious when they are left to decompose. These impurities are generally found to exist in direct proportion to the amount of carbonic acid present, so that the latter serves, in default of a more direct method of measurement, to determine the amount of the hurtful ingredients.

As for carbonic oxide, it is a highly poisonous and dangerous gas, one part in a hundred of air being sufficient to destroy animal life. "The chemist Chenot, having accidentally inhaled a single breath of [this] gas, fell on his back to the ground as if struck by lightning; his eyes were rolled in their sockets, and his extremities drawn up. In a quarter of an hour external sensation returned, with a feeling of cold and suffocation. A heavy sweat covered his whole body, while a peculiar hyperæsthesia of the brain existed."

¹ Zur Frage der Ventilation mit Beschreibung des minimetrischen Apparates zur Bestimmung der Luftverunreinigung. Zurich, 1877.

"Carbonic oxide is known to be often present in minute quantities in the air of inhabited rooms, proceeding from defects in furnaces or stoves, and to some extent from the imperfect combustion of illuminating material. Being a frequent ingredient of illuminating gas, it may enter a room through a leak or through the sides of flexible tubes. It has been found in tobacco smoke. Many people suffer from small amounts; the effects commonly attributed to its action in ordinary life are giddiness, headache, and prostration of strength. It exists in the smoke of a glowing candle-wick. Death occasionally results from the careless use of braziers containing charcoal, so commonly used in Southern Europe; King Alfonso very nearly lost his life from this cause a few years ago, in Spain. The danger of closing the chimney-draught of a stove arises chiefly from the probability that quantities of this gas will be thrown back into the room. The fuel (anthracite, wood, coke, charcoal, soft coal), which burns readily and without carbonic oxide while abundant fresh air is supplied, gives rise, when the draught is checked, to the half-oxidized product (CO instead of CO₂). In no case can we say that a given fire produces no carbonic oxide. For example, in a bed of live coals ten inches deep, we know that it exists in abundance in the central layers where oxygen is deficient in amount, and that it issues in quantities from the upper layer, where, again meeting with air, it becomes further oxidized or burnt, making a blue or yellowish flame, characteristic of the perfect combustion of anthracite and charcoal, and forming carbonic acid."

"Air may, so far as its effect upon health is concerned, be considered pure and good which contains not more than 6 or 7 parts in ten thousand of carbonic acid. A good rule is that it should contain under one part in a thousand. To attain an absolute purity would be impossible, even with the strongest ventilating currents, both because the outer air is itself not absolutely pure, containing from 2 to 7 parts of carbonic acid in the ten thousand, according to the locality; and because the organic product of respiration clings to the walls, ceilings, and furniture so pertinaciously that it may be said to give to every place its peculiar and characteristic odor. Boston Public Garden showed, in May, by four analyses, 3 parts in ten thousand." (Storer.)

THE ILLUSTRATIONS.

CUSTOM-HOUSE, ST. JOHN, N. B. MR. THOMAS S. SCOTT, CHIEF ARCHITECT, DEPARTMENT OF PUBLIC WORKS, OTTAWA, CANADA.

A VIEW OF THE OTHER FRONT AND THE PLAN OF THIS BUILDING WERE PUBLISHED IN THE *American Architect* FOR OCTOBER 4, 1879.

DESIGN FOR A COUNTRY HOUSE. MR. W. A. BATES, ARCHITECT, NEW YORK, N. Y.

A GROUP OF THREE HOUSES, MONT CLAIR, N. J. MR. H. H. HOLLY, ARCHITECT, NEW YORK, N. Y.

DESIGN FOR A CITY HOUSE. MR. EDGAR C. CURTIS, ARCHITECT, BOSTON, MASS.

The materials are brick and stone, which latter forms the capitals and bases of the columns and string courses and lower story. The house is designed in sixteenth century French Renaissance, of which there are so many beautiful examples in the southern parts of France, at Orléans, Tours, Blois, Chambord, etc. The plan is one used throughout Paris in all the first-class houses, but adapted to the American ideas of comfort for one family. Generally a stable occupies the end of the lot, but the narrowness of the front almost precludes this arrangement, not to mention the building laws in force in certain parts of the city. It is said that in New York there are several examples of city houses on this plan.

CORRESPONDENCE.

THE CASTLE OF HEIDELBERG. — FRANKFORT-ON-THE-MAIN. — THE ROYAL PALACE AT WURTZBURG. — TIEPOLO AND HIS WORKS.

WURTZBURG, BAVARIA.

BEFORE describing this fine old town I must speak of two or three other places which I visited on my way here, and which it would be high treason for an architect to pass by; but I acknowledge frankly that I can offer only sketches of these places which will be as hasty as were my own flying visits to a few of the many towns which are scattered all over this part of Germany. So much has been written of Heidelberg, and its romantic site has been so often described, that I am tempted to pass it over, but its castle, quite apart from its picturesqueness, claims our attention as the most important example of the early Renaissance on this side of the Rhine. Of the original capital of the Palatinate and the buildings of its powerful Electors, little was spared by the troops of Louis XIV., in 1693, the castle then being reduced to ruin. The town, now containing some 22,000 inhabitants, lies in the narrow valley which the Neckar has worn through the overhanging hills. It is a steep climb up to where the castle stands boldly out from the hill-side, but once there pretty shady walks lead to the great terrace, from which there is a beautiful and famous view of the castle and of the valley opening into the wide plains beyond. Passing under the massive square tower which defends the entrance to the castle, one enters a large

regular court, surrounded by buildings of varying dates, the most interesting being two façades at right angles, — one built in 1556 and the other fifty years later, — whose dimensions are respectively 26 metres long by 14.50 high, and 27 long by 22 high. What the Château of Chambord is for France, the Certosa of Pavia for Italy, and the Town-Hall of Seville for Spain, these feudal walls are for Germany. The early Renaissance of each of these buildings exhibits striking national characteristics. The French never abandoned the bold and beautiful *silhouettes* which the architects of François I. taught them to raise against the sky; the Certosa, in spite of the delicate carving of the style, reveals the Italian love for plain surfaces and marble panels; while the Spaniards, in their example, gave free play to their southern fancy and profusely chased their walls, so that it was actually called "silversmith's work." Here, also, in these two façades of Otto Henry and Frederick IV. will at once be recognized in their rich ornamentation that German perfection of workmanship which tempted them aside to mere feats of mechanical skill.

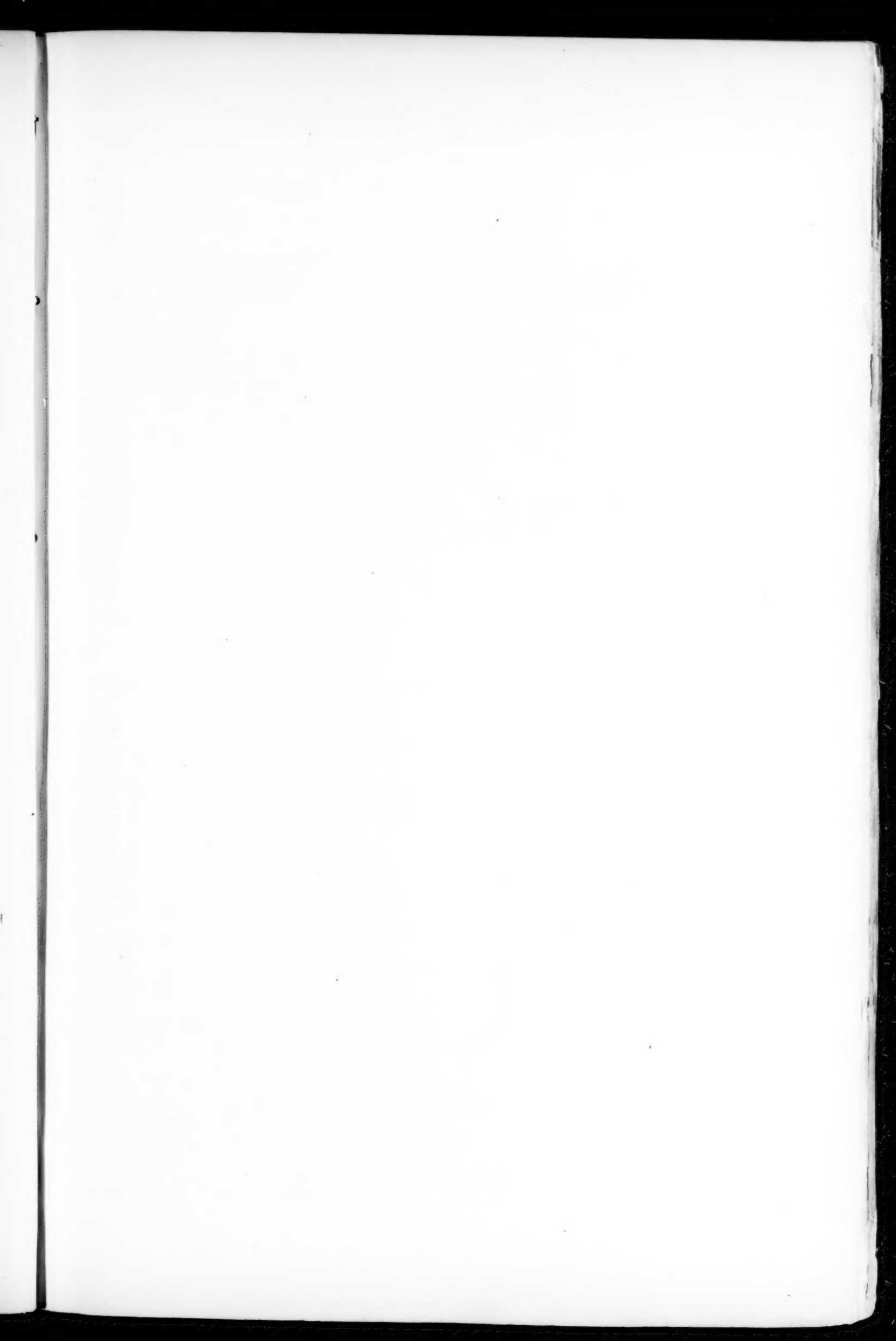
The earlier of these façades, that built by Otto Henry, is generally considered the finest example of Renaissance in Germany. This opinion must have become current at a time when all architecture was ranked according to its resemblance to Vignola's orders; but judging from a less prejudiced point of view, the wing of Frederick IV. is the finer, as more original in conception and more consistent in detail. The former building, with its three stories divided by entablatures supported upon pilasters, and its prevailing horizontal lines, is in its general aspect a bastard Italian offspring, though the florid carving in high and sharp relief above the windows and in the frieze is thoroughly German. The entrance is under the most exuberant doorway, with caryatides and a confusion of carving. The other and later building at first sight seems curiously enough to show a relapse into a Gothic sentiment. Its columns and pilasters are carried up as buttresses, and the entablatures are broken around them, while two great gables with curved outlines destroy all remaining classic reminiscences. The influence, however, here at work was probably not pure Gothic, but that of the French Renaissance, which for a long time made the classic architecture yield to northern forms of construction, and which at this period had completed its finest monuments. It is curious, also, that the classic allegorical statues of the first façade are replaced here by ones which are of true mediæval character, being portraits of the Palatine counts and their relations. It was, perhaps, the desire to represent with impartiality sixteen personages, that induced the architect to place niches and statues on the outer sides of the bays which gables surmount, and to place a buttress and its pilasters in the axis, thus reversing the natural and appropriate positions. The design, however, is beautiful and imposing in spite of much trivial detail. These details are carved and undercut with marvellous precision and skill; but the effect is that of wood-carving, and stone is not treated as such, while over all, even in really beautiful forms, is that Teutonic dryness, which is so unsympathetic that at first sight it obscures what is often admirable in design. Perhaps our worthy teetotalers in America will think this dryness is most lamentably lacking in other Teutonic characteristics when they are told that the celebrated "great tun" in the castle wine vaults holds 334,000 litres, and is 9.60 metres long, and with 6.90 metres for its central diameter! The interiors of the various buildings composing the castle contain nothing of interest, and of the wing of Otto Henry only the façade above described remains, without the roof or floors.

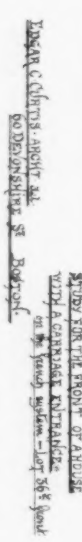
Two or three hours by rail from Heidelberg took me to Frankfort-on-the-Main, where I expected to find mediæval houses; but alas, I was a generation too late, and the picturesque old streets, such as Prout loved to draw, have disappeared before the requirements of a bustling modern city of some 100,000 inhabitants. The sombre, narrow "Street of the Jews," formerly so celebrated, has been pulled down, with the exception of a few black-browed houses which seem to scowl at their new neighbors. Few of the many Jews who have built up great fortunes in this city of finances have cared to preserve the houses of their ancestors; but the plain old house of the founder of the Rothschild family — I might almost say dynasty, such is their power throughout the world — is carefully preserved by his descendants. The cathedral, never remarkable, has lost its interest since its choir, of the beginning of the fourteenth century, which was burned down in 1867, has been rebuilt. Its lofty octagonal lantern is, however, a fine Gothic example. More historical than architectural interest here is attached to the restored Hall of the Emperors in the town-hall; for it will be remembered that most of the German Emperors were elected, and many of them crowned, at Frankfort. It is disappointing to find so little to recall those splendid ceremonies. Instead we turn to the modern Bourse and to the nearly completed theatre, to remind us that the city is being "improved." A new gallery for the Stædel Institute has lately been built on the other side of the Main. Among the pictures are some fine Dutch and Flemish ones, but the modern school of Schwind, Lessing, Overbeck, etc., has little of interest.

About half way between Frankfort and Nuremberg lies the ancient town of Wurtzburg, which it is well worth the while of an architect to visit, for besides its palace it has preserved much of its mediæval dignity and tranquillity. This royal palace, formerly an episcopal one, was built in 1744. In spite of the rococo taste of that epoch the simplicity of the main lines and the admirable proportions of the build-

ing give it undeniable dignity and beauty. The architects of that period, however they frittered away their power in minute and ridiculous ornaments, rarely did anything mean or trivial with the masses, and here the grand lines which rule from end to end of the building, and the well-proportioned windows, prompt one to forgive the childish decoration scrawled over it, for it really seems as if in the absence of the architect a riotous troop of school-boys had climbed upon the scaffoldings and scrawled upon the walls their whimsical fancies. So much for the power of current fashions in the eighteenth century. Subsequent generations on looking back will see that since then other interlopers, perhaps not boisterous boys, but Greek-browed maidens or thin-lipped sages, have played as woful tricks with the honest work of architects, who finally become convinced themselves that these officious vagrants are sent by the gods to give them immortality. With the appreciation of masses the architects of this period understood remarkably how to lay out the approach and surroundings of their buildings; here a spacious square precedes the large court of the palace. The entrance hall is wide and low and vaulted with a very flat elliptical vault. On the left opens the grand staircase, which, with its great hall, is one of the finest in Germany. Half way up, the stairs divide and return in two flights to the broad gallery which surrounds the hall. The architecture of this hall is really fine, at once robust and refined, and there is a striking absence of rococo ornament. One can but wonder how those riotous boys were kept out; especially when, on entering the halls beyond, they are seen to have been frantically at work, or rather at play, for never was there such an extravagant scrawling and sprawling of straggling stucco spider-like designs as on these walls and ceilings. They seem to have dipped their nimble fingers in stucco and gold — it may have been treacle — and careered about to their hearts' content. The great lunettes in the central hall are framed in the ample folds of stucco curtains, held back by cherubs, themselves stuck to the ceiling in a miraculous way. Enormous columns of stucco have brass capitals and bases, and the cornice *baroque* consoles of the same. All this is deplorable, outrageous, and in no way to be defended. One's Paritan morality is violently offended, and yet ere long that righteous indignation begins to subside. There is a subtle influence at work. It is not merely that the hall is vast, nobly proportioned, and splendidly lighted; there is over all the enchantment of exquisite color. That outrageous stucco order is of beautiful roe marble, on which the yellow brass gives a delicious note, while the lunettes and ceiling echo this chord with the loveliest harmonies. These effects are not fortuitous, nor due to the softening hand of time, but were designed by that prince of decorators, Tiepolo. In writing from Spain I spoke of his splendid ceiling in the palace at Madrid, and I confess to having visited Wurtzburg especially to see his great rival works here. Unlike other Venetians his best works are not in his native city, for neither in the Palazzo Labia nor in the churches is he seen at his best.

Among his frescoes the ceiling of the great staircase hall here is often ranked first. I was, however, disappointed to find it in such bad preservation; the ceiling itself cracking and the colors apparently darkened and injured. Yet it is a wonderful work. There is a rather flattened elliptical vault, and above the cornice are grouped in repose a procession, including characteristic types of men and animals from different parts of the world. The rest of the ceiling is chiefly occupied with clouds, with here and there allegorical figures. The tonality of the Madrid ceiling is very light and delicate, the palest and rarest blues, yellows, and rose, rendered even more delicate by the vigorous coloring of the walls, which are hung with rich crimson silk, and a most powerful note is struck by the dark bronze statues around the hall. Here the conditions are reversed. Whether originally so intended I do not know, but the walls of this staircase hall are of light stone, and the ceiling, on the contrary, is most vigorously colored with powerful accentuations. In the picturesque attitudes and accessories of the various groups Tiepolo has found fine opportunities for that tremendous *fougue* which fired him often in churches, to his injury. The central hall above mentioned has three great frescoes, more in his usual, and, I think, more successful style. The tonality of this ceiling is very light, the white plaster seeming to shine through and give transparency as the white paper to a water-color. A group of white horses seen from almost directly underneath are relieved with amazing skill against a pale sky; the group in the chariot behind them is most graceful, with the loveliest orange and pink tones. On the extreme right and left, towards the foreground, are comparatively vigorous groups, serving as *repousée* to the blaze of light diffused all over the rest of the scene. This ceiling has the beauties and some of the faults to be found in Tiepolo's work: lovely aerial color, elegance in the drawing and the composition, a most happy combination of diffused and concentrated light, with a few crisp accents of vigorous color. On the other hand it can be said that the perspective of the figures is violently foreshortened, and that the composition, however agreeable in its lines and *clair-obscur*, is quite meaningless, and the dramatic action of the groups does not explain itself. For the first I would say that when vertical perspective is introduced at all, it is better it should be boldly carried out, and the second objection seems to me a great merit. A ceiling should be decorated as *intellectually* as possible, — that is, there should be no attempt to express abstract ideas, nor to present a seriously interest-





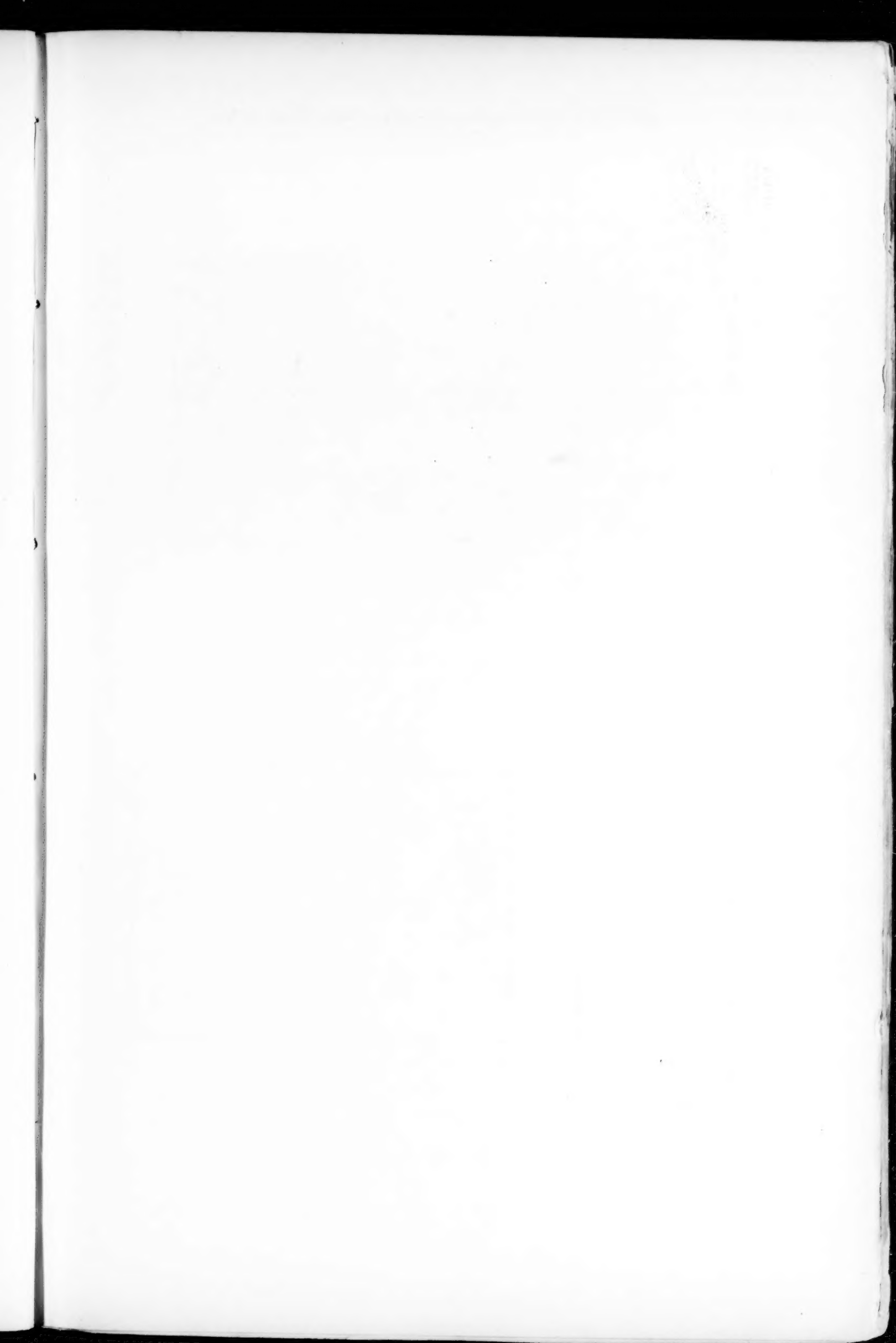
GROUND FLOOR plan.

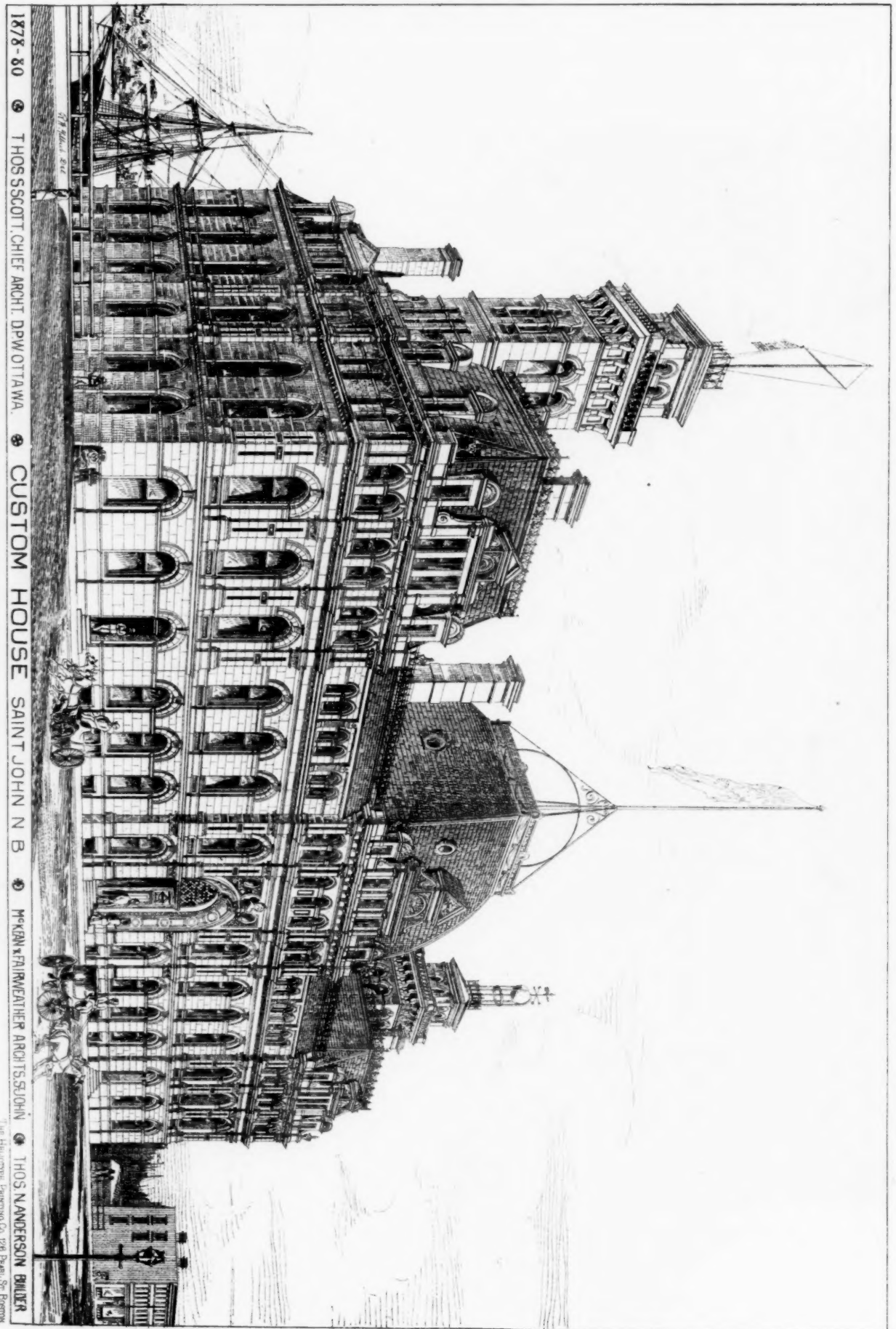
FIRST FLOOR PLAN

BED ROOM FLOOR PLAN.
Area: 11.7 sq. ft.

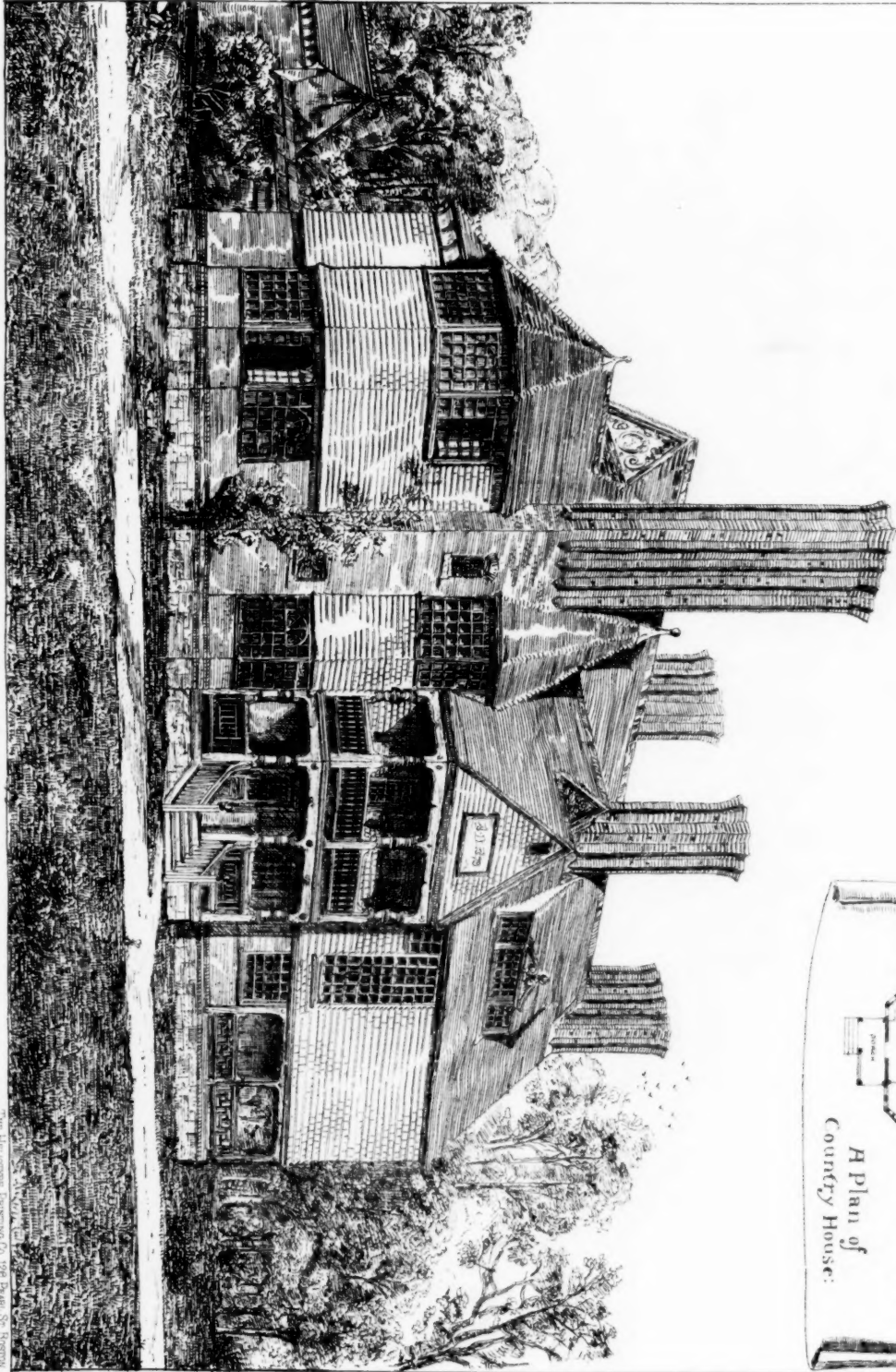
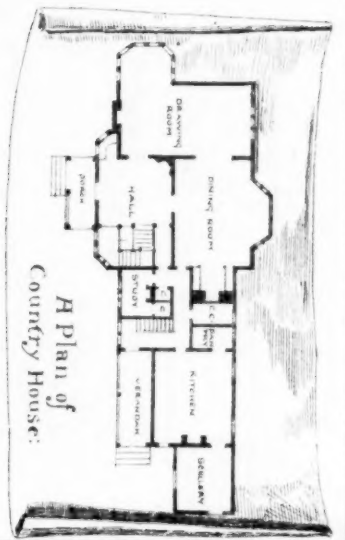
SKETCH PLANS of HOUSE WITH CARRIAGE ENTRANCE
on the French system - Lot. 30 ft front

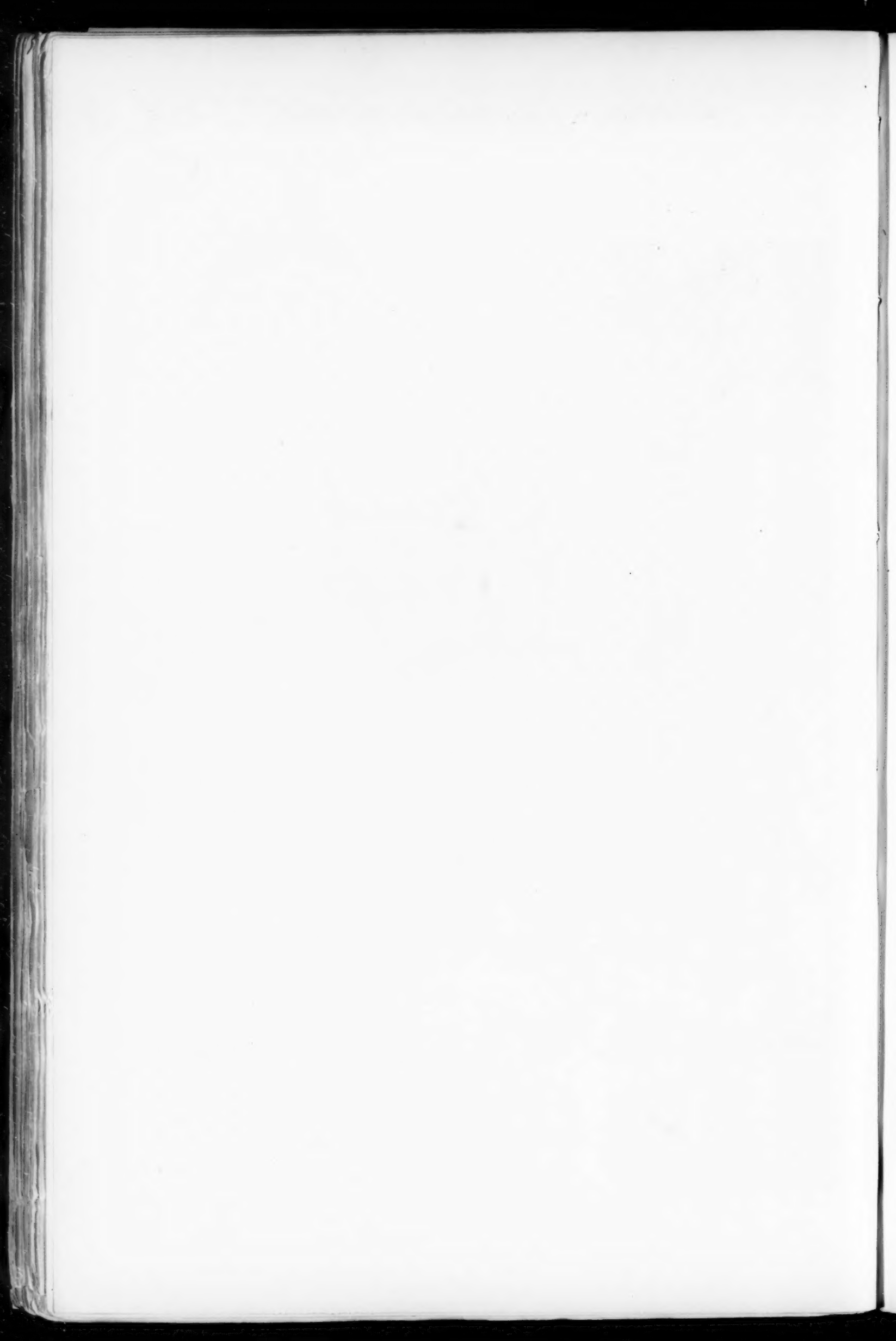
EDGAR C. CURTIS, ARCHT.
60 DEVONSHIRE ST.
BOSTON, MASS.



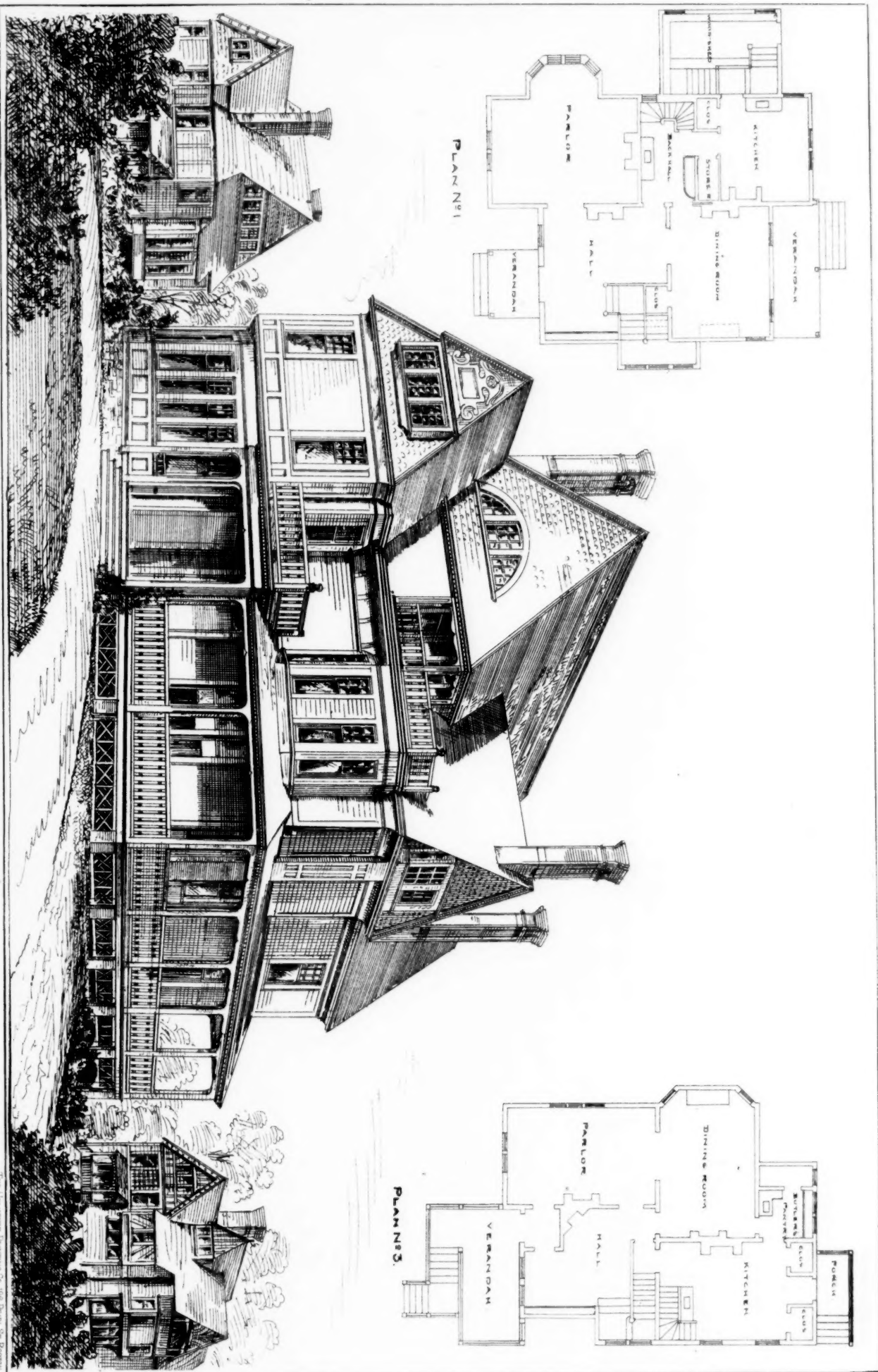


Wm. A. Bates, Archt.
N^o 45 W. 35th St. New York.





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A GROUP OF THREE HOUSES AT MONTCLAIR, N.J.
H. HUDSON, N.Y. ARCHT.

THE HEDGECOCK PRINTING CO. 126 NASSAU ST. N.Y.

ing picture, when the neck and eyes must be tortured if more than a rapid glance from time to time be given. That this was the opinion of Tiepolo is evident from the radically different manner in which he has treated the two great frescoes on the walls, — one a grand marriage ceremonial, and the other a reception of a grandee by some prince. There is here no eccentric action nor attitudes, and no attempt at effects for themselves merely. The story in each case is simply and very elegantly told. Veronese himself was never more dignified nor more the "grand seigneur." There is no *chic* in these two frescoes; drawing and color, details and composition, are all carefully studied. Alone this hall suffices to place Tiepolo among the first three or four decorative painters of the world.

His biography has never been more than very hastily studied, for his works have attracted little attention, owing to their connection with buildings in the rococo style, which artists and critics for the last half century have not thought it worth while to glance at.

Giovanni Battista Tiepolo was born in Venice in 1697, and studied first with Lazzarini, who was a thorough master of drawing. Later he worked under Piazzetta, celebrated for his *clair-obscur*. In spite of his immense natural facility it seems that Tiepolo studied with unflagging patience and ardor for a long time directly from nature, and his talent was supplemented by great acquisitions. His two sons, Giovanni Domenico and Lorenzo Tiepolo seem to have early imbibed his style and helped him in all his later work. I believe, also, that Mengozzi Colonna, an architect and decorator, accompanied them always, and to him is chiefly due the skilful drawing of the architecture often introduced in their compositions. Tiepolo painted nature only in her outward manifestations. He had no sermons to preach and no convictions to express. He painted joyously all that was beautiful and picturesque: in sentiment for the latter he has never had a rival. He took the diffused light of Veronese and struck across it the most brilliant gleams of sunlight, and this brilliant play of light upon light was his passion, and generally other considerations were sacrificed to this. Avoiding dark shadows, he gave value to his lights by rare and vigorous accent placed with consummate art, generally among the accessories with which he balanced his compositions, and which introduce often an eccentric element of bric-a-brac, out of keeping with his allegorical subjects. He attained an extraordinary skill in foreshortening, and I believe no one has ever painted flying and falling figures with such lightness and precision as he. These qualities naturally pointed to fresco as his medium, and his headlong facility found here its widest range. In his frescoes it is difficult to find one among his infinite variety of tints which is commonplace. His scheme of color was evidently founded upon that of Veronese. How much these tints are themselves rare and how much their elegance is given by contrast is not easy to decide, but he certainly made great use of complementary influence to give a delicate transparency to his tints. It is for this skill in coloring in true decorative style that I would bring Tiepolo to the notice of painters and decorators. With his love for the effects of light it is natural that he should have been a fine etcher, and he, as well as Domenico, produced a great number of plates. It is curious to note that whereas Rembrandt, who also loved *clair-obscur* above all else, blackened his plate all over to give intense force to a few concentrated sunbeams, Tiepolo kept his whole plate as light as possible, — hatching generally but once, and in one direction, — and sent brilliant light gleaming over everything by a few crisp, dark accents. Of these etchings Charles Blanc, in his life or rather sketch of the Tiepolos, speaks very highly, declaring that in them he shows qualities of a great colorist, which, however, he does not accord him in his frescoes. This latter assertion may be explained by the fact that the eminent critic (as he confesses) had only casually seen a few of Tiepolo's frescoes in Venice, and from these he could form no fair opinion of the painter's power. As I have said, the life of Tiepolo remains to be written, and it will well repay the biographer, for this brilliant painter's genius was the last spark of that splendid flame which had for so many generations fired Venetian artists. Art there had degenerated hopelessly, and it was left for Tiepolo to gather in one last triumphant effort — for his contemporaries ranked him with Veronese — all the resources of its technical traditions, and with his death, in Madrid, in 1770, the latter, too, passed away. There are in the library of St. Mark's, at Venice, some three hundred of Tiepolo's letters, which are full of historical interest, and give fascinating glimpses into the truly Venetian life at the Palazzo Labia, whose fair mistress may be pardoned for loving the reckless and brilliant painter.

I have no space left to speak of the other rooms in the palace, which are of minor importance, and I will only mention the skilful laying out of the small garden behind the palace. It is made to appear of really unknown size, so ingeniously are arranged the alleys and shrubbery, while a high semicircular terrace — the ancient town wall — is made to complete, by its varied flights of steps, its charming mystery. There are a number of churches in the town, but none of especial interest, but the general aspect of the streets is gravely picturesque.

R.

GREEK ART IN BERLIN.

THE Berlin Museum of Sculpture has recently been enriched by the acquisition of the most extensive and connected work of Greek art that has come down to the modern world. It consists of a large

portion of a sculptured frieze, forming part of an altar erected at Pergamos, by Attalus I., who lived from 241 to 197 B. C., to commemorate his victories over the Gauls. The subject represented is a battle between the gods and giants. The following is the history of the recovery of this ancient work and its transfer to the German nation.

In the year 1865 Herr Karl Humann, a Westphalian engineer, was employed by the Turkish Government to construct a road between the harbor and the town of Bergamah (the ancient Pergamos), in Asia Minor. Noticing how Turks, Armenians, and Greeks used the marble scattered about for building materials, and even for limekilns, he set about to investigate carefully the ruins of the place. He soon came upon several large slabs with sculptures in *alto-relievo*, and in 1872 presented three of these to the Berlin Museum. This led to his receiving a communication from Professor Curtius, the great Greek authority, informing him that an ancient Roman writer, Ampelius, who lived at the commencement of the Christian era, mentioned the existence at Pergamos of an altar 40 feet high, with sculptures representing a gigantomachy. At the initiative of Herr Humann, permission was then obtained from the Turkish Government to make excavations for the space of a year, the German Government providing the funds. The labor was commenced on September 7, 1878, and completed last summer, the result being the recovery for the Berlin Museum, at an inclusive cost of some £6,500, of a considerable portion of the valuable work mentioned by Ampelius.

The dimensions of the site which was covered by the construction are 123 feet square, giving a circumference of some 490 feet. Excluding the staircase space, there would remain a surface of 426 feet in length available for the sculptures. These being 7 feet 6 inches in height, the area occupied by the figures must have amounted to 3,195 square feet. In large slabs about one third of this quantity has been found, besides about one thousand fragments, many of which may yet be fitted in their proper place. Taking all the parts, large and small, it may be estimated that quite half of the enormous work will be forthcoming.

Many of the slabs found are much defaced and injured by earth, having been evidently used in bygone ages for ramparts. The Byzantines, later, employed those readily accessible in building, and, as has been said, the modern inhabitants of the district have taken whatever they could lay their hands on for similar purposes. Not a few of the slabs are, however, as good as untouched, and many more, merely coated with lime, are expected to be found well-preserved on its removal.

The work is in the boldest *alto-relievo*, many of the figures being almost entirely detached from the background. The marble is large-grained and colored, not uniformly, but varying from a blue to a yellowish shade. Gods and giants are portrayed as engaged in tremendous battle. The latter are variously represented. Some are snakey-footed and with wings, while others are of merely human form, as armed warriors. There are two groups covering eight plates — one where Jupiter holds the ægis in his left hand, and with the right hurls his thunderbolts; Athene is seizing by the hair a giant encircled by her snake, the Goddess of Victory advances to crown her, and Gæa rises from the ground in an attitude of supplication. On another series we recognize Helios coming up from the depths with his four-horse chariot, Apollo, Artemis, Dionysos, Hephestus, Boreas, and Poseidon. The characteristic features of the works of this period, when Greek art flourished for the last time, abound in these sculptures. The vigor, the wealth of invention, the boldness of representation, and the mastery of technique they exhibit, excite the greatest wonder and admiration. The unusual prominence of the relief gives the figures almost as complete statues, which naturally enhances the effect.

Besides the gigantomachy, parts of a second frieze, supposed to have adorned the interior of the building, have been discovered. These consist of thirty entire or partly-preserved pieces, five feet high and about three feet wide. The subject of these sculptures is uncertain, but is supposed to be the legend of Telephos. A number of statues, some of which appear to belong to the altar, have also been brought to light, and a few sculptures of a more remote period, including a female head of great beauty. The edifice which these sculptures adorned, called an altar, was really a considerable portion of a temple. Herr Couze, who presides over the sculpture department of the Museum, and other learned Germans, are still on the spot, endeavoring to ascertain the plan of construction and the position the frieze occupied in relation to it.

The great portion of the slabs have already reached the Berlin Museum, but they are not yet arranged for exhibition. The authorities are, however, doing their best to place the best-preserved and most complete groups for the early inspection of the public. — *The Architect*.

CONSERVATORIES AND GREEN-HOUSES.

[From a paper read before the Leeds Architectural Association by Mr. Maurice B. Adams, A. R. I. B. A.]

WE will take the plant-house first. This is frequently made a span-roofed structure, and 18 feet wide is found to be a width which will admit of the most advantageous arrangement of fittings. It is usual to place a flat stage on either side and a stepped one in the centre, thus leaving a walk all round the house. The pipes for heating can be conveniently arranged under the side stages. A span

roof is the best form that can be erected, as the plants, having light all round them, are not so liable to be drawn to one side or the other, and thus become of bad shapes, as they are likely to be in lean-to houses. A span-roof house should be placed with the ends north and south, as by this means each side secures an equal amount of sun. The length from end to end may vary according to circumstances, but it is generally advisable not to have one house more than 40 or 50 feet long, as by dividing it up and heating each house separately, the gardener is afforded greater facilities for growing his plants. The heating-apparatus can easily be regulated in connection with one furnace as at Kew, where one big boiler heats three or more houses.

The half-span house is the next best, and is very frequently used where a back wall exists. The light is not so well distributed as in a span, but the house has a great advantage over the lean-to house for plants. Internally, the most convenient arrangement will be to have a flat stage in the front and a stepped stage at the back. I may here say that if no other provision be made for obtaining water, warmed in proportion to the temperature of the house in which it is to be used for watering the plants, a tank or cistern should be arranged in the floor of the structure for this purpose; a trough under the passage-way is a good method.

A lean-to would be fitted in the same way; both half-span and lean-to buildings should run east to west, facing the south and rather inclining towards the east. In this country [England] the angle of 45° is, for most purposes, found the best pitch for horticultural buildings generally.

For plant-houses one foot of four-inch pipe for every 28 or 30 cubic feet of air will be found to give a proper temperature.

The intermediate house is used for growing plants that require a somewhat higher temperature than the plant-house, but not so high as the stove. One foot of four-inch pipe to about 25 cubic feet of air will answer best in this case, and in other respects the building resembles the plant-house.

The stove-house is more usually made with iron stages carrying slate shelves covered with stone-chippings, sand, or small shells, on which the pots stand, thus obtaining a soakage for the superfluous moisture after watering; and from an artistic point of view, this system of gravelling the shelves with small shells is much to be recommended, especially in ornamental houses, where the ground space should be laid out, as far as possible, in natural beds instead of devoting the room entirely to stages. If wooden stages were employed in stoves similar to those employed in the plant-house, where they are made of stout laths $1\frac{1}{2}$ inch by one inch, about $\frac{5}{8}$ inch apart, it would be found that owing to the great heat kept up and the quantity of moisture usually produced they would be liable to speedy decay. The stove may be either a span, half-span, or lean to structure. Each form has its advantages, though, all things considered, the span-roof is the best. This house is heated in the proportion of one foot of four-inch pipe to about every 20 cubic feet of air, and the same system applies to the orchid-house. These proportions must, of course, be taken as a medium guide, for it is evident that the quantity of pipe necessary to keep up a given temperature will vary according to different situations and local influences; thus houses in the north of England and Scotland will require more pipe than those in the south of England. Also, a span-roof, because it has a much greater cooling surface, will require more pipe than a half-span or lean-to, where the back consists of a brick wall, but the proportions of heating power which I have just given will be found sufficiently accurate for a basis. At the risk of being tedious, permit me to say a few words more with reference to the subject of heating, because the particulars may be of value for future reference, when a more strictly accurate rule than the above calculations is required. It has been found from careful experiments that one square foot of glass will cool $1\frac{1}{4}$ cubic feet of air per minute, as many degrees as the difference between the external and internal temperature. Therefore, having taken out the number of square feet of glass, multiply this by $1\frac{1}{4}$, which will give the number of cubic feet of air to be warmed per minute. Then proceed by the following rule: Multiply 125 by the difference between the extreme external and internal temperature, and divide the product by the difference betwixt the temperature of the building and the pipes (the latter being usually calculated as at 200°); this quotient being again multiplied by the number of cubic feet necessary to be warmed per minute, and divided by 222, will give the number of feet of four-inch pipe required to bring the building to a proposed temperature. Suppose it be required, for example, to ascertain the quantity of pipe to heat a vinery with 400 square feet of glass to 75° , and, estimating the lowest external temperature at 20° , the calculation will be as follows: 125×55 (difference of external and internal temperature) = 6,875 $\div$ 125 (difference between temperature of pipes and house) = 55, which multiply by 500 (number of feet of air to be warmed per minute) = 27,500 $\div$ 222 = 123 $\frac{4}{9}$, the number of feet of four-inch piping necessary.

The forcing-house is used, as its name implies, for forcing on plants, etc., before they are placed in the conservatory or other plant-houses. It is usually fitted with beds having pipes below them to heat the soil with what is called bottom heat. The beds are made with iron pillars supporting slates which form the bottom of the bed, the same material being used for the sides and ends. The air flues are formed in the wall of the building, and are so arranged in conjunction with the slate trough, so to speak, which carries the bed,

that the heated air may pass up in the front as well as at the back, fresh air being admitted below in a flue, or air-drain, running from end to end, and which can be regulated at will. By this means the house can be supplied with fresh heated air when it is not desirable to open the front ventilators. And here may be said that the most usual way of ventilating buildings of this kind is by allowing fresh air to enter at the lower portion of the building, either by an air-drain or by front ventilators, which, in some cases, are also repeated below the lights in the brickwork in the form of wooden doors or flaps. The heated and vitiated air is then allowed to pass off at the apex of the roof by lifting lights worked from below. Any system which admits fresh cold air over the whole surface of the roof equally does not practically do the work so well, simply because no draught is set up, as is the case in buildings such as I have described; and in very windy weather, much cold air which is not wanted must find its way into the building, when so many small ventilators exist all over the roof, a good number of which must necessarily soon fail to fit exactly as they may do when first fixed. With regard to the pipes being carried on bearers above the ground instead of their being buried in the soil, as is sometimes done, it is worthy of note that by this means they are less subject to moisture, and less liable to corrode. For forcing-houses, about one foot of four-inch pipe to from 15 to 16 cubic feet of air will be found in good proportion.

MR. RUSKIN'S DRAWINGS.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, — Before seeing Mr. Ruskin's drawings¹ curiosity was rife to know which phase of his varied pen-work would be found repeated by his pencil and his brush. We had been told a great deal about his technical ability, — especially since the Whistler controversy, — we had read a great deal about the qualities he deems necessary in the work of others, we had heard a great deal about his courses of practical advice to students, and we looked for some decisive element in his handiwork by which we might judge the value of his theories, some characteristic excellence or defect with which those theories would stand or fall. But when seen, the wisest criticism is found to take a negative tone. There is little that is original or peculiar in the work, one way or the other. It would simply be rather uninteresting could one not regard it from a psychological as well as from an artistic point of view. Looked at in this way, the catalogue is the most important part of the exhibition, — of more worth without the drawings than they without its comments. Dated, explained, and appraised by Mr. Ruskin himself, they become valuable as a most naive bit of autobiography. Hence it may be guessed that the element in his writings to which they correspond is that which brings his own individuality prominently to the front, discussing and referring to it as of like, if inferior, æsthetic interest, with Venetian arches and Turner's intuitions.

The first thing impressed upon us by this catalogue, perhaps, is the fact that a keen sense of the ludicrous is a safeguard in self-criticism of an intellectual as well as of a social kind. Such a sense seems quite absent from Mr. Ruskin's anatomy. The list begins with a couple of maps, such as we have all done in our day, neither better nor worse, save that the names are very carefully painted. It is a bit of magniloquent overstatement when Mr. Ruskin says that the painting was "an excellent discipline of hand and eye, and the lines drawn for the mountains and sea a most wholesome imitation of steady engraver's work." The next drawing, done at twelve years old, he labels "infinitely stupid, but showing steady power and will to work." The first clause is certainly true, the second no more true than it is of a thousand sheets turned out yearly from our schools and drawing-academies. A couple of more early sketches (No. 7) are explained as "interesting to me now in their proper economy of paper and their weak enthusiasm, and the fastening so early upon the Rock of Arona, afterwards drawn for Modern Painters." Mr. Ruskin sees nothing mildly absurd in the fact that they should be thus interesting to him, nothing fatuous in the belief that the public will in its turn be interested in that interest of his. This sort of complacent dwelling on his failures and deficiencies as well as his successes runs through the catalogue of his later works, as, indeed, through so many passages of his books. Failures and deficiencies being his must needs attract us, or serve as signboards to mark the limits of possible advance. What reason else could prompt the labelling of No. 83 "Study for etching after Turner's drawing. A try for truer rendering of the England drawings. Failure?"

If we turn now to the actual technical merit of the drawings we shall first be struck by the fact that there is not a picture among them. I do not forget that their object is instruction, — demonstration merely, — that they are intended to show the truest methods, not the greatest possible results. But a man with the executive artistic instinct makes a picture whenever he touches paper, — a picture suggested or imagined, though not necessarily developed or even explained. There has been an artistic necessity for his choosing, as he has chosen, an instinctive act of composition. No one has more thoroughly explained this than Mr. Ruskin. No one exemplifies it less than he. This would be, by itself, perhaps, a valid reason for doubting whether a different scheme of early education could ever, as he himself believes, have made him a true artist, — for I suppose that is what he means by saying: "Had I been permitted at this

¹ Recently exhibited in Boston and New York.

time to put my whole strength into drawing and geology, my life, so far as I can judge, would have been an entirely harmonious and serviceable one," and in another place, "the power of delineation, natural to me only because more accurate." That he possesses small "power of delineation," in an artistic sense, — whatever may be the case in a topographical sense, — is shown in his slight sketches, which cannot certainly be described as abstracts with all the vitality preserved and emphasized, as are, for example, the dozen-stroke etchings of Rembrandt. But it is shown no less in elaborate studies, like No. 87, A Stone of my Garden Wall. With all its patience and apparent accuracy, vitality of line and color are lacking still. No one could deny, of course, that there is a great deal of cleverness in Mr. Ruskin's work, but it is the sort of cleverness that comes by trying, — not as a birthright. He shows us no spontaneous, if imperfect, childish essays, such as one usually finds from an artist born. He starts with labored imitations of other men, and ends with labored imitations of nature, — all thought out and done by rule, very evidently in the simplest sketches as well as in the elaborated work. Good form is constantly to be found, and there is good color of one kind in No. 21, Mats and Fish-Baskets, and of another and very exquisite quality in No. 69, Part of N. W. Porch of St. Mark's, and there is a strong sense of the motion and quantity of water in No. 28, Falls of Schaffhausen. But each fine quality is found by itself, — here color, here line, and here chiaroscuro. To separate them may be good occasional practice for the beginner. To lay violent stress upon one while hinting at the others is sometimes the prerogative of an artist specially, if narrowly endowed. But to produce cold and definite studies, now of one and now of another, one's whole life through, is not to prove one's self an artist; for the truest art must be a synthesis, more or less perfect, of its various factors. Mr. Ruskin's are, I repeat, not short-hand notes of pictures, possible or intended, but memoranda, separate and distinct, about the varied qualities that go to make a picture.

Even as lessons of method these drawings do not seem to be quite all their author claims for them. The etchings after Turner are, perhaps, the most instructive. It is hard to see in exactly what consists the excellence of the sketches (numbered 49), for example, of which it is said, "They show what I have finally adopted in manner of pencil-drawing, and I believe my pupils will find it a satisfactory one for rendering the essential qualities of form." It is interesting, again, to notice No. 85, A Photograph from Drawing of Gneiss with its Weeds. "Old drawing of Modern Painters time," says Mr. Ruskin, "which really had a chance of being finished; but the weather broke and the stems in the upper right-hand corner had to be rudely struck in with body color. But all the mass of the rock is carefully studied with good method." Oh, the wasted labor of this sheet, where the best part is indubitably just that slighted corner. It is most disappointing, by the way, in all the one hundred and six numbers not to find so much as a hint of figure drawing, which Mr. Ruskin has practised much, I believe, and which he rightly extols as almost the beginning and the end of art.

In conclusion, I may say that if a good technical artist were to exhibit a series of his works, beginning with the very earliest, it would need no printed commentary to explain its value or enforce its lessons. But Mr. Ruskin is primarily a critic, and a teacher who uses and refers to his technical performance merely to sustain and illustrate his criticisms. So we turn first to his catalogue, for its own sake, and then to his drawings, as a gauge by which to try his words. And not from his drawings directly, but only by comparing them with his judgments upon them, can we test the probable value of his opinions in a wider field.

M. G. VAN RENSSLAER.

THE "QUEEN ANNE" STYLE.

"F. A. W." raises a question which is by no means easy to answer, — What is the exact definition of the "Queen Anne" style? The term is so loosely used, and the real examples of the style have so little that is characteristic about them, that every builder and furniture dealer can rehabilitate his obsolete designs, or invent new and unheard-of ones out of his own head, and put them boldly forward as examples of the new style without much risk of being repudiated.

The safest way of investigating a style is to study the constructional requirements from which its motives are derived. In this aspect, the distinguishing characteristic of the English buildings — the best examples — erected in the early years of the last century was their extensive use of brick. There was no question of Gothic or classic form with their builders; some remains of the mediæval passion for picturesqueness may have unconsciously come down to them, but the design of detail was thoroughly and wholly classic, as they understood classicism, and had been so for a hundred and fifty years. They had no patterns or models whatever for balustrades, window dressings, or interior finish, which they did not believe to be derived from the Italian or French Renaissance, the crown of architectural fashion.

Nevertheless, the local use of cut stone, which had persisted, from its exclusive use in Gothic ages, through the "red brick and ashlar" compromise of the Elizabethan and Jacobean period, to that time, seems to have suddenly declined, and with this came a change in forms, necessitated by the change in material. Perhaps the decline of skill among the stone-cutters, which we know to have taken place then, was a cause as well as result of the movement; however that

may be, red brick, moulded or plain, began to take as far as possible the place of stone. Flat or segmental arches superseded lintels, mullions disappeared, gable copings were ingeniously contrived out of bricks on edge, and moulded and carved brickwork supplanted stone for string-courses and panels. With this came a modification in the general character of design; the bold projections, corbels, and consoles of stone could not be imitated in the small material, and flatness and delicacy became the rule.

All this was rational, and consequently satisfactory to both taste and understanding, and so followed, not caricatured, no style is more suited to the requirements of our own time, or better adapted to serve as the ground-work on which the more catholic taste of our day might operate to develop new beauties of its own.

Contemporaneous with this brick architecture, but far less definitely bounded within a given period, existed in England a "half-timbered," or "wood and plaster," construction for rural buildings, not differing materially from that in use since the days of Elizabeth, except that details, where such luxuries appeared, were more frankly classic. These serve as models for the English architects of to-day.

In our own country appeared a modified style, more interesting than either of its parent fashions, as being an attempt to combine both in a structure different from either; to recall the picturesqueness of Devonshire and Kent, as well as the aristocratic elegance of the towers, in studding and clapboards. Little of this is now left; here and there an overhanging upper story, a prettily carved Corinthian capital, or delicate moulding in wood, or a picturesque turn to a roof, reveal the skill and taste of the colonial builders, as well as their poverty in material; but it would be well if such examples as we have were adopted for our similar constructions of the present day, instead of attempting to imitate at second hand in seven-eighths boards and shingles the brickwork and half-timber which Norman Shaw and the other English architects can study in original examples at every step, while they are as unfamiliar to us as our own clapboards and studding would be to them. How difficult it is to succeed in our second-hand imitation, Mr. Price's pretty design, referred to by "F. A. W.," shows. His problem evidently was, to construct a country house of wood in a hot climate. This requires verandas, but there being no authentic example of a real Queen Anne veranda, the designer invented one, using posts suggested by the so-called Jacobean furniture legs, and supplied with a Queen Anne flavor by introducing a mock fanlight, of the ortholox pattern, between the posts. A tower, for a look-out, being also demanded, and the proper examples of such being in England, out of reach if they exist at all, the architect has adopted a kind of French Colombar, spiced, like mock-turtle soup, with a real Queen Anne sun-dial on its wall to give it the proper smack. So with all the other details. It is no disparagement to the designer, but the reverse, to say that his talent has made a beautiful and harmonious whole out of necessarily various materials, in which the Queen Anne element holds a comparatively small place. If there were any other name for it no one would think of calling it by that one; but it is not Gothic, or Ionic, or Corinthian, or Romanesque, and yet it must be christened somehow; and so, on the principle of the French painter, who called his picture the Sacrifice of Isaac, though both Abraham and Isaac were explained to be out of sight around the corner, this and all the other nondescript structures of the period are endowed with the name for the moment fashionable.

C.

THE "QUEEN ANNE" STYLE.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, — The following quotation from a local daily paper may perhaps contribute a little to the fog in which "F. A. W." finds the "Queen Anne" style to be enshrouded, as well as to show what is retailed for Queen Anne in these parts.

"At the front a spacious square bay-window which will contain a sheet of plate glass 72 x 80 inches, surrounded by setting of stained glass, and stucco work in the Queen Anne style."

The report itself is doubtless correct.

GRAPHITES.

NOTES AND CLIPPINGS.

THE WASHINGTON MONUMENT. — The committee on the District of Columbia has adopted a bill appropriating \$677,000 for the completion of the unfinished shaft of the Washington Monument.

MR. RUSKIN ON THE RESTORATION OF ST. MARK'S. — Mr. Ruskin has just printed a pamphlet for private circulation, in which he explains his silence respecting the projected restoration of St. Mark's Church, in Venice. He says: "I am now entirely unable to take part in exciting business, or even, without grave danger, to allow my mind to dwell on the subjects which, having once been dearest to it, are now the sources of acutest pain. The illness which almost killed me nearly two years ago was not brought on by overwork, but by grief at the course of public affairs in England, and by affairs, public and private alike, in Venice; the distress of many an old and deeply regarded friend there among the humbler classes of the city being as necessary a consequence of the modern system of centralization as the destruction of her ancient civil and religious buildings."

A STATEMENT WITH A MORAL. — An architect has declared the Presbyterian church at Vinton, Iowa, unsafe, and it has been closed. The church was built two years ago at a cost of \$35,000.

A FIND OF STATUETTES. — The Marchese Grillon, the husband of Mme. Ristori, is building a mansion in the new and yet unfinished part of the Via Nazionale, Rome, and recently, in digging the very last spadeful, almost, of the foundations, the workmen came upon a large deposit of ancient bronzes. The find was at once seen to be a very important one, and it has been pronounced by a very competent authority, on a first but by no means complete examination, to be worth at least 75,000 francs, and probably more. Some of the statuettes found are of Roman, and others of superior Greek workmanship.

CANNON FOR OUR SOLDIERS' MONUMENTS. — So many applications have been made, by means of bills in Congress, for grants of condemned cannon, to be used in building soldiers' monuments, that the Secretary of War has been called upon to make a statement, showing how many such cannon have been given away, and how many there are left. There were none given until 1868. In 1870 there were given 195 bronze cannon, worth \$22,638.60, with \$1,275 worth of iron cannon; in 1871, 43 bronze cannon, worth \$13,333.76, and \$1,240 worth of iron; in 1872, 74 of bronze, worth \$8,900, and \$556 worth of iron; in 1873, 110 of bronze, worth \$31,522; in 1874, 136 of bronze, worth \$15,709; in 1875, 14 of bronze, worth \$3,602. In 1876 only 4 bronze cannon were given, and in 1877 none; but in 1878 the number rose to 24, and in 1879 to 37. The total weight of the bronze cannon given for these purposes was 512,739 pounds, and of iron 357,084 pounds. The value of these cannon was \$111,345. There are only 268 condemned bronze cannon left, and 230 of iron. The Lincoln monument needs more bronze cannon than can be furnished, and there are demands from the Gettysburg Battle-Field Memorial Association which ought to be satisfied. There are yet to be called for 120 guns given away by acts recently passed.

PROTECTING ST. PAUL'S FROM LIGHTNING. — Some six years have elapsed since a system of lightning conductors was applied to St. Paul's Cathedral by Mr. John Falkner, of Manchester. That the system has proved itself, so far, an efficient one, the number and severity of thunderstorms since then, and the absence of damage to the Cathedral, is sufficient testimony to the excellence of Mr. Falkner's method. His mode of proceeding in fitting the conductors he thus describes: "In the metallic connection, with cross, and ball, and scrolls, are eight copper conductors, each being a half-inch strand of copper wires. The octagonal strand has been adopted as giving most metal in the least space. These eight conductors pass to the metal railing of the golden gallery, with which they are in metallic connection. Thence they are carried down to the dome, to the metallic surface of which they are again connected at several portions of their length. Then down the rain-falls over the leaden roofs of the aisles, in the angles formed by the aisles themselves; again down the rain-falls to the sewers. Further, the choir and nave roofs are connected together by a saddle, or conductor, stretching over them both, and joined to the conductors proceeding from the summit of the west towers." The dome, aisle roofs, and ball and cross, and the two western towers thus form one immense metallic conductor. The copper strands are passed into the sewers for the sake of the moist earth connection, and are here rivetted to copper plates, which in turn are pegged into the earth. Mr. Falkner's system of practical testing he carries out as follows: At any point to be tested a wire is carried to a neighboring gas-pipe for a second earth; this wire is attached to an ordinary vertical galvanometer, and this again to a couple of Leclanché cells, the other pole of the two-celled battery carrying a wire which is touched to the portion of metal roofing to be tested. The galvanometer is first deflected with only the wire in circuit, and the deflection is noted. Then the earth-connections are made, and the deflection is again noted. Unless the deflections are identical within a limit of one or two degrees, Mr. Falkner proceeds to re-connect by bands that portion under test to some other portion giving perfect earth. In this way nearly every square yard of the leads has been tested. Only very recently this test has been applied with satisfactory results. The subject of lightning conductors is one that is exercising architects very considerably just at present. It may be hoped that the outcome of the present discussions and volumes of written opinions will produce some practical results. — *The British Architect*.

THE LONDON OPERA-HOUSE. — We are in doubt whether the following item, which we clip from a daily paper, refers to some new movement for recommencing work on the abandoned opera-house on the Thames Embankment, to which we have often referred, or whether it explains the method by which money for the original undertaking was raised. The item reads as follows: —

"A grand National Opera-House is to be built on the Thames Embankment in London, and it is expected will be a model theatre. The cost will be \$750,000. The plan on which it is to be built is rather a strange one. Each shareholder on taking a share receives 5 per cent interest, and in addition is allowed to nominate the life of anybody he chooses. The annual income of the opera-house is divided ratably among the shareholders, and, as each of the so appointed lives or nominees deceases, those shareholders only whose nominees survive continue to divide ratably the annual income, until eventually the shareholder whose nominee survives all the others becomes entitled to all the property: but, until this occurs every year brings him in from 20 or 30 to 50 per cent, as the case may be. Each shareholder has a right to name a life in respect to each of his shares, and in order to expedite matters so that the fortune may be determined within a respectable time, no one is to be nominated that is under 60 years, and when the next ten, twelve, or fifteen years have passed away the lucky winner will be left to enjoy his property."

THE DUSSELDORF EXHIBITION. — The building in which the exhibition of next year is to be held at Dusseldorf is now, so far as the walls and roofing are concerned, complete. The length of the main building is 1,181 feet, and the area it covers is almost exactly equal to that of the Exhibition Palace at Sydney, New South Wales, or about half the length of the great Exhibition Building at Paris in 1878. The total number of exhibitors in the industrial portion, reckoning the numerous collective exhibitions as only one, will amount to upwards of 3,000, and every branch of German industry, manufactures, and commerce will be represented at the show.

DAMPNESS IN SUMMER HOUSES. — *Le Technologiste* suggests that the dampness that is sure to accumulate in houses in the country or by the seaside, that are shut up and uninhabited during the winter, may be prevented by placing in one of the rooms a large bowl of chloride of lime, which is to be set in a larger bowl, so that the dampness which is absorbed from the atmosphere by the lime may overflow into it, and not on to the floor. Of course it will be necessary to leave all inside doors open, and likewise it will be necessary to close all outside doors and windows, as hermetically as possible, else the bowl of lime will be set to perform a task that even the Danaïdes would shrink from. The cost and trouble of making the house practically air-tight on leaving it for the winter would, however, be counterbalanced by the saving effected by keeping books and papers free from mould, the furniture from swelling and warping, and the assurance of better health to the occupants.

A PREHISTORIC ROCK PAINTING. — Not a hundred miles below Nashville is a curious spectacle, known as "Sun and Moon." It consists of a painting upon an immense rock which rises to an altitude of several hundred feet. As to who painted it is a mystery which I believe was never unravelled. Many think it was the work of the red brother, centuries ago, perhaps. But there the sun and the moon shine out in all the freshness of new paint. They are midway on the cliff, and stand out in bold relief. How any human being ever reached the spot is a question which I believe has never been solved. It is supposed that in those days they had no giant ladders, and could not easily have reached the point from below. The only natural rope of that time was a wild grapevine, of which Tennessee is so prolific, and some Indian might have been, by this means, let down over the dizzy bluff, and, when he had finished his work, again been let down or pulled up. At any rate, these pictures are there on the everlasting rock, and are likely to remain for future ages. — *Cincinnati Commercial*.

A NEW SEWAGE SYSTEM FOR LIVERPOOL. — The latest attempt to solve the sewage problem has just been made, by the construction, on the Clyde, Scotland, of a sewage steamer called the Alpha. It was designed and built by Messrs. Simon & Coy, of Renfrew, to the order of the Corporation of Liverpool, for the purpose of conveying the sewage of that city far out to sea. In its construction, the well is wider at the bottom than at the top, and, instead of being one oblong tank, it is divided into ten compartments. These are separated by perpendicular partitions, so that the contents may fall readily into the water. The doors are worked on a novel principle. Along the centre is a set of gearing, by which the doors are opened and shut; they are kept open by strong iron bars until the load has fallen. A patent pulsometer pump, of large dimensions, is fitted in the stoke hole, with a discharge pipe on deck, designed to force out any light substance which may have clung to the sides. Externally, the vessel resembles an ordinary steamer. The hull and deck are built of iron, but the hopper cavities are of steel. It is expected to carry a dead weight of three hundred and fifty tons, at a speed of nine knots an hour. It will immediately be used to transport the refuse from the streets, but if the experiment prove successful, the system will be applied to liquid and solid sewage, and vessels with a capacity of one thousand tons may be built. — *Engineering News*.

LONDON FIRES IN 1879. — Captain Eyre Massey Shaw, C. B., Chief Officer of the London Fire Brigade, has made his report on the state of his command, and the fires in London in 1879. The number of calls for fires or supposed fires received during the year was 1,949. Of these, 116 were false alarms, 115 proved to be only chimney alarms, and 1,718 were calls for fires, of which 159 resulted in serious damage and 1,559 in slight damage. The fires of 1879, compared with those of 1878, show an increase of 59; and, compared with the average of the last ten years, there is an increase of 85. The proportion of serious to slight losses, 159 to 1,559, is most favorable; and, notwithstanding several exceptional periods, as for instance, the year 1872, Captain Shaw thinks he is justified in saying that the value of property destroyed in London was less in 1879 than in any other year since the formation of the fire brigade. The number of fires in the metropolis in which life was seriously endangered during the year 1879 was 96; and the number of those in which life was lost was 27. The number of persons seriously endangered by fire was 164, of whom 132 were saved and 32 lost their lives. Of the 32 lost, 15 were taken out alive, but died afterwards in hospitals or elsewhere, and 17 were suffocated or burned to death. The number of calls for chimneys was 4,169. Of these 1,375 proved to be false alarms, and 2,794 were for chimneys on fire. In these cases there was no attendance of engines, but only of firemen with hand-pumps. The number of journeys made by the fire-engines of the 52 land stations was 22,184, and the total distance run was 50,491 miles. The quantity of water used for extinguishing fires in the metropolis during the year was, in round numbers, a little more than 16,000,000 gallons, or about 72,000 tons. Of this quantity about 32,000 tons, or a little more than two-fifths of the whole, were taken from the river, canals, and docks; and the remainder from the street pipes. During the year there were 9 cases of short supply of water, 33 of late attendance of turncocks, and 18 of no attendance, making altogether 60 cases in which the water arrangements were unsatisfactory. The strength of the brigade at present is as follows: 52 land fire-engine stations, 1 movable land station, 113 fire-escape stations, 4 floating stations, 3 large land steam fire-engines, 34 small land steam fire-engines, 12 seven-inch manual fire-engines, 37 under six-inch manual fire-engines, 130 fire-escapes and long scaling ladders, 3 floating steam fire-engines, 1 steam-tug, 17 hose-carts, 15 vans, 3 barges, 57 telegraph lines, 106 miles of telegraph lines, 452 firemen, including chief officers, superintendent, and all ranks. The number of firemen employed on the several watches kept up throughout the metropolis is at present 104 by day and 188 by night, making a total of 292 in every twenty-four hours; the remaining men are available for general work at fires. The list of wounded and other injuries for 1879 is unfortunately very large, but this will always be the case as long as the men work with zeal and energy. There were during the year 297 cases of ordinary illness and 69 injuries, making a total of 366 cases, of which many were very serious. The condition of the brigade with regard to discipline and general efficiency is, in all respects, perfectly satisfactory.

BUILDING INTELLIGENCE.

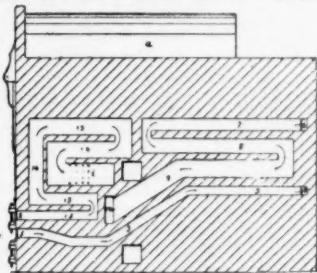
[Reported for the American Architect and Building News.]

[Although a large portion of the building intelligence is provided by their regular correspondents, the editor greatly desires 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.]

222,631. SMOKE AND GAS CONSUMING FURNACE.—Kingsbury M. Jarvis, Maiden, Mass. This invention relates to furnaces for steam-boilers and other similar purposes, and is intended as an improvement on the furnace for which Letters Patent Nos. 176,639, 186,734, and 189,862 were granted. The present invention consists of a novel construction of the chamber behind and in the bridge-wall, such construction permitting the heated air to deliver more uniform into the combustion-chamber. The figure represents a sectional view of the side wall. The boiler *a*, fire-chamber, grate *b*, ash-pit, and combustion-chamber are all as described in aforesaid patents. The front and rear ducts both begin at the front of the furnace at 1 and 2. The rear duct starts at 1, and, passing along the side of the combustion-chamber, as shown at 3, and by the passage 4 to the open space 5 in the rear wall of the furnace, returns thence to the side wall, and winds back and forth therein, as shown at 6, 7, 8, 9, and finally enters through passage 10 into the portion *c* of the chamber behind the bridge-wall. The portion *c* of the chamber passes across through the bridge-wall, and is connected with the main portion *d* of the chamber by a series of vertical slots in the partition *f*, separating the portions *c*, *d* of the chamber. The heated air from the rear ducts, having been received in the portion *d* of the chamber, passes up through a perforated plate, where it mixes with the gases set free from the fuel in the fire-chamber, and causes complete combustion. The front ducts, receiving air at 2 at the front of the furnace, pass, as shown at 12, 13, 14, 15, 16, back and forth in the side wall at the side of the fire chamber, and finally deliver the air, heated in its passage, through another perforated plate into the furnace near, but above, the bridge-wall. The ducts increase in sectional area from the point at which the air is received to that where it is delivered, to allow the air to expand freely as it becomes heated. Nearly the whole heating portion of the furnace-walls is traversed by the air to be heated.



224,268. COMBINED BURGLAR-ALARM AND DOOR-BELL.—John Berkey and William F. Keller, Easton, Penn.
224,287. CURTAIN-FIXTURE.—Willard H. Gilman, Beebe Plain, Quebec, Canada, and Frederick A. Wiswall, Derby, Vt.
224,288. LOCK.—Friedrich Hasdenteufel, Iserlohn, Prussia, Germany.
224,295. WATERPROOFING COMPOUND.—Daniel M. Lamb, New York, N. Y.
224,300. COAL AND ROCK DRILL.—Bernhard Leonard, Mahanoy City, Penn.
224,309. HYDRAULIC EXCAVATING.—Roy Stone, New York, N. Y.
224,324. FASTENER FOR MEETING-RAILS OF SASHES.—William Brinton, Polkathie, St. Germans, England.
224,331. PUMP.—James F. Gellert, Baltimore, Md.
224,333. SHINGLE-CUTTING MACHINE.—P. H. Griswold, Tonawanda, N. Y.
224,348. KNOB ATTACHMENT.—Emery Parker, New Britain, Conn.
224,352. KILN FOR BURNING BRICK, POTTERY, ETC.—Francis Raffinetti, Genoa, Italy, and James Austin and Emanuel Gandolfo, New York, N. Y.
224,354. FACET.—Charles C. Redmond and Archibald W. White, San José, Cal.
224,363. SASH-HOLDER.—Samuel I. Sutton, Dublin, Va.
224,367. COMPOUND FOR DISINFECTION.—William Wheeler, Philadelphia, Penn.
224,373. LOCK.—Carl W. Ade, Stuttgart, Germany.
224,374. EXTENSION-LADDER.—Stephen B. Adams, Dunreith, Ind.
224,377. DOOR-SPRING.—Joseph H. Barker, Cincinnati, Ohio.
224,380. LOCK.—John Betjemann, Pentonville Road, England.
224,388. PAPER VENEER.—Isaiah M. Clark, Coldwater, Mich.
224,401. TEN-FOOT EXTENSION RULE.—Wm. J. Derickson, Clayton, Cal.
224,416. ELEVATOR.—Dennis Frisbie, New Haven, Conn.
224,431. FIRE-EXTINGUISHER.—John Hill, Columbus, Ga.
224,466. WINDOW CORNICHE.—Martin Murphy, Brooklyn, N. Y.
224,473. MACHINE FOR POLISHING WOOD.—George Pelstring, Cincinnati, O.
224,480. MACHINE FOR SMOOTHING WOOD, ETC.—Wilhelm Sassack, New York, N. Y.
224,488. HOT-AIR FURNACE.—Oscar C. Stafford, Minneapolis, Minn.
224,504. INSULATED CRESTING.—Josephus C. Chambers, Cincinnati, O.
9,008. DISINFECTING APPARATUS FOR WATER-CLOSET.—(Revisee.) Edward J. Mallett, Jr., New York, N. Y.

SUMMARY OF THE WEEK.

Baltimore.

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

Mrs. M. C. Robinson, three-story brick dwell., on Charles St., near Eager.

Mrs. F. Stewart, three-story brick dwell., No. 17 Warner St.

Mrs. Albert Bayler, two-story brick dwell., 325 Gay St., bet. Forest and Aisquith St.

Bernard Link, two-story brick building on Lombard St., near Washington St.

House.—Mr. John Hetzel is building a fine house on Eutaw Place, 22 feet 6 inches front and 70 feet deep, of pressed brick, with marble finish, and hard wood inside, to cost \$10,000. Mr. Wm. F. Weber is the architect and superintendent. It is not done under contract.

QUARANTINE STATION.—The president and vice-president of the National Board of Health, and Dr. C. B. Goldborough, of the United States Marine Hospital Service, have held a consultation with the state and city health officials relative to the quarantine regulations for the Port of Baltimore. It was decided that the removal of the quarantine station was needed, and that the proper place for a new station was on the city's property at Hawkin Point.

COURT-HOUSE.—In 1876 an ordinance was before the Council to appropriate \$800,000 to purchase and build a court-house on the lot of ground bounded by St. Paul, Calvert, Fayette, and Lexington Streets, but it was defeated on account of the amount required. There is now being prepared a resolution to direct the city solicitor to make an estimate of the amount required to purchase that lot, with the idea of building a court-house upon it.

Boston.

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

Brick.—39 Beverly St., 1 carriage-house, 40' x 75'; three stories; Jas. White, owner; Otis Wentworth, builder.

Wood.—E. First St., for Warren Chemical Co., 1 storehouse, 40' x 40'; W. T. Eaton, builder.

L St., for City of Boston, 1 bathing-house, 25' x 60'; J. Stevens, builder.

Mather St., Ward 24, for B. F. Stetson, 1 dwell., 20' x 30'; T. M. Stetson, builder.

Murray Ave., Ward 21, 2 dwells, 29' x 40'; Wm. Donaldson, owner and builder.

WAREHOUSE.—H. W. Wellington will build a first-class warehouse at the corner of Bedford and Chauncy Streets, for the occupation of Wellington Brothers. The building will be 63 feet by 90 feet; six stories in height above the basement. The materials of the façades are not fully determined, but will be either entirely of granite or mostly brick; Mr. S. J. F. Thayer, architect.

Brooklyn.

BUILDING PERMITS.—Huntington St., 1 one-story frame factory, 80' x 30'; owner, John E. Borne & Co.; builders, Thos. W. Jones.

Van Duke St., 1 two-story frame dwell., 22' x 32'; owner, Michael Cahill, 70 Van Dyke St.; mason, Mr. Mahoney; carpenter, M. & J. Shelly.

Washington Ave., No. 442, 1 four-story brown-stone dwell., 18' x 45'; owner, Thomas Read, 410 Washington Ave.; carpenter, H. J. Smith; mason, John Rentum.

Commercial St., Nos. 68 and 70, 1 three-story brick blacksmith shop, 50' x 30'; owner, E. G. Stache, 109 DuPont St.; architect, Fred. Weber; mason, G. J. Roberts; carpenter, Eggers.

North Sixth St., No. 258, 1 two-story frame tenement, 24' x 48'; owner, Michael Schmuth, on premises; builder, John Rueger.

North Seventh St., cor. Fourth St., 2 four-story brick tenements, 20' x 50'; owner, John Clark, on premises; architect, Thos. F. Houghton.

Monroe St., 2 two-story brick dwells., 12' 6" x 45'; cost, each, \$2,200; owner and carpenter, Charles Isbill; mason, William Urie.

Hopkins St., 1 two-story frame dwell., 17' x 40'; cost, \$1,500; owner, George Schank; builder, Nicholas Grass.

Patchen Ave., 1 two-story brick dwell., 20' x 32'; owner, Philip Sullivan, 408 Decatur St.; architect, T. F. Houghton.

ALTERATIONS.—Debevoise St., No. 4, three-story frame extension, 22' x 25'; cost, \$2,300; owner, Jno. Wolff, on premises; architect, F. H. Engelhart; builder, N. Grass.

Cambridge Place, raised one story, mansard roof; cost, \$2,000; owner, S. L. Woodford, cor. Gates and Washington Aves.; carpenter, D. H. Fowler; mason, Phil. Sullivan.

Burlington, Io.

CHURCH.—The Jesuit Brothers are about to commence, in a few weeks, a church building, 80 by 125 feet.

FACTORY.—Funk & Hertzler are to build a wagon shop 50 by 117 feet, two stories and basement; brick and stone.

GRAIN ELEVATOR.—Mr. Harrison has obtained permission from the city council for another elevator 120 by 120 feet, to be built on the levee close to the river.

Milwaukee.

BUILDING.—Some evidence of preparation for building in the spring is beginning to manifest itself in the architects' offices.

FACTORY.—E. T. Mix, architect, has already let one contract, a building for a chair factory; 40 by 120 feet, three stories; cost, \$11,200.

He is also preparing plans for several dwellings, the contracts for which will be let early.

THEATRE.—H. C. Koch & Co., architects, have this winter prepared plans for a large amusement hall or theatre and some other buildings, to be built in Quentin's Park, a place devoted to summer amusements and owned by the Schlitz Brewing Company. The cost of the buildings will be upwards of \$50,000. Work has already commenced on these buildings.

This firm is also preparing plans for several dwellings, all of which will be put under contract early in the spring.

New York.

BUILDING PERMITS.—Lexington Ave., cor. 121st St., 6 three-story brick (brown-stone front) dwells., one 17' 7" x 45', and 16' 8" x 45'; cost \$10,000 each; owner, Miss Frederica R. Neihbur, 226 East 109th St.; architect, Wm. F. Neihbur; builders, H. P. & Wm. F. Neihbur.

One Hundred and Twenty-first St., 4 three-story brick (brown-stone front) dwells., each 16' 8" x 45'; cost, \$8,000 each; owner, Miss Frederica R. Neihbur, 226 East 109th St.; architect, Wm. F. Neihbur; builders, H. P. & Wm. Neihbur.

Seventy-first St., 3 five-story brick apartment-houses, each 33' 3" x 76'; cost, \$11,500 each; owners, Improved Dwelling Association; architect, Geo. W. DaCunha.

Seventy-second St., 3 five-story brick apartment-houses, 33' 3" x 76'; cost, \$11,500 each; owners, Improved Dwelling Association; architect, Geo. W. DaCunha.

Fifth Ave., 1 four-story brick (brown-stone front) dwell., 24' 11" x 60'; cost, \$81,000; owner, H. G. Silbeck; architect, John G. Prange.

Fifty-fourth St., Nos. 127 and 129, W., 2 two-story brick stables, 25' x 90'; cost, each, \$6,100; owner, E. Donnell, 44 W. Fifty-eighth St.; mason, L. N. Crow; carpenter, McGuire & Sloane.

Fifty-fourth St., Nos. 143 and 145, 2 two-story brick stables, 25' x 90', gravel roofs and iron cornices; cost, each, \$6,000; owner and builders, same as last.

Fifth Ave., 1 four-story brick store and tenement, 27' x 57'; cost, \$10,000; owner and builder, James Riley, cor. First Ave. and One Hundred and Fifteenth St.; architect, John B. McIntyre.

First Ave., 11 four-story brick apartment-houses; each 20' x 52'; cost, each, \$9,000; owners, Duffy Bros., 1830 Third Ave.; architect, Andrew Spence.

First Ave., cor. One Hundred and Thirtieth and cor. One Hundred and Fourteenth Sts., 2 four-story brick apartment-houses, with stores on first floors; each, 19' 11" x 66' 6"; cost, each, \$11,000; owners, Duffy Brothers; architect, Andrew Spence.

One Hundred and Fifteenth St., No. 420 E., 1 four-story brick tenement, 25' x 60'; cost, \$6,000; owner, John Taylor, 159 West Eleventh St.; carpenter, Wm. Kusche; mason, James O'Meara.

Seventeenth St., Nos. 33, 35, and 37 E. (Union Sq.), 1 six-story brick store, 71' 6" front, 120' 7" rear, and 184' deep; cost, \$200,000; owners, Richard Arnold and Henrietta Constable; architect, Wm. Schickel.

Avenue A, cor. Seventieth St., 1 three-story brick build., for planing mill and carpenter's shop, 52' x 70'; cost, \$12,000; owner, Ira E. Doying, 111 Fourth Ave.; architect, James E. Ware.

Fourth Ave., 1 two-story brick office, 20' x 45'; cost, \$1,890; owners, McCafferty & Buckley, 163 East Fifty-fourth St.; builder, R. W. Buckley.

First Ave., cor. Eighty-fifth St., 1 four-story brick (brown-stone front) apartment-house, with store, 26' 8" x 60' 1"; cost, \$15,000; owner, O. W. Loeffler, 113 East Seventy-seventh St.; architect, John C. Burne; builder, J. A. Frame.

First Ave., 3 four-story brick (brown-stone front) apartment-houses, with stores; each, 25' x 60'; cost, \$14,000; owner, O. W. Loeffler, 113 E. Seventy-seventh St.; architect, John C. Burne; builder, J. A. Frame.

Fifty-eighth St., No. 209 W., 1 three-story brick stable and dwell., 25' x 85'; cost, \$10,000; owner and builder, W. N. Griswold, 74 Broadway.

Ninth Ave., cor. Forty-fifth St., 2 five-story brick tenements, with stores, 22' 5" x 54' and 25' x 54'; cost, \$8,000 and \$10,000; owner, John H. Barklage, 617 Ninth Ave.; architect, John M. Foster.

Seventy-first St., 1 three-story brick (brown-stone front) dwell., 20' x 50'; cost, \$11,000; owner and builder, John Davidson, 128 East Fifty-second St.; architect, Jas. E. Ware.

ALTERATIONS.—Broadway, No. 828, three-story store and two-story factory to be raised to four stories; interior alterations; cost, \$4,000; owner, Dr. Isaac E. Taylor, No. 1 East Thirty-sixth St.; architect, John B. Snook.

Fourth Ave., Nos. 381 and 383, 2 four-story brick buildings to be made into one apartment-house; cost, \$5,000; owner, estate of Wm. Simpson, 5 East Fourteenth St.; architect, John B. Snook; builder, B. Blackledge.

Fulton St., No. 33, three-story store, new front in first story; cost, \$2,000; owner, C. J. Fryer, 52 West Twenty-seventh St.; mason, J. Allen; carpenter, J. Miller.

Eighth Ave., No. 446, four-story brick tenement, with restaurant, a one-story extension to rear, 19' 6" x 56' 3"; cost, \$2,000; lessee, Justus C. Wolff, on premises; architect, Wm. Kuhles.

Nineteenth St., Nos. 154 and 156 W., five-story brick factory building, repair damages by fire; cost, \$4,789; owner, G. C. Flint, 104 West Fourteenth St.; architect and builder, Henry Wallace.

No. 139 Chambers St. is to be extended and improved, under the superintendence of Messrs. O. P. & R. F. Hatfield. But are now being received for the work.

BACK BUILDING.—The building on the corner of Broadway and Wall St. is to be torn down and a fine edifice is to be built on the site by the Bank of the Republic, which will remove into the Drexel Building during the rebuilding.

BUILDING MATERIALS.—Brick is not quite so stiffly held this week, but the price of other building materials is very firm, and will probably be maintained. There has been a decided advance in the price of southern lumber.

CHURCH.—Old Trinity Church, in Harlem, recently burned, is to be rebuilt.

FACTORY.—At a cost of \$25,000, a six-story factory, 50' x 65', Nos. 356 and 358 Mulberry St., is to be built, of brick and granite. Mr. Ed. Deves is the builder, and Mr. Wm. Grant the architect.

HOUSES.—On Seventy-fifth St., between Fourth and Madison Aves., six first-class residences are to be built at a cost of about \$18,000 each. The fronts will be brown-stone and the interior finish of hard wood. Messrs. Thom & Wilson are the architects.

STOCK EXCHANGE.—The negotiations which have been on foot for several months past to secure ground for the extension of the New York Stock Exchange have at length been concluded. The purchase has been made of three lots on New St., Nos. 12, 14, and 16, adjoining the rear of the Exchange, and No. 14 Broad St., for \$375,000. The plans for the new building have not yet been fully decided on, but will probably be considered immediately.

SPONS.—On the south side of Forty-seventh St., 59 feet west of Broadway, a first-class five-story brick store is to be built for Mr. Chas. Johnson from designs of Messrs. D. & J. Jardine. Messrs. N. & H. Andrews are the builders. The building is to be 34 feet in front, with a depth of 92 feet.

Oakland, Cal.

HALL OF RECORDS.—The new Hall of Records, County Clerk's office, which was won in open competition by Wm. Stokes, last summer, is fast growing toward completion.

tion. The building is 125 by 100 feet and two stories in height. The walls are brick. The fronts are faced with pressed brick, with cement and iron finish; cost, \$80,000.

MASONIC TEMPLE.—The Masons are building a new temple on the corner of Washington Street and Central Avenue. It will be three stories high, the first devoted to stores, and the second and third to the uses of the lodges. The exterior walls will be faced with pressed brick and have sandstone finish.

Philadelphia.

BUILDING PERMITS.—Front and side alteration, S. E. cor. Eighth and Chestnut Sts.; Jas. B. Doyle, contractor, 915 Filbert St.

Front alteration, 1321 Arch St.; Geo. Kessler, contractor, 1322 Marshall St.

Front and side alteration, S. E. cor. Fifteenth and Filbert Sts.; David Bergin, Master St. and Lancaster Ave.

Two-story dwell., 14' x 80', Rover and Cambria Sts.; John Cunningham, contractor, 2733 Waterloo St.

156 N. Third St., two-story brick block, 14' x 15'; Chas. Ricker, 156 N. Third St.

One-story store, cor. Hanover and Girard Ave.; T. C. Matlock, 106 Putnam St.

3 two-story dwells., 11' 8" x 44', Twenty-seventh and Oxford Sts.; W. H. Pole, 2721 Oxford St.

One-story added to factory, Hancock and Putnam Sts., 15' x 120'; Jas. McCartney, 42 Franklin St.

Three-story store and hall, 19' 8" x 71', cor. Twenty-third and South Sts.; Michael Gibbon, cor. Christian St. and Gray's Ferry.

One two-story house, Third and Oxford Sts., 20' x 70'; Patrick McCormick, 1415 American St.

New front to store 48 N. Delaware Ave.; John Wilson, 2507 Story St.

Alteration S. W. cor. Eighth and Market Sts.; W. P. Fogg, 114 N. Thirteenth St.

Seventh story add. to factory, 39' x 97', cor. Third and Canal Sts.; Benj. Ketcham & Son, 1023 Brown St.

ALTERATION.—The building of the old Reform Club, on Chestnut Street, above Fifteenth, has recently been bought by Alfred G. Baker, President of the Franklin Insurance Company, who proposes to change it into large stores.

BREWERY.—On Broad St., above Columbia Ave., the ground is being excavated for a brewery for Philip J. Lauber. This building, 70' x 75', will be five stories in height, fireproof, and built of ornamental brick; cost, \$50,000; Murrill Robbins, builder; Mr. H. J. Schwartzman, architect, of New York.

OFFICE BUILDING.—Mr. T. P. Chandler, Jr., has been appointed architect of the building for the Union Insurance Company to be built at the corner of Third and Walnut Streets. Detail drawings and specifications are now being made prior to receiving the bids for its construction.

HOTEL.—No. 1914 Chestnut (The Aldine Hotel), J. B. Lippincott & Co., owners, is to have an addition 30 by 200 feet; contract not yet awarded; Addison Hutton, architect.

HOUSES.—Corner of Thirty-eighth and Ludlow Streets, nine three-story dwellings, 25 by 45 feet; owner, E. A. Rollins; contractor, W. S. Kimball; architect, G. W. Hewitt; cost, \$42,000; brick.

No. 524 Market Street, rear addition; two stories, 60 by 24 feet; owners Barrett, Gunnis & Hogan; Josef Q. Lancia, superintendent; cost, \$3,500; brick.

At Canoe Place, running from Diamond St. to Susquehanna Ave. on Thirteenth St., John Baird is having built thirty-four model dwellings, of brick and marble.

On Thirteenth St., above Norris, D. C. Clever is building six houses, three stories in height, 18' 6" x 73'; cost, about \$75,000.

INSURANCE BUILDING.—The Insurance Company of North America is about to build a fine fire-proof building on the property Nos. 228, 230, and 232 Walnut Street; architect not yet chosen.

STORES.—Thirty-eighth and Market Streets, 8 stores; one story, 25 by 50 feet; owner, E. A. Rollins; contractor, P. Muller; architect, G. W. Hewitt; cost, \$10,400; brick.

At the cor. of Thirteenth and Chestnut Sts., old buildings are being torn down to make way for a large store for Mr. Geo. Howell. This building, 37' x 104', will be four stories in height, built of brick, and Montgomery marble; cost, \$30,000. Marriner & Buckingham, builders; Mr. S. D. Button, architect.

St. Louis.

BUILDING PERMITS.—Forty permits have been issued since our last report, of which eleven 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. Renner. | Dwelling. | 2 | 12 | \$3,500

G. B. Allan. | Iron Ware-house. | 3 | 3 | 15,000

Mrs. E. Garth. | Dwelling. | 2 | 14 | 7,000

J. Maher. | Dwelling. | 3 | 14 | 10,000

General Notes.

ADAMS, MASS.—The Episcopalians have raised the \$2,500 necessary to secure L. L. Brown's gift of \$1,200 to build a new church, but more money is needed for contingencies. The church will be built the coming summer.

ATLANTIC, IOWA.—A leading citizen offers to give \$5,000 towards building a \$15,000 court-house here.

ATLANTIC CITY, N. J.—J. C. Sidney & Son, Philadelphia, have drawn plans for a house for Chas. Sparks; cost, \$5,500. The contract for the building of the four houses for A. H. Craig has been awarded to Donley & Thomas. Cost, \$12,000. Wilson Bros. & Co. architects.

BLUFFTON, IND.—Mr. J. Hodgson, architect, of Indianapolis, is building the new jail, which will cost \$25,000, and the theatre, which will cost \$18,000.

BRISTOL, VT.—Col. N. F. Dunshaw, high sheriff of Addison county, will build a new block of stores on the "Holly Corner" the coming spring.

CAMBRIDGE, MASS.—An addition to the Museum of Comparative Zoology is to be built from the drawings of Mr. G. R. Shaw, architect, of Boston. It will measure 80' x 80'; Rumery & Maxwell, builders.

CAMBRIDGE CITY, IND.—Messrs. Huebner & Mueller, of Indianapolis, are the architects of the Catholic church now building here at a cost of \$8,000.

CAPE MAY, N. J.—J. C. Sidney & Son, Philadelphia, have drawn plans for Jas. Myer's house, 42' x 65'; cost, \$6,000.

CONCORD, N. H.—Two wooden houses for Mrs. A. J. Howe

and the Hon. J. Homer are building, to cost respectively about \$5,000 and \$3,000; W. H. Benjamin, builder.

A house with wood-n sides and brick ends is building for Mr. Frank B. Sanborn. Mr. H. W. Hartwell, of Boston, is architect of all three.

DELAWARE, WIS.—Mr. E. T. Mix, architect, of Milwaukee, has prepared sketches for rebuilding the Deaf and Dumb Asylum, which was burned in the early part of the winter, which have been accepted.

DETROIT, MICH.—Perrin Brothers, brick store and dwelling, No. 389 Michigan Avenue, \$2,800.

D. A. Davis, eight frame dwellings on Twenty-first Street, \$4,000.

George Teagan, two frame dwellings, cor. Trumbull Avenue and Locust Street, \$1,400.

The corner-stone of the new fire-engine house building at the head of Griswold Street, on Clifford Street, was laid February 9.

FAIRFIELD, IOWA.—Mr. S. Light is to build a two-story store and office building, 34 by 132 feet, of brick and stone, from designs prepared by Mr. C. A. Dunham, of Burlington, IOWA.

FINT, MICH.—An addition, 44 by 60 feet, and three stories high, will be built in front of the present woolen mills.

FORDHAM, N. Y.—Mr. Jas. Stroad, of New York, is the architect of the stable and training circus now building. He has also drawn plans for a handsome dwelling on the Heights. It will be in the Queen Anne style, hard-wood finish, stained-glass windows, and will cost about \$16,000.

GERMANTOWN, PA.—A three-story house, 35' x 45', will be built for John Colwell; cost \$5,000. J. C. Sidney & Son, architects, Philadelphia.

GLENCOE, MINN.—The Lutherans will build a new church this year.

HAMILTON, O.—The Infirmary Commissioners have unanimously recommended that the County Commissioners proceed to build a new Infirmary building, at a cost not to exceed \$50,000.

HARLAN, IOWA.—Mr. C. A. Dunham, architect, of Burlington, IOWA, has just finished the drawing for the new jail for Shelby County, which will cost about \$10,000.

INDIANAPOLIS, IND.—At the end of the next building season the State House will be built up to the second story, at a cost of \$500,000. The contractors have already paid out \$50,000 more than they have received.

IPSWICH, MASS.—An iron light-house is to be placed on Ipswich beach to replace the old one.

IRONTON, O.—G. W. Thompson, architect, has drawn plans for two new houses on Sixth Street. One for Mr. C. C. Clark, and the other for Capt. Wm. Bay. About forty-five tenements are to be built by the New York & Ohio Iron and Steel Company upon their lands, out near the line of the Iron Railroad.

KANSAS CITY, MO.—Mr. T. C. Bermingham, agent of the J. W. Butler Paper Company, has purchased a lot on Delaware Street, 60 feet front by 120 deep, and will build a large four-story building.

MADISON, IND.—Mr. Wm. Trow, Jr., is building a mammoth warehouse on the site of the burned foundry on the river front.

MENDOTA, ILL.—A new jail is to be built here.

MOSCOW, KY.—Mr. John Idlet is building a large tobacco warehouse at Point Pleasant.

NORWICH, CONN.—The town offers the State a farm worth \$10,000 as a site for a new insane asylum.

ONANCOCK, VA.—Mr. Wm. F. Weber, of Baltimore, has just completed the drawings for a new almshouse for Accomack County, to be built here, to be 62 by 70 feet, and 3 stories high. Contract has not yet been awarded.

POTOSKI, MICH.—The German Methodists will build a church this fall.

PROVIDENCE, R. I.—Ex-Mayor Knowles is building a new house on Pawtucket Avenue, at a cost of about \$10,000.

The Providence & Springfield Railroad Company is building a passenger station on Cove Street, and it will be ready for occupancy about the 1st of June. It is two stories in height, 57 by 25 feet.

SALEM, MASS.—Chas. Merritt & Richardson are rebuilding their factory. The main building will be brick, three stories, and 120 by 30 feet; cost, \$20,000.

SANDWICH, MASS.—The trustees of the Sandwich Academy have bought the Mrs. Wells place on Franklin Street, and a new academy building will be put up before next fall.

SHELBYVILLE, ILL.—The new court-house is to cost \$70,000.

SHELBYVILLE, IND.—St. Vincent's Catholic Church, four miles from this town, is building from the design of Mr. D. A. Bohlen, architect, of Indianapolis; cost, \$10,000.

STONHAM, MASS.—The Congregational society has raised nearly enough money by subscription to warrant the commencement of their new chapel. It will be about 35 by 60 feet.

TAUNTON, MASS.—Messrs. Howard & Son, of Oakland, are about to add a weaving shop, picker-room, etc., to their mills. The dimensions of the former are to be 132 by 72 feet; the latter, a separate building, 40 by 40 feet; also a boiler-house, 42 by 28 feet; all to be built of brick.

WALTHAM, MASS.—Additions to the buildings of the American Watch Company are soon to be made. They will measure in the aggregate about 27 by 350 feet, will be three and four stories high, and will cost about \$35,000. H. W. Hartwell, of Boston, architect.

WELLESLEY, MASS.—Mr. G. R. Shaw, of Boston, is the architect of a library to be given to the town of Wellesley by Mr. H. H. Hunnewell. The building will be of rubble, relieved with sandstone, and will cost about \$25,000.

WINCHESTER, KY.—The new Clark County National Bank building will cost from \$10,000 to \$12,000.

Bids and Contracts.

BALTIMORE, MD.—The contract for building a hotel at Tolley's Point Summer Resort, near Baltimore, was awarded to Geo. A. Paine, of Philadelphia, and the pier to a Baltimore firm.

BOSTON, MASS.—The contract for the erection of the Coliseum Building on Huntington Avenue has been awarded to Messrs. Kelly & Richards.

NEW HAVEN, CONN.—The committee on school buildings have awarded the contracts for the Lloyd Street School-House, that for the Joiner-work to Henry S. Lancaster, and that for the mason-work to Bunnell & Sperry.

NEWPORT, R. I.—The contract for finishing stone for the workhouse was awarded to Charles Sparks.

NEWPORT, R. I.—The bids for building the new engine house in the Second Ward have been opened. There were six bidders, the highest being \$5,800, and the lowest \$4,748, by H. A. Kaull, Alderman from the First Ward.

NEW YORK, N. Y.—Martin Deegan has the contract for the carpentry on the Insane Asylum at Ward's Island, at \$15,150, and David Brown has the mason-work at \$18,485.

PHILADELPHIA, PA.—The contract for building the Industrial House for Blind Women, Messrs. Wilson Bros. & Co., architects, was awarded to A. T. Richards for \$28,949.

WARREN, MASS.—The contract for building the new mill of the Cutler Manufacturing Co. has been given to parties in Fall River. The building is to be of brick.

INDEX OF CURRENT WORK,

Giving information concerning important buildings now unfinished.

[Architects and Builders are requested to aid the editors in making the information in this department full and exact. Notice of the completion of a building is particularly desired.]

Baltimore.

RAILROAD OFFICE.—Office for Baltimore & Ohio R. R. E. F. Baldwin, architect. Cost, \$400,000. 214 x

Boston.

STORES.—Liberty Building. W. G. Preston, architect. Cost, \$200,000.

HOTEL.—Hotel Vendôme. Ober & Rand, architects. 216 y

Brooklyn.

HOSPITAL.—Eastern District Dispensary and Hospital. C. C. Buck, architect. Cost, \$35,000. 204 y

HOSPITAL.—Hospital of St. Mary. Mr. P. C. Keely, architect. Cost, \$200,000.

Chicago.

HOTEL.—Hotel. T. V. Wadskier, architect. Cost, \$30,000. 215 x

ASYLUM.—Home for the Aged. Cost, \$25,000.

New York.

STORE.—Store for Arnold, Constable & Co. W. Schickel, architect. Cost, \$200,000. 210 x

BARGE OFFICE.—Mr. J. G. Hill, Supervising Architect. Cost, \$146,000.

CHURCH.—St. Paul's (R. C.). Mr. J. O'Rourke, architect, Newark, N. J. Cost, \$500,000.

OFFICE BUILDING.—G. E. Harney, architect. Cost, \$200,000.

COLLEGE.—Addition to Columbia College. C. C. Haight, architect. Cost, \$200,000.

DWELLINGS.—House for Cornelius Vanderbilt. G. B. Post, architect. Cost, \$250,000. — Houses for W. H. Vanderbilt. J. B. Snook and C. B. Atwood, architects. Cost, \$400,000 and \$300,000.

CLUB-HOUSE.—Union League Club-House. Messrs. Peabody & Stearns, architects, Boston. Cost, \$250,000.

General.

ALBANY, N. Y.—U. S. Court-House. Mr. J. G. Hill, Supervising Architect. Appropriation, \$305,000.

ATLANTON, GA.—Union Depot. Cross & Taylor, architects, Kansas City, Mo. Cost, \$87,000.

BURLINGTON, IOWA.—County Court-House. P. E. Hale, architect. Cost, \$100,000.

CHESTER, ILL.—Penitentiary. Bell & Hackney, architects, Springfield. Cost, \$850,000. 214 x

CHESTER, PENN.—Church of St. Michael. E. F. Durang, architect, Philadelphia. Cost, \$60,000.

CLEVELAND, O.—Church. Heard & Smith, architects. Cost, \$40,000.

COHUES, N. Y.—Hotel. Ogden & Wright, architects. Cost, \$60,000. 207 x

DARTON, O.—County Court-House. Mr. L. Beavers, architect. Cost, \$100,000. 213 y

Presbyterian Church. Wheelock & Clay, architects, Chicago. Cost, \$60,000. 214 y

DENVER, COL.—Stores. W. J. Edbrooke, Chicago, architect. Cost, \$140,000.

DES MOINES, IOWA.—Court-House. P. Hale, architect, Chicago. Cost, \$86,000.

DETROIT, MICH.—The Rotunda. Lloyd & Pierce, architects. Cost, \$160,000.

DORCHESTER, CAN.—Penitentiary. Thomas S. Scott, Ottawa, architect. Cost, \$120,000.

ELUSHING, N. Y.—Chapel for the Academy of St. Joseph. W. Schickel, architect, New York. Cost, \$45,000.

FRANKLIN, IND.—Court-House. G. W. Bunting, Indianapolis, architect. 215 x

GARDEN CITY, N. Y.—St. Paul's Cathedral School. Mr. E. D. Harris, architect, New York. Cost, \$250,000.

HARTFORD, CONN.—Courant Office. G. Keller, architect. — House for Cornelius J. Vanderbilt. Cost, \$50,000.

INDIANAPOLIS, IND.—State House. Mr. E. May, architect. Cost, \$2,000,000.

LEBANON, PA.—St. Luke's Church. Henry M. Congdon, architect. Cost, \$70,000.

LINCOLN, NEB.—State Capitol. W. H. Wilcox, Chicago, architect. Cost, \$400,000.

MANSFIELD, O.—Jail. D. W. Gibbs, architect, Toledo, O. Cost, \$50,000.

MERIDIAN, MISS.—Court-House. Moser & Tucker, architects. Cost, \$25,000.

MIDDLETOWN, N. Y.—Homeopathic Insane Asylum. C. Pfeiffer, architect, New York. Cost, \$125,000.

MILWAUKEE, WIS.—County Insane Asylum. H. C. Koch & Co., architects. Cost, \$135,000. — Chamber of Commerce. E. T. Mix, architect.

NEWPORT, R. I.—Casino. McKim, Mead & White, architects, New York. Cost, \$70,000. 214 y

NORTH EASTON, MASS.—Hall for Oliver & Oakes A. Ames. Cost, \$40,000. H. H. Richardson, architect, Brookline, Mass.

OMAHA, NEB.—Trinity Cathedral. J. F. Stuckert, architect, Philadelphia. Cost, \$50,000.

ORANGE, N. J.—Music Hall. Stillman & Farnsworth architects, New York.

UTICA, N. Y.—U. S. Court-House. Mr. J. G. Hill, architect. Appropriation, \$250,000.

WELLESLEY, MASS.—Dormitory. Ware & Van Brunt, architects. Cost, \$80,000. 210 x

WESTON, W. VA.—Hospital for the Insane. Appropriation, \$35,000. A. A. Lewis, W. E. Lively, E. Ralston, Executive Committee.

WILLIAMSPORT, PA.—Store. E. Culver, architect. Cost \$100,000.

WILMINGTON, DEL.—Court House. T. P. Chandler, Jr Philadelphia, architect. Cost, \$66,208.