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CONTENTS.

A DIFFICULTY has been raised in the New York Board of Health which is somewhat embarrassing to architects who have striven for solidity of interior finish. Dr. Janes, Assistant Sanitary Superintendent, having inspected the additions to the new Court-House, has reported: "I found that the interior walls consist of brick uncovered by plaster or paint, and thereby present an absorbing and evaporating surface, which in my opinion is detrimental to the health of those who daily occupy these apartments." Brick walls, he thinks, are porous enough to absorb and filter out from the air they enclose the noxious vapors and organic impurities it contains, and to give them up when fresh air is supplied. When exposed, he says, they become in time filthy, and cannot be thoroughly cleaned by any amount of scrubbing. He therefore recommends that in this case they be covered with some material that will stop the absorption. We do not wish to argue against any reasonable precaution, but we think an apprehension of this kind may easily be overstrained. In particular cases, as in cells in which prisoners are kept closely confined, or in sick wards of hospitals, the porosity of wall surfaces is a thing to be carefully guarded against. For this reason, in hospitals where a wall is lined with brick glazed bricks are preferred. Perhaps the crowd which throngs a police court may be almost as profuse in unsalubrious exhalations as the wards of a hospital, and in such cases special precaution should be taken; but for ordinary rooms, or indeed for such rooms, we suspect bare brick to be as good as any of the materials that are in common use, inasmuch as a fair comeliness in interior effect leads to the use only of the harder, smoother, and more impervious kind of brick.

As for the common materials, ordinary plastering is more porous than a hard-pressed brick. A fine, hard finish, very thoroughly trowelled, may perhaps shed exhalations better, but its advantage disappears when it is covered with a wash of color or with paper. Unpainted wood is as bad in substance, and provides innumerable crannies and cavities which are worse. Granite and marble are more compact, but most kinds of stone are not. The only safe resource, then, would be in tiling, in some of the hard, impervious cements, or in paint and varnish, applied impartially to floors, walls, and ceilings. Curtains, upholstery, and carpets of course would be worse than anything else, and we may assume at once that they could not be tolerated in rooms from which bare brickwork was banished. These questions of comparison are questions which for the present at least it is all but impossible to settle by direct experiment, and in which, therefore, we are obliged to depend for our opinions on *a priori* reasoning; but it seems to us, on the whole, that, whatever care is necessary in the exceptional cases we have mentioned and other analogous ones, we have commonly no reason for dread of good hard brickwork or stone-work. In building for ordinary uses, instead of putting aside our growing preference for solid work or our precautions against fire, or of feeling obliged to take refuge in universal painting, we shall probably be safe in trusting to such freedom of ventilation as shall prevent foul air from lingering in our rooms, or shall rapidly carry off any unusual impurities, and in the customary appliances of cleanliness.

OWNERS of real estate in Chicago are disturbed by an ordinance which has just passed their city council. In the alarm that followed the great fire, and possibly stimulated by the discrimination of the better insurance companies against risks in the city, Chicago passed building laws which banished wooden buildings from her fire limits, and provided other wholesome restrictions. The effect was to make the new buildings of the city much more substantial and less dangerous than those they replaced. Since the alarm has worn away there has been a constant pressure in favor of relaxing the laws. The ordinance now brought forward allows wooden buildings sixteen feet high to be put up anywhere in the city. If it goes into effect, the result will be that a great deal of land which borders on the denser part of the city, and on which it is not now profitable to put buildings of a better class, will be brought into use for cheap wooden shanties. In these the poorer people of the city will swarm, and will provide the city anew with just the opportunity that led to the first great fire. Wooden sheds will also be interspersed among the better buildings in the heart of the city in such a way as may endanger them greatly. This not only invites recklessness, but is a breach of faith with the men who have been encouraged by the old laws and the security expected from them to put their capital into better buildings than the old, as well as with underwriters. The common argument for relaxation of building laws is that they bear heavily on men of little means, who must build cheaply, or not at all. This argument, we suspect, is generally pressed for more than it is worth. In the present case it appears to be not the poor men, but capitalists, speculative builders who wish to invest their money in cheap houses, and lumbermen who wish a market, that are behind the movement. One alderman, indeed, declared in council that he had made inquiry and found that the poor people of his ward were not in favor of the ordinance. It is a familiar saying that a burnt child dreads the fire, as it is a familiar fact that the fears of children do not last unless they are renewed. Chicago is a young city, and seems bent upon giving an illustration both of the saying and of the fact. The opportunity for renewing the fear will doubtless follow in due time.

THE latest Sessional Paper of the Royal Institute of British Architects contains the examination papers for the last year. The Institute examinations, to which, as we said a short time ago in discussing the qualifying of architects, it has been decided that after two years' grace from this time every candidate for the Institute must submit, are held every spring, provided candidates enough present themselves. They have been established sixteen or seventeen years, but have hitherto been purely optional, there being nothing dependent on them, we believe, but the certificate of proficiency which the Institute gives to those who pass. Inasmuch as the examination is entirely voluntary, and has led from nothing to nothing, it is not surprising that no large proportion of the architects in practice have undertaken them. Nevertheless, the fact that seventy-five candidates are on record as passed since the examinations were established indicates that they have not been without effect, and it is probable that they have had an influence through emulation over a much larger number. When the new rule of the Institute is enforced, and all architects who wish to be members of it are obliged to enter through the door of an examination, we shall see how strong an impetus it can give in this direction, and we shall have also a measure of the desire of architects to join the Institute. Thus far, it is to be noticed, there has been a decline in the number of candidates since the earlier years, at least in what is called the class of Proficiency. The examinations are now of two kinds: the Proficiency examinations, which date back to 1863, and the Preliminary examinations, which were begun in 1870, and are intended as introductory to the others, the first being biennial and the second annual. There is also an occasional examination in what is called the class of Distinction. We find a record of these classes in what is called the "brown book" of the Architectural Association, from which it appears that the average number which has passed in the successive examinations of the class in Proficiency has been four, and in the Preliminary class seven or eight. Between 1863 and 1877 seven examinations for proficiency were held, and we notice, not without a sympathetic regret, a pretty steady *diminuendo* in the candidates passed, the successive numbers being eight, seven, four, four, three, two, one. Whether this diminution was the cause or the effect, or merely the concomitant, of the establishment of the Preliminary class, which was begun in 1870, does not appear.

The numbers in the Preliminary classes, on the other hand, of which six have been examined, do not show any such marked progression.

The examination papers of the last spring's classes are of interest for the indication they give of the English idea of an architect's education, and the relative importance they ascribe to its different branches. In each examination candidates are marked on a scale of one thousand, six hundred being required in order to pass in the Preliminary and seven hundred in the Proficiency class. The Preliminary examination includes drawing from the round, the subjects given being in this case a vase, a Gothic crocket, and an antique figure; a sketch from memory, a Doric capital and a Gothic buttress; and a geometrical drawing from memory, a classical entablature and a window of any period of English architecture. These exercises occupy the first day. Then follows a day of mathematics, which includes arithmetic, Euclid, and very simple practical geometry: then a day of examination on the use of materials, and one on history of politics of art, both confined entirely to English history, and ending with an architectural description of some important mediæval building in England. The examination for proficiency is more exacting. Drawing is taken for granted, excepting constructive drawing, and except that the applicant is required to exhibit a certain amount of work done at home and called probationary, including a measured drawing from some existing building, a perspective sketch of a like subject, and a plan, elevation, and perspective of a design by himself. The work is divided into two sections, artistic and scientific, each occupying three days of a week, and each being marked on a scale of one thousand, of which seven hundred is required in order to pass. The marks are subdivided among the subjects of the sections, and the minimum necessary to pass is varied, showing the rank assigned to the different branches. Thus, in the artistic section design comes first, with four hundred marks out of the thousand, of which two thirds must be won to pass; the history and literature of art have two hundred and fifty, only one third being required; perspective two hundred, and geometrical drawing one hundred and fifty, the minimum being one third. So in the scientific section, after the probationary work, including a set of working drawings with specification and details, we have for construction three hundred marks, two thirds required; materials, two hundred, also two thirds; mathematics (including arithmetic, algebra, and geometry) and physics, each one hundred and fifty marks; mensuration and professional practice, each one hundred, in all of which but one third are required for passing.

The quality of the examination deserves the notice of those who are interested in fixing a standard of qualification for architects in this country. To exhibit fully its intended scope would require a comparison of the papers of successive years, since but few questions can be asked on each subject in any one paper. But the questions before us imply a considerable amount of work, and are meant to lead over the whole ground of an architect's professional acquirement. There is always difficulty in so framing examination papers that they shall bring out the candidate's real knowledge and not be met by cramming, a point in which there is an advantage in such an oral examination as we referred to in noticing Mr. President Whichcord's opening address three weeks ago. The difficulty is pretty well met in most of the subjects of these papers by proposing problems for solution or questions for discussion which would call for thought and knowledge of his subject on the part of the candidate, unless they were specially adapted to a formal routine of study laid out beforehand. Here the problem in design for the Proficiency examination is a cemetery chapel, which is somewhat quaintly prescribed to be "in any style of classical or other historically Christian architecture." The problems in physics are the equilibration of a polygonal roof and of systems of weights and pulleys. Those in construction include questions of foundations, of proportions of piers and buttresses, of the framing of a trussed partition with three doors, of a king-post roof of thirty-six feet span and a queen-post roof of fifty feet; the design of a cast-iron girder, of a wrought-iron box girder, an iron column, etc. One thing which strikes the reader as in marked contrast with the practice of all the continental schools, and with the practice of England herself half a century ago, is the almost absolute neglect of classic styles. Beyond the alternative we have quoted in the problem of design and the drawing of an Order from memory in the Preliminary examination, there is hardly a recognition of the existence of classical architecture, or mention of any ancient form or example of building. Indeed, we are struck in the references to the history and literature of architecture with what we are tempted to call a certain insularity of view, almost all the questions being confined to English mediæval architecture and history, and no hints being given of the interdependence of styles or the development of forms, or of the influence of other countries than England, except in the alternative questions on Italian Renaissance. We do not say that this is not justifiable in a scheme which aims simply at encouraging the practical efficiency of the architects of a particular nation, but it does not lead to the breadth of cultivation which is desirable in our profession at this day, nor does it follow along with the actual acquirements of the better trained English architects.

Another point which is conspicuous is the curious simplicity of the mathematical papers, the examination stopping short altogether, especially in geometry, of the point where knowledge of the subject would be useful. There is no practitioner — hardly even the engineer — to whom what we may call a geometrical habit of mind is so important as to the architect; and to him, dealing as he does almost exclusively with solid forms, with intersections of planes and solids, and of lines with both, of curved surfaces, and problems of stone-cutting, geometry which stops at two dimensions is almost as inadequate as to know how to multiply but not to divide would be to a computer. To be sure, the habit of drawing constantly from the round and for it, gives architects a good deal of intuitive perception of the relations of form; and rules of perspective, practised but not understood, help him graphically out of many difficulties; but the free handling of combinations which comes of a ready knowledge of geometric relations, and the robustness of imagination which it gives, are apt to fail him. In these examination papers the geometrical examples are confined to a few rudimentary properties and simple problems of plane figures, such as might serve in any school examination, and such devices of perspective as are commonly learned by rule of thumb; the amount of geometrical knowledge presupposed might occasionally be of some practical convenience, but could hardly have any influence on the architect's mental habit. In fact, the technico-scientific side seems to be the weakest side. One could believe, from the character of these geometrical papers, from the use of cast-iron girders, and from constructive designs that we find in English building papers, that the study of descriptive geometry or of graphical statics, and the use of modern methods of framing had not yet been accepted by English architects. We observe also a noticeable neglect of the subject of sanitary precautions, ventilation, drainage, and the like. In a general comprehensiveness, nevertheless, in the careful attention to practical conditions, and the readiness for actual work in both design and construction, which they seem to presuppose in the successful candidate, these papers are exemplary, and deserve the study of those who are interested in the qualifying of architects. Even in the preliminary papers we find much that would be a stumbling-block, we fear, to a large number of architects in practice in this country.

A glance through the annual report of the Architectural Association, to which we have just referred, and to which we may have occasion again to refer, shows the secret of the success of this society to lie in its programme of operations, definite, well arranged, purposeful, and well carried out. Our attention has been especially attracted by an appendix, which enumerates the opportunities, besides those offered by the two architectural societies, that enable the architectural student to fit himself for his profession, — opportunities of which we have as yet no equivalents. First, the Royal Academy, with its seven years' curriculum; its lectures on architecture, science, and art, by such men as Barry, Woolner, Armitage, Marshall, and Barff; its medals and travelling studentships; and its valuable collections and library, gives opportunity at once for individual and associated study. King's College, London, provides, under the conduct of Professor Kerr, lectures on the arts of construction, while there are classes, both day and evening, in drawing, in descriptive geometry, and in levelling and surveying. University College, London, also maintains courses of weekly architectural lectures, this year delivered by Mr. T. Roger Smith, holds examinations, and awards medals, prizes, and certificates. The Royal Architectural Museum and School of Art,

which owes its being to the enthusiasm of Sir Gilbert Scott, has its regular drawing and modelling classes, its sketching club, its prizes and exhibitions. And, last, the National Art Training School, at South Kensington, has its classes in drawing of all kinds, and occasional lectures. It is the profiting by these advantages, as well as the dumb influences of surrounding architectural work of acknowledged merit, which secures for the English draughtsman, who may stray to this country in search of work, such satisfactory rating, — more satisfactory, we imagine, than he would receive should he remain at home.

WE are glad to do justice to the authorities of Palo Alto County, Iowa, to whose proposal for plans of a county jail we alluded in our number for November 29, 1879, and at the same time to give an account of the matter that is more encouraging to the profession. Whatever may have been the intent of the original proposition of the Board of Supervisors, which perhaps we misunderstood, and however inadequate the sum first offered, even if only as a premium in competition, we are officially informed that the selected architect gets five per cent on the contract price of the building for his plans and superintendence. At the same time we will correct a mistake into which we were led some time ago in copying a letter from another journal. On November 1, 1879, we quoted, under the head of a Prehistoric Excavation, an account of a remarkable cavern, adorned with paintings, discovered near what are called Chimney Pierre Rocks. The account, which should have been dated from Vincennes, Ind., proves on examination to be a hoax: no such cavern is known to exist.

SOME CAUSES OF FAILURE IN AMERICAN ARCHITECTURAL DESIGNS.[1] I.

ALLOW me to say a word or two as a preface to the paper which I am about to read.

Some exception has been taken to the title which I have given it. It has been intimated to me that the inference might be drawn from the words "some causes of failure in American architectural designs," that I intended to imply that all American architecture was a failure. I own that I do not, as a whole, consider it a success.

In discussing the subject we must take the architecture of America as a whole. We cannot discuss the work of a few cultivated men and call this American Architecture. We must take the mass of buildings as we find them, and if the majority of buildings in this city, for instance, is good, then I do not know in what good architecture consists. I would not have the temerity to say that the first half of my paper was applicable to members of the Institute, for were I to do so, the injustice in many instances must be apparent; but the number of men practising what is called the art of architecture spreads far beyond the limits of our Institute, and if we cannot apply any of these strictures to ourselves, I am quite sure we can each one of us find many feet which these shoes will fit most snugly.

I propose to state what seem to me some of the causes which make the faults of architectural designs in this country possible, faults resulting in those blots which form rather the rule than the exception in American architecture. The question is a broad one, and the more thought one bestows upon it the greater seems to be the importance of our acceptance of the answer given.

The most superficial glance backward through the last ten years cannot fail to give encouragement to a hopeful architect, one loving his art and wishing for its full success. That progress and advancement have been made will not for a moment be denied, and is it not equally undeniable that still greater progress is both possible and desirable? I may be accused of making a pessimist's statement if I say that for every ten failures made a decade ago only eight are made to-day, for possibly the ratio may be greater in favor of the present, but in looking through the architectural journals, or in walking the streets of this or other American cities, one is hardly tempted to make a more favorable criticism.

And whose fault is it that no better work is done? Is it the architect's or the public's, and are there other causes beyond these and beyond the architect's control? Is this prolific sowing of tares his fault or his misfortune, and is he alone to be blamed for the low standard which he has set up as the criterion of this art, which it should be his glory and his honor to foster? I am inclined to answer that a very full share of the censure must rest with the architects; they cannot withdraw themselves from the discussion as innocent parties, to the hem of whose garments no blame is attached.

That there are other causes beyond their control, at least for the present, must be granted, but with them we have now less to do. I will try to state them later on, that their bearing and influence may be properly seen. They are not to be removed in a day, and if they be removed at all, their removal will follow the correction of those faults in design for which the architects are alone responsible. Let us then look this matter seriously in the face and admit, with others outside of this Institute, our share of the responsiblity. Let us admit that we and others are partly, even largely, to blame for the indifferent position of architecture in this country, and, seeing our error, do what we can to remedy it. I will divide these causes of failure into two classes: first, those causes over which the architect has control, and he having control must therefore be held responsible for his failures; and, second, those causes over which he has no absolute control, and hence he can be held as only remotely responsible. I am persuaded that were he to remove those causes of failure for which he is responsible, it is only logical to conclude that the second class of causes would in time be removed of themselves.

But so long as the profession continues its present course in relation to architecture, so long as it permits itself to practise the art handicapped by disadvantages, the removal of which rests solely with itself, it is but fair that it should be the object of that contempt which nine tenths of its efforts create, and it alone must be to blame for the disfavor with which the art is regarded. The architects are slowly, but surely, building up a monument to their incapacity, a monument which ignorant and thoughtless people may admire and copy; but architecture as an art will be as dead as their imaginations, and will be a byword and reproach in the mouth of nations fortunate enough to have escaped from these fatal blunders.

First and foremost of those causes of failure over which the architect has control is want of proper and thorough preparation to practise the art which he has chosen as the work of his life. Half fledged, with a meagre preparation in some architect's office, picking up what crumbs may chance to fall from the master's hands, crumbs often enough stale and mouldy, without taste or nourishment, and so worthless; learning, and learning imperfectly, too, the mere technique of his art, he plunges into practice to commit blunder after blunder, and to perpetrate such things as it were a sacrilege to call architectural works. What does he know of the underlying and stable foundations of all good work in the past? The book is closed to him. He is blind and deaf to the past, and to him Egypt and Greece and Rome, the Middle Ages and the Renaissance, so far as the principles or practice or living facts and processes are concerned, are only so many meaningless words, conveying no idea and presenting no possible point of departure for his own work. What does he know of the Greek column and entablature, of the Roman arch and vault, of the pointed arch of the Middle Ages, or of the use and reason of the pinnacle or flying buttress? What does he know of that great intellectual activity which was developed with the discovery of the art of printing, and which brought about the Renaissance, or of that new birth of architecture in England to-day? In any one of these phases exist endless principles, the full mastery of which should be the groundwork upon which to build up the fabric of his own practice. He knows them not, but upon the quicksands of his ignorance, and in the quagmire of his presumption and temerity, he attempts to raise a structure which justly and properly should totter and fall and bury him in its stupid débris — but it does not. Through this state of things a public slow to learn is led to admire his eccentricities, to applaud his grotesque antics, and to believe in this false prophet.

Or again, he may have studied with some zeal, and have given more time to master the various branches of his art than others have given, and still be entirely unprepared to cope with the task he has set himself. It matters not so long as he is incompetent through insufficient education; the result is, and always will be, the same. We may be sure that his work is of little value to himself, to the public, or to his art. Very possibly the majority of such architects, with proper preparation and thorough training, might have produced creditable works, creditable alike to their art and to themselves. But, without knowledge of the fundamental principles of architecture, they have recourse to tricks and artistic subterfuges, or aim at novelty, as if, perchance, to surprise the public into favorable attention; when of all emotions that of surprise is not the legitimate object of any art, or, if legitimate, is only so in a very subordinate degree.

How easy it is to be original! One might change the position of the sill and lintel with their concomitant decoration, turn columns upside down, or do a thousand other things never done before. The effect would be startling, to say the least. But originality with beauty is another and very different thing, and not given to many men to produce. Surely we have seen numberless instances in which the architect's ignorance of the essential principles of the art has permitted him to produce new and terrible results, scarcely less startling than might be produced by the reversal of these accepted forms. There is, of course, a reason for the cap being at the top of a shaft and the base at its foot, of a pediment being set over an opening and not under it, reasons which ought to be familiar to every one who sets out to practise; but ask many of these architects the reason why they design a column with its usual arrangement, and they will have no other reason to give than that they have always so seen it. Could we keep such persons within the limits of mere copying, and that from good models, at least little harm would come, if no good; but we cannot, nor would such a course ever help to the advancement of architecture. The very A B C must be learned, if we would combine letters to form words, and the rules of grammar must be at our command if we would combine these words properly and intelligibly. Do all architects, then, know the A B C, much less the grammatical rules governing the art they practise? It would be impossible to study properly

[1] A paper by Mr. W. A. Potter, F. A. I. A., read at the late convention of the American Institute of Architects, held in New York in October last.

the history or practice of any phase of architecture and not become familiar with the principles which lay at its roots, principles on which it was founded and which make it possible, principles at once æsthetic and practical. Who can study a Greek temple or a Roman bath, and not be struck with the philosophic use of material in the one, and the philosophic planning as a means to an end in the other? These two buildings having been well studied, two principles will of necessity be fully understood and force themselves upon the architect, and he will thus learn the relation of material to form, and of arrangement to use. And yet how many instances are thrust into our notice every day, in which both these general principles are absolutely wanting. Whose fault is it if we see constructive principles governing the use of one material, and harmonizing with its physical qualities and capabilities employed, in conjunction with a material which can be logically used only in some other form? And whose fault is it when we see buildings built whose arrangement seems to have been made with no reference to the uses to which the building was destined? It is the fault of the architect who has come to his task unprepared, and whose responsiblity reaches much further than I would dare to say. And so follows a whole train of errors and failures. Blunder after blunder is perpetrated, calculated not only to retard the proper advancement of architecture, but to mislead public opinion, or, in the eyes of the few intelligent people who watch these architects, to cover the art with ridicule. Success (and by that I mean success in its highest sense, not a favorable public notice, but a doing of right and good work without regard to what an ignorant public opinion may say of it), success, I say, can never come in any great measure to a man unless he has convictions, and strong ones too, in relation to the work he has in hand. Be he politician, theologian, scientist, artist, or architect, he must have fixed convictions as to the right and the wrong of what he may do or teach. And who may be said to have convictions? Certainly not that man who is ignorant of the facts and principles of the art or science he may profess to practise. The broadest knowledge, the fullest acquaintance with facts and theories and principles, joined to sound judgment will give any man a reasonable ground-work on which to base his convictions; but no amount of good judgment will avail if he has not given careful study to facts, which make a judgment possible. So it follows that many architects coming to their work unprepared by an acquaintance with the æsthetic and scientific principles on which the art rests, ignorant alike of its practice in the past, of the merits of its different phases, of the reasons for the existence of its very details, — these architects are, I say, without any convictions whatever. To them nothing is, nothing ever can be, absolutely right or absolutely wrong.

Judgment and reason cannot do this work, for they have nothing to work upon. Mere taste, as fallible as it is questionable, is all they have to guide them, and on this broken reed they cannot with safety depend. The result with many, even intelligent, architects is a running after each prophet who may arise, who, with some force or genius, has the power to render an eccentricity or revival of form for the moment the fashion. Such architects blow one day from the east, and the next day from the west, the day after that from the north, and on the following day from the south. They have been infected by the novelty of four different styles of work, and have tried them all, but whether good or evil they know not, and following blind inclination they show themselves to be very architectural weathercocks. Could this be so if they knew anything of principles or their value? If a man has convictions upon the subject his work would be in the direction of, and governed by, these convictions, and practising one style he would reach such a point of excellence in its exposition or adaptation as education, and his natural gifts aided by experience, might allow. Architecture is a tentative art; it is not absolute. What do we know absolutely of the effect we are about to produce before we have produced it? We build up our errors of taste and judgment to remain in lasting stone. We have not the privilege of the painter, who may retouch his canvas, keeping it by him before it is perfect. We have no proof-sheets of our work to correct; nor are our words rehearsed, that at rehearsal we may correct our blunders. It is only through a series of failures of judgment that judgment is to be trained at all, and as we may never be sure of its being without fault, certainly it will never reach any reasonable degree of accuracy if we take up one style to-day, and another to-morrow, so having no experience in any one direction. We see this sort of thing every day, and if the architects who work after this manner were men of sound education, men of convictions, in fact, we should have fewer failures to deplore.

It is the learned men in all learned professions who place their profession where it ought to stand, and if the architects would wish to correct some of those faults which make failures in their designs possible, and to place the art of architecture where it has a right to be, mainly with them lies the power. Architecture is not an art of feeling alone. It is distinctly divisible into two parts, the scientific or practical, and the purely æsthetic. We cannot depend upon our feeling or taste, no matter how good both may be, for underlying all work are immutable and eternal principles of right or wrong which we ought to and must be familiar with, principles which are inseparable from the component parts of the art, correlative and mutual and to be understood and mastered if we would combine those elements which in the combination of the scientific and the æsthetic create and form the art whose servants we claim to be. Let us then acknowledge, as we think we must, how many failures result from ignorance, and, admitting this, the remedy is at once found.

THE ILLUSTRATIONS.

"THE VANCORLEAR," NEW YORK, N. Y. MR. H. J. HARDENBERGH, ARCHITECT, NEW YORK, N. Y.

The building was built by Mr. Edward Clark, and completed November 1, 1879. It has a frontage of 200 feet on Seventh Avenue and 100 feet on both Fifty-fifth and Fifty-sixth Streets. The materials of the front are Philadelphia brick and Dorchester stone, with a sparing use of terra-cotta. The chief feature of the plan is the court, which has an area of about 3,500 square feet; the level of this is the same as the basement floor, and is reached by an inclined driveway outside of the building. The construction is fireproof throughout. The finish is of hard woods. The building returns a fair rate of interest to the owner at rents varying from one thousand to fifteen hundred dollars.

HOUSE FOR F. B. PORTER, ESQ., NEWPORT, R. I. MESSRS. POTTER & ROBERTSON, ARCHITECTS.

A PORTION OF RIEVAULX ABBEY. DRAWN BY MR. D. A. GREGG.

ROMANESQUE ARCHITECTURE. I.

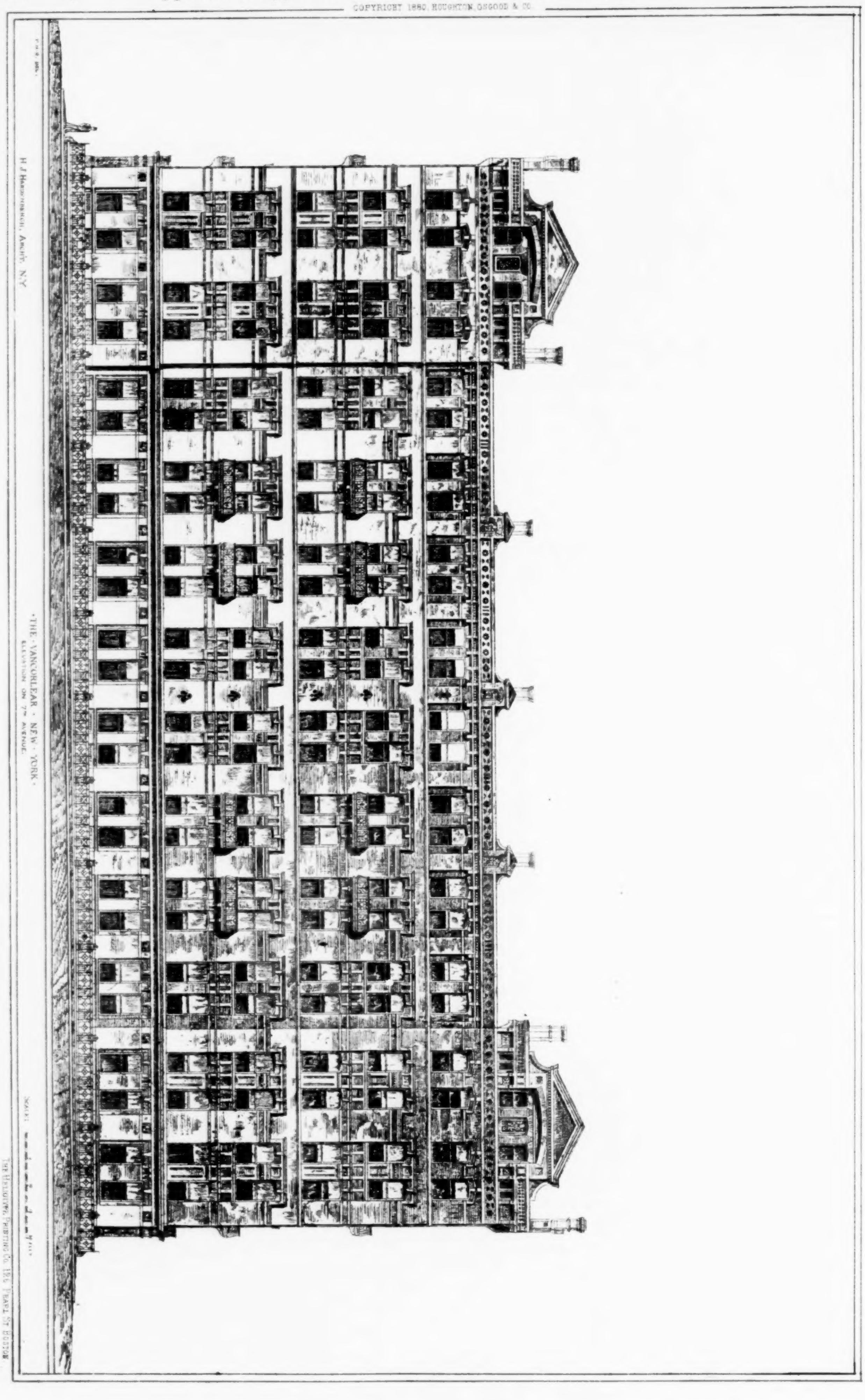
[The following article, by Mr. E. A. Freeman, was originally published in an English magazine, half a dozen years ago. It is not, so far as we know, easily accessible to students of architecture in any convenient form, and since it contains the best account that we have ever seen of the real position and office of the Romanesque in the development of architecture, we shall quote the essential parts of it in this number and afterwards.]

As it is with the history of language, so it is with the history of architecture. To judge from the popular disputes about Law Courts and the like, people in general group all forms of architecture under two heads. The division which they make is closely analogous to the popular divisions into ancient and modern, dead and living, on other subjects. Architecture is supposed to be divided into two great styles, "Grecian" and "Gothic," and it is thought a very good joke to call the admirers of the supposed styles respectively Greeks and Goths. It is not very easy to find out what people who talk in this way mean by the words which they use; but it might seem that "Grecian" architecture pretty well answers to ancient history, dead languages, classical literature, and the like. It might seem that "Gothic" architecture, that is, the architecture of England, Germany, and France, pretty well answers to modern history, living languages, and so forth.

But, for my present purpose, I have nothing to do with the practical inferences which have been made from the vulgar classification, with questions as to the style of the Law Courts, or with recent controversies of any kind. I wish to point out that the same times, the same despised and neglected times, which the general historian of Europe looks on as the most important in the history of language, are also, in the same historical way of looking at them, the most important in the history of architecture. Alike in language, in law, in religion, and in art, the function of Rome was to leaven the whole world, and the most truly interesting period of Roman history was that when Rome was beginning to discharge her Imperial and Œcumenical office in all these different ways. That is to say, the form of architecture which has, not indeed the highest æsthetical merit, but certainly the highest historical interest, is neither the purely "classical" nor yet the purely mediæval style, but the style which comes between the two. Less satisfactory as a creation of artistic skill than either the pure Grecian or the pure Gothic, the intermediate form, the Romanesque, connects itself more directly than either with the general history of the world. It is the architectural language of those ages when the new world gradually grew out of the old, the ages which showed Rome as the true centre of the world and its history, the point to which all roads lead and from which all roads set forth. Laying "classical" prejudices aside, and looking at the matter from either an historical or a constructive point of view, we shall see that Roman and Romanesque are essentially the same thing. And more than this, we shall see that the Romanesque, the supposed corruption, is in many respects a real development or improvement on the earlier Roman. Or rather, the classical Roman is in truth a transitional and imperfect stage, leading the way to a more perfect form in the supposed corrupt and barbarous Romanesque.[1]

The only sound classification of styles of architecture is that which arranges them according to their leading principles of construction. Of such principles, as far as we know at present, there are only three; more accurately speaking, there are only two, one of which again falls into two great sub-divisions. The two great sys-

[1] I am here saying again a good deal of what I said twenty-three years ago in my *History of Architecture*, a book which I suppose is by this time pretty well forgotten. It was written when I was very young, and when I had by no means an adequate knowledge of examples. It was, moreover, colored throughout by ways of looking at things of which I have long taken leave. But I believe that I had even then fully grasped the true relations between the study of architecture and the general study of history, and most of the principles and classifications which are there laid down are such as I should maintain still.

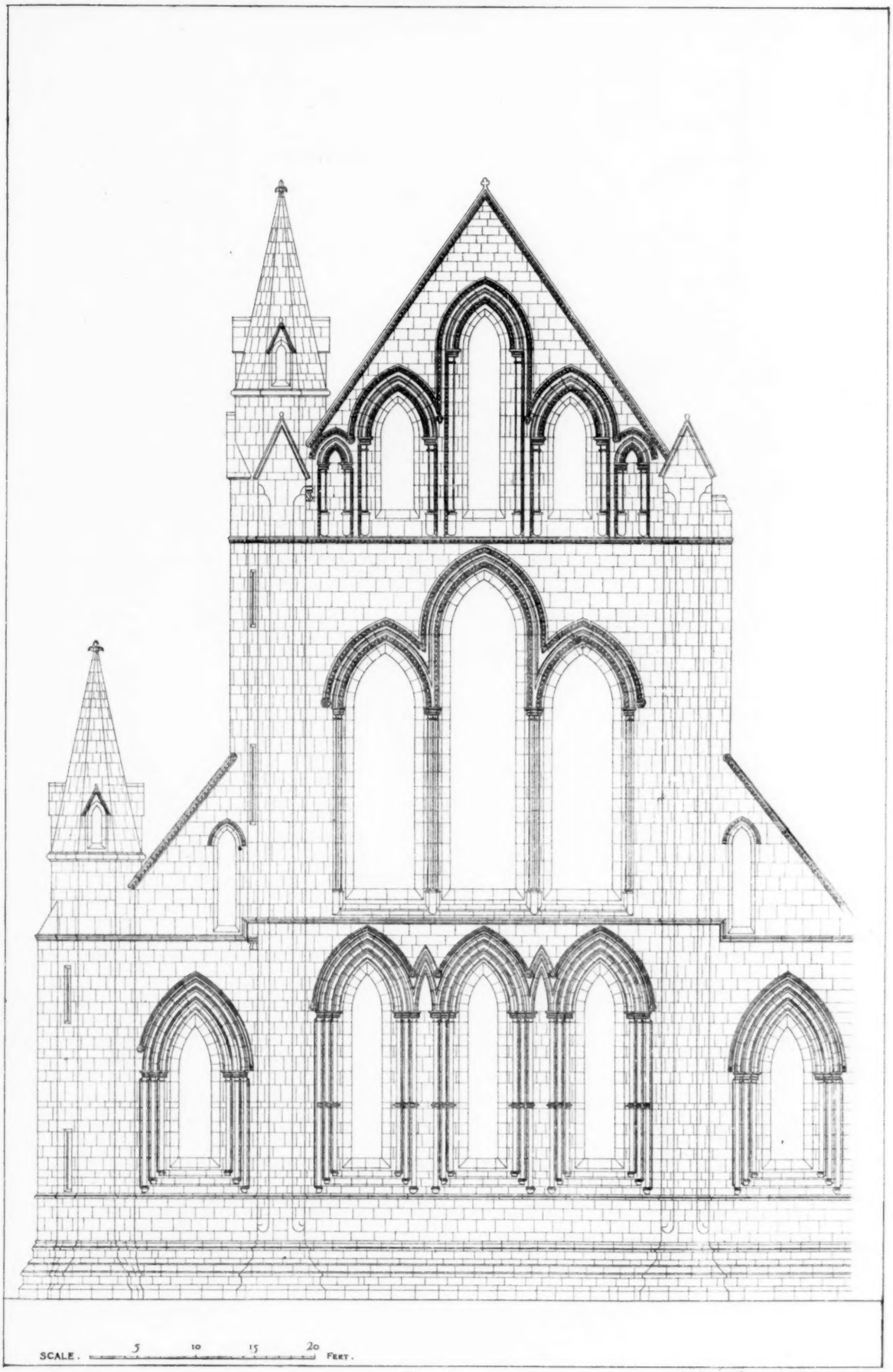


Jan. 1880.

House for F. B. Porter Esq., Newport R. I.

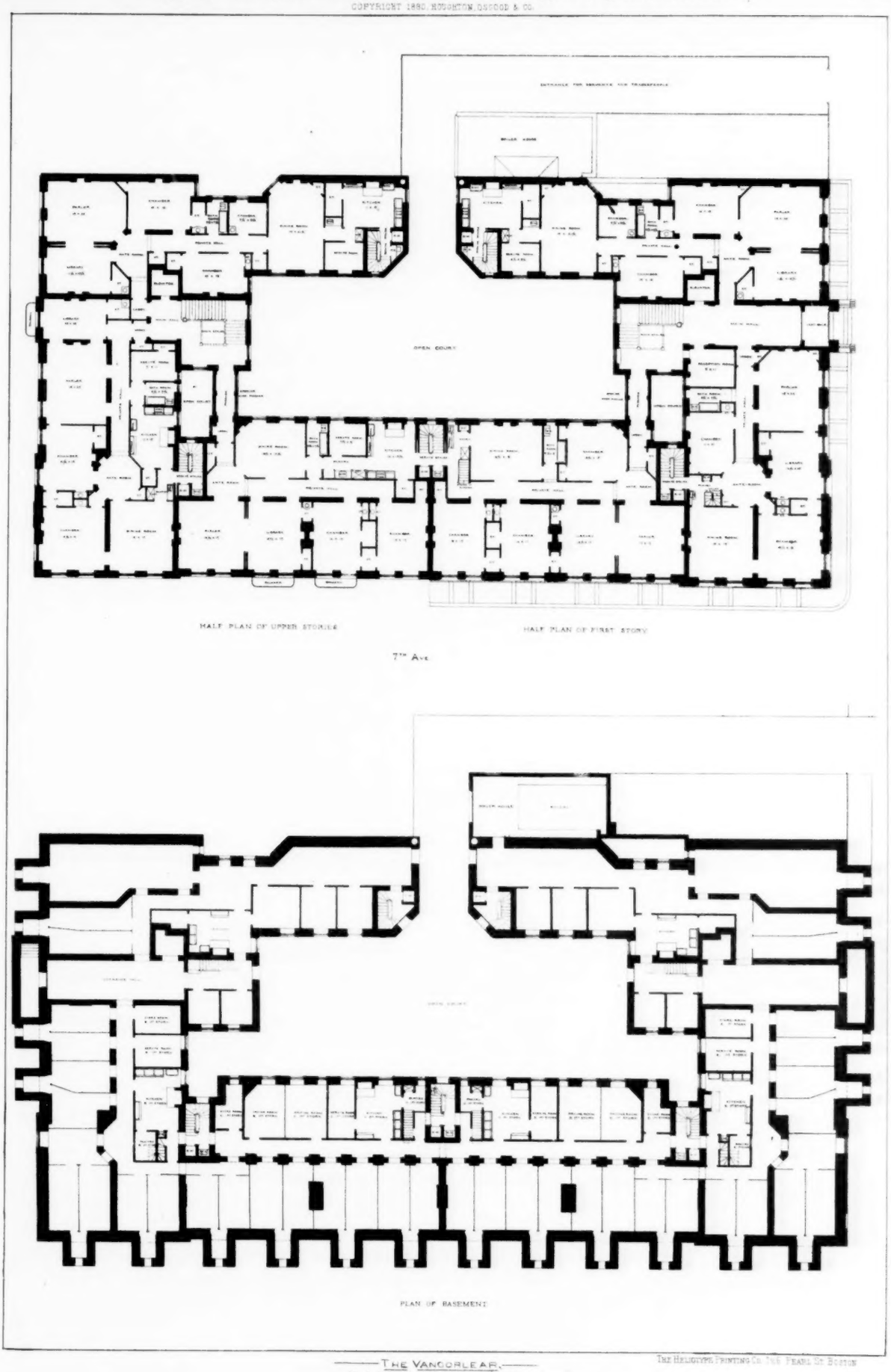
Potter & Robertson Architects.

62 W. 33d St. N.Y.



RICVAULX.
DRAWN BY D. A. GREGG

THE HELIOTYPE PRINTING CO. 126 PEARL ST. BOSTON



THE VANCORLEAR.
H. J. HARDENBERGH, ARCHT. N.Y.

THE HELIOTYPE PRINTING CO. 330 PEARL ST. BOSTON

tems of construction are the *Entablature* and the *Arch*, and the arch again may be either *round* or *pointed*. We thus get three distinct forms of construction, the Entablature, the Round Arch, and the Pointed Arch. And each of these principles of construction has been, in its own time and place, the animating principle of a style of architecture. That is to say, there have been times and places in which each of the three has not only been the prevalent form of construction, but has been accompanied by an harmonious and consistent system of decoration. Each of the three constructive principles may be looked on as the expression of an æsthetical principle. In the case of two out of the three this is generally acknowledged. It is universally felt that the architecture of the entablature is the expression of horizontal extension, that the architecture of the pointed arch is the expression of vertical extension. It is generally acknowledged that the perfection of the horizontal idea is to be found in the highest form of the architecture of the entablature, that is, in the architecture of old Greece. It is generally acknowledged that the perfection of the vertical idea is to be found in the highest form of the architecture of the pointed arch, that is, in the Gothic architecture of mediæval Europe. It is not so generally acknowledged that the intermediate form of construction, the round arch, has also its leading æsthetical idea. It is not so generally acknowledged that there have been times and places in which the round arch also has produced a style, not perhaps approaching so nearly to ideal perfection as either of the other styles, but still coming near enough to it to be set alongside the other two, as an independent and equal form of art.

Yet, if we admit the entablature, the round arch, and the pointed arch to be the three chief, and seemingly the three only possible, forms of architectural construction, it seems necessarily to follow that the round-arched construction must have its leading æsthetical idea no less than the other two, and that it must be capable, no less than the other two, of an ideal perfection. Whether it has ever actually reached its perfection or not, whether it has ever come so near to it as the other two have, is a question which is not now to the point. It will not do to say that there is a perfection of the arched style, but that its perfection must be looked for in the architecture of the pointed arch, and that the architecture of the round arch is an imperfect form. The answer is plain; the round arch is constructively as good a form of construction as either the entablature or the pointed arch. As a mode of building, it stands on a perfect level with them. Now, if we admit that all good and honest architecture consists in finding appropriate forms of decoration for good and honest forms of construction, it would seem to follow that every good and honest form of construction must be capable of finding some appropriate form of decoration, and of thereby reaching an ideal perfection. It seems then to follow that the architecture of the round arch has a right to be looked on as an independent form of art on a perfect level with the architecture of the entablature and the architecture of the pointed arch. Of course it does not follow that it has ever been actually carried so near to ideal perfection as either of the other styles. It is enough if we allow that it has, like them, its leading idea, and that it is capable of an ideal perfection. It seems, then, to follow that the architecture of the round arch has a right to be looked on as an independent form of art, on a perfect level with the architecture of the entablature and the architecture of the pointed arch. Of course it does not follow that it has ever been actually carried so near to ideal perfection as either of the other styles. It is enough if we allow that it has, like them, its leading idea, and that it is capable of an ideal perfection, whether it has ever actually reached it or not.

Some of the causes of the general unwillingness to admit the claims of the architecture of the round arch to an equal place alongside of the other two great forms are obvious enough. First of all, I am free to admit that the architecture of the round arch never has, as a matter of fact, been carried so near to perfection as both the other two forms have. There is no round-arched building so absolutely satisfactory as a work of art as either the best Grecian or the best Gothic buildings. In comparing Romanesque and Gothic buildings, a much greater share of the charm of the Romanesque building belongs to its age and its historical associations, a much less share to its actual merit as a work of art. I know not how others may feel, but to my own mind this is proved by the following test. A modern Gothic building, if it be really as good as an ancient one, is as satisfactory as an ancient one. But a modern Romanesque building is, to my mind at least, simply grotesque. The more closely it reproduces an ancient building, the more grotesque it becomes. This, I think, proves that, in the case of the Gothic building, we do, in the strictest sense, admire a work of art, while a great part of the charm of the Romanesque building is derived from other sources. But, if round-arched architecture has never been actually carried so near to perfection as the other two styles, that fact in no way disproves its abstract capacity of reaching an equal relative perfection. Secondly, though I believe the round-arched style to have a leading idea equally with the other styles, and to have equally with them an appropriate form of decoration, yet neither the leading idea nor the appropriate form of decoration is quite so obvious in the case of the round-arched style as it is in the case of the other two. There is something negative about all the characteristics of round-arched architecture. While the leading idea of the architecture of the entablature is that of horizontal extension, while the leading idea of the architecture of the pointed arch is that of vertical extension, I take the leading idea of the round-arched style to be that of no extension either way, but of simple rest and immobility. The round-arched form, again, has another peculiarity. No other can so well dispense with ornament. Either a Grecian or a Gothic building would be wholly intolerable, if it were so utterly void of ornament as many Romanesque buildings are which are perfectly satisfactory in their own way. Indeed, we may safely say that, the larger a Romanesque building is, the plainer it may be, perhaps ought to be. A small chapel in that style is commonly much richer than a great minster. What, too, is the nature of Romanesque ornament, when we get any? It is again something of a negative kind. The Greek mouldings are of a kind which serve to strengthen the horizontal lines supplied by the construction of the building. The Gothic mouldings are of a kind which serve to strengthen the vertical lines supplied by the construction of the building.

To admit the round-arched style as an independent form of equal rank with the other two involves giving up a whole train of notions about ancient and modern, classical, and the like. If we are to admit the claims of the round-arched style as I have put them, we must altogether wipe out the hard and fast line between ancient and modern. We must admit the continuous existence of a style whose earlier examples were the work of "classical" Romans, while its later examples were the work of barbarians, Goths, and the like. It would be hard to make many people believe that a really wider line ought to be drawn between two forms of mediæval work than between one form of mediæval work and one form of classical. It would be harder still to make them believe that one form of classical architecture ought to be looked on as a mere imperfect transition to a style which was brought nearer to perfection at the hands of mediæval barbarians. To those who take a wider view of general history there is no difficulty in all this. Sweep away the distinction of "ancient" and "modern;" cease to look on things "classical" as something all by themselves, hedged in from everything belonging to other times and nations; learn to look on history as a whole, and the history of Greece or of Rome simply as a part of that whole — and there will no longer seem anything strange or incongruous in holding that, in architecture, in language, or in anything else, the function of the first century on either side of our era was simply to pave the way for the eleventh or twelfth century after it. Once grasp the true life and spirit of the long imperial history, and there will seem nothing wonderful in fixing on the third century, in purely classical eyes a time of decay and degradation, as a time which alike in religion, in law, and in art stands out as one of the great creative ages of the world.

THE OPEN FIRE-PLACE. XX.

We pass somewhat blindly from one extreme to another. The opponents to the theory of "red-hot" permeability, and the dealers in cast-iron furnaces generally are convinced that the French Academy was mistaken, and that it is practically impossible for gases to pass through red-hot iron. In defence of their position they march out a small army of "distinguished" chemists, physicians, professors, and doctors of philosophy, who advertise liberally in behalf of the cast-iron furnace men that "cast-iron is no more permeable than wrought-iron;" that "any scientific chemist of experience must consider the exposition made in favor of wrought-iron much in the same light as a 'mare's nest;'" that "the result of analyses shows that carbonic oxide *has never passed through the metal at any time;*" that they cannot after three months' trial, working night and day, get the smallest particle of gas through the iron; that one has "never known such a thing as these gases passing through either cast or plate iron when used for heating purposes," etc.

Fig. 139 represents the Reynolds Wrought-Iron Furnace, one of

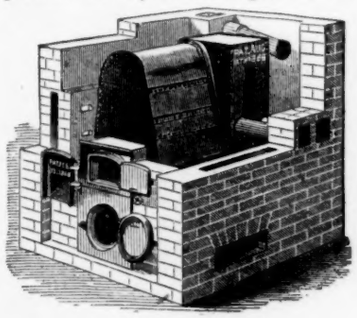


Fig. 139.

the most perfect hot-air furnaces now known. The doors are circular in form, with bevelled edges, turned to fit with the greatest nicety, so that they are as nearly air-tight as movable metal furnace joints can be made, and no check-draught door in the smoke-flue is necessary. This is a most important advantage, inasmuch as if no check-draught or damper be required in the smoke-flue, the pressure may be kept continually inwards or at least neutral at every part of the furnace. The radiating surfaces are well placed and large in extent.

Fig. 140 represents Dunklee's Golden Eagle Furnace. In it hot air passes as well inside of the tubes as outside of the drum (not shown in the drawing), enclosing them and the smoke chamber, thus exem-

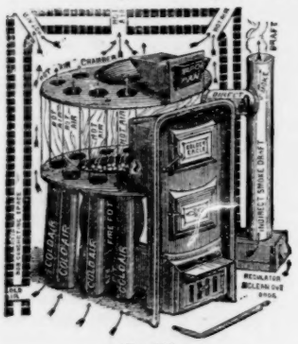


Fig. 140.

Fig. 141.

plifying both principles of circulation previously described. The tubes are of wrought-iron, and it is claimed that the greater expansion of wrought over cast iron tightens the joints when the furnace is

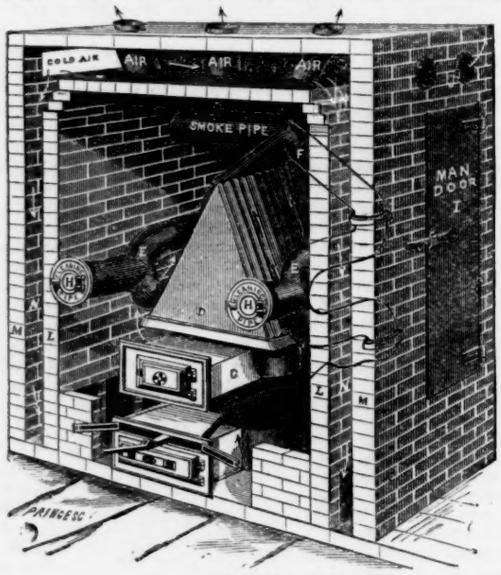


Fig. 142.

lighted and lessens the liability of leakage. The furnace has a large radiating surface and is a powerful heater.

In Chubbuck's Cast-Iron Furnace (Fig. 141) we have illustrated the principle of an increase of the heating surface by means of projec-

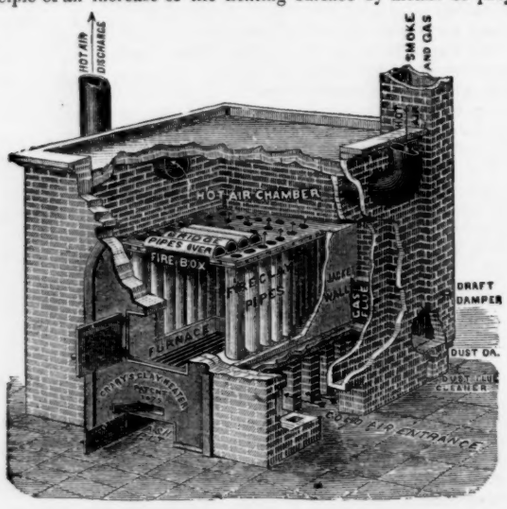


Fig. 143.

tions on the fire-pot, and in the Gothic Furnace (Fig. 142) by corrugations on the upper and lower radiating surfaces.

Terra-cotta is not permeable to gases when glazed or vitrified, but is exceedingly porous when partially or hard burnt without being vitrified. The Crary Clay Heater (Fig. 143) gives us an illustration of an American terra-cotta furnace.

Soapstone is altogether non-porous, and an excellent material for

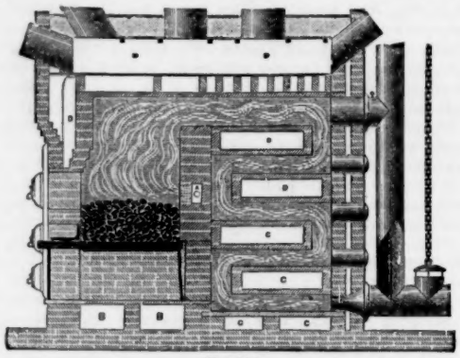


Fig. 144.

furnaces. The heating power of the furnace shown in Fig. 144, made by the Boston Soapstone Company, has proved to be much greater than would naturally be expected of material having so low a heat-conducting power.

THE VIGO COUNTY COURT-HOUSE.

To the Editor of the American Architect:

Dear Sirs, — Architects often wonder that the public and private citizens have erroneous conceptions of architectural affairs. Almost every practitioner has had some disagreeable experience in this regard. But when architects themselves fail to see clearly, and give *un faux compte rendu* to their guild, one feels no more like blaming common people and their attorneys for their extreme and adverse opinions. In the Vigo County Court-House case your correspondent accumulates an astonishing amount of errors and misrepresentations.

In your issue of December 20, 1879, your correspondent introduces the subject of the Vigo County Court-House by insinuating that I got myself and others into difficulty by my eagerness to obtain employment. The truth is that the Vigo County Commissioners came to my office, twice engaged my services in the project of erecting the court-house, and in the manner that other commissioners and all my clients have done. Never did I solicit any employment of Vigo County, and I do not propose to do it in the future. The commissioners I knew not. If they had not presented themselves at my office I would, perhaps, never have seen them. Thus Vigo County, by her Board of Commissioners, got me into difficulty, besides occasioning a large outlay of money, litigation, expense, trouble, bother, etc.

Without setting out the records, I wish to state that I had two claims against the county.

The first, a claim of one per cent for preliminary studies of a building estimated to cost $406,000, in the year 1872; the second, a claim of three per cent (not three and a half per cent, as your correspondent says) for preliminary studies, general drawings, specifications, a full and comprehensive set of inch-scale detail drawings, and about one half the full-size profiles. This in 1873, for an entirely different building, and ordered by the Board.

These two claims are very distinct. The first became a reality on the 10th of December, 1872, when the commissioners rescinded my contract and stopped my services upon the $406,000 building without consent. The second claim came into existence when the commissioners asked my services again, ordering another plan for a building, and adopting this plan the 4th of March, 1873, ordering it completed and agreeing to remunerate me as per schedule of charges of the American Institute of Architects.

The assertion of your correspondent that both plans were the same is a very great mistake. The records and the whole history of this court-house project are there to prove his error, without the help of the drawings and specifications of the two different plans, and a host of witnesses.

During the interim between these two contracts the Board of Commissioners, on the 17th of December, 1872, issued an advertisement for proposals to erect a court-house, not to exceed $250,000 in cost; each bidder to present his own plan and specification. The Legislature of Indiana, then in session, put a stop to this, enacting a law which made it obligatory on county boards to adopt plans first and exhibit them to the public for at least six weeks previous to letting the works.

In this particular move the commissioners ignored me entirely, and if this act of the Legislature had not been passed, I would have had no claim but on the first agreement, the one per cent for preliminary studies. The insinuation of your correspondent that it was intended to exclude all bidders and architects is wrong. County boards in Indiana may employ architects in any way they choose. There is no necessity for them to resort to any subterfuge. Where, then, is the reason for the insinuation that I was to associate my-

self with a contractor to secure a job in collusion with the Board of Commissioners, to the exclusion of everybody else ?

Both contracts in regard to payments were based upon the schedule of charges of the American Institute of Architects, and, entered by me in good faith on my part, were reasonable in all respects, and were cancelled by the Board without my consent. And here, again, your correspondent omits a very interesting part of the records.

To return to the first claim, I drew a set of study plans, upon the instructions of the commissioners, to wit, the usual county offices in main floor, a jail and sheriff's residence in basement, and three court-rooms with necessary appendages in the upper stories. The commissioners, upon the counsel of their advisers, — and they were numerous, — put this plan aside, as they were told that Vigo County was prosperous in wealth and population, and at some future time would need more court-rooms; hence a larger building would be desirable. This obliged me to prepare another set of study plans for a structure holding five court-rooms. That was the plan adopted December 2, 1872.

In accordance with the expert's definition of the term *preliminary sketches* are meant, — namely, "such sketches of a proposed building as an architect usually prepares in advance, for the purpose of arriving at a final and definite understanding with his client, and when the architect is finally employed to prepare the full drawings and specifications they are considered as forming part of such services and are not separately charged." I charged for them separately, as my first contract was rescinded by the commissioners December 10, 1872, and the next spring I was again employed by them to prepare plans for an entirely different building.

The study plans of a building to cost $406,000, which in its entrails was to hold a jail for forty-eight prisoners, a sheriff and jailer's residence, a full set of county offices, five court-rooms, with complete appurtenances, I consider a complex problem. Call such "*sketches* of a proposed building"! A few scratches made in advance, and, as three of the experts testified, without understanding the subject, ought not to be charged for! However, I look upon study plans in a different light. I consider them the most important part of an architect's performance. They are his composition, his creation. The more he understands of his subject the more time and pains he is likely to devote to the study plans. The final and definite understanding with his client is not all that the study plans contemplate. In a $406,000 building of the kind under consideration an architect has far more trouble to conciliate himself upon all points. For this reason instead of a few sketches I drew the plans of the four stories three times in succession, improving them at each study as a process of evolution. With these plans were drawn three sets of elevations, and transverse and longitudinal sections of the structure. So thoroughly was my work done that I could write a specification for the works which were to enclose the structure in every part. But here, again, comes the absurd statement of your correspondent that the commissioners did not know that the contract they let was only for the enclosing of the building! The letting of that contract was their business. They managed it, and for more than two hours they read to themselves, *viva voce*, the specification, which from beginning to end, and in every sentence, only specified the enclosing of the structure. It was thought best by them to defer letting the work for the full completion, as it would require more than two years to enclose the building.

I did fully and systematically all the labor embraced in the term preliminary studies, and by my contract for those services I was entitled to one per cent upon $406,000. This contract, like the second, was rescinded without my consent.

The second contract contemplated a building without any jail or sheriff's residence in the basement, and only three court-rooms. How this plan was the former your correspondent never explained. By the terms of this second contract, based upon the schedule of the American Institute of Architects, if all the drawings had been completed by the 10th of June, 1873, the date of the rescinding, I would have been entitled to recover three and a half per cent upon the cost. My labors, in this instance, embraced study plans, general drawings, specifications, a full set of inch-scale detail drawings, about one half the full-size profiles, and the duplicates of the general drawings and inch-scale drawings. The inch-scale drawings in this case were a full and large illustration of the general drawings in plan, elevation, and section, together with accurate horizontal and vertical profiles, some of the sheets for a single illustration being over seven feet in height. With these inch-scale drawings any ordinary assistant could have completed the full-size profiles left undone, and which I estimated at a half per cent out of the three and a half per cent due for a full set, making my second claim three per cent upon the estimated cost of $250,000.

The letting was advertised. Besides home mechanics, parties from Chicago, Dayton (Ohio), Indianapolis, Greencastle, New Albany, etc., proffered bids. These were left to the care of the auditor of the county, and alone could have told the cost of the court-house. The terms were that the commissioners would let the whole in a lump, if such bids were lower than the aggregate of the proposals in detail.

When the time for letting arrived (June 3, 1873) there were nineteen proposals, none of which were opened, as a new man came on the Board, which made a majority against building a court-house, and the order to build, together with my contract, was rescinded.

In short, the Board of Commissioners employed me to prepare plans, drawings, etc., for a court-house to cost $406,000, and made a written contract agreeing to pay me for services in the erection of the building according to the schedule of the American Institute of Architects. I had earned justly one per cent under that contract when it was rescinded, and was left without a cent of compensation.

The next year I was again employed by the same Board to get up a different plan for a different building, under a new law that had been passed. I did so. My plans were adopted. I was again employed as architect to complete the building, to be paid by the schedule of the American Institute of Architects, and after myself and assistants had worked for more than five months my contract was cancelled because the county did not want to go on and build a court-house.

My services under the two contracts, with interest thereon since 1872 and 1873, would, at the lowest estimate, amount to about $14,000.

Now, after seven years, in which I have been to great expense, litigating with a wealthy county, which I am informed has paid out over $2,000 in trying to beat me out of my just earnings, I receive a verdict for $10,425. I will be compelled to law this for years through the Supreme Court.

I have ever been ready and anxious to make a fair compromise, but this having been refused, I go to the court and intend to see whether an architect, under fair and honorable contracts, has any rights that a county board is bound to respect.

Very respectfully yours, J. A. VRYDAGH.

ARCHITECTS' CERTIFICATES FOR PAYMENT.

MILWAUKEE, January 2, 1880.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Dear Sir, — I don't know that you have seen a decision given in the English High Court of Justice, Common Pleas Division, March, 1879, Stevenson *vs.* Watson. A lawyer friend handed me the *Central Law Journal*, bearing date July 25, 1879, published at St. Louis, where you will find the case reported at length. It is condensed as follows: —

"A company employed the defendant as their architect to design and supervise the building of a hall. The plaintiff undertook to build the hall, and the contract to build was signed by the company and the plaintiff, the defendant being no party thereto. The contract stipulated that the defendant should be at liberty to make such additions to, and deductions from, the original plan as he might deem advisable; the remuneration for such alterations to be estimated by him in a certain manner; all matters in dispute were to be left to the defendant, whose decision was to be final. The statement of claim alleged that, during the progress of the work, the defendant gave certificates from time to time, and the plaintiff thereupon received payment of various sums; but that in estimating the final balance due to the plaintiff, the defendant did not use due care and skill in ascertaining the amount to be paid to the plaintiff, and neglected and refused to ascertain the amount of the additions to, and deductions from, the original plans in the manner stipulated for, and 'knowingly and negligently' certified for a much less sum than was really due; and it was further alleged that, when the error was pointed out by the plaintiff, the defendant refused to reconsider his certificate. *Held*, on demurrer, that the duties of the architect were not such as could be deputed to an ordinary clerk, but called for the exercise of professional judgment and skill; that no fraud was charged against him, and that accordingly the action would not lie.

"Per Lord Coleridge, C. J. The plaintiff had taken the defendant for better or for worse, not as an arbitrator, but as a person whose opinion, as a condition precedent, he had to obtain before he could get a sum of money; and this being so, the plaintiff could not bring an action against the defendant for refusing to give the grounds of his opinion or to reconsider it.

"Per Denman, J. The defendant, though not exactly an arbitrator, was in a position very analogous to that of an arbitrator."

My friend thinks the case of importance to the profession, as he says in his note to me, "Coming from the English High Court of Justice, and the several judges concurring mainly, makes it a case of weight." I perfectly agree with him and therefore invite your attention to it. Yours truly, A. BATE.

THE MECHLIN MARKET-HALL.

NEW YORK, January 16, 1880.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Sir, — In the number of the *American Architect* for January 10 you give a view of a group of buildings at Mechlin or Malines, situated a few miles from Brussels, with no explanation of the same. From my guide-book (Baedeker's), used on a visit to Belgium in 1878, I quote the following: —

"The place still boasts of several mediæval buildings. The old Cloth Hall, begun in 1340 but left uncompleted, with a small tower of the sixteenth century, is now used as the Guard House. [Note the grated windows in the engraving.] To the left of it are remains of a late Gothic Palais de Justice, begun by Keldermann in 1530."

The last mentioned building appears to have been left in an incomplete condition some years, and then roofed over, the upper stories being used as a dwelling, and the lower one converted into shops.

The engraving fails to convey the picturesqueness of the original on account of the firmly drawn lines of the roofs, windows, and street corners.

At the time of my visit the large square in front of the Guard House was being filled with booths, tents, travelling houses on wheels, much like a photographer's car, etc., preparing for a grand fair, to happen the following week, and I sketched the scene with my back to the Guard House, choosing that view on account of the picturesque buildings and the Cathedral, which formed a striking background to the lively scene in front.

Very truly, L. W. Seavey.

OUTSIDE COMMISSIONS FOR ARCHITECTS.

[We give the benefit of publication to the following advertising letter, which has been forwarded to us, and was addressed to a person who, being an architect, is not a dealer.]

Dear Sir, — We beg to invite your attention to our marbleized iron mantels which are now so extensively used. They have proved a complete success in every way.

We would especially invite your attention to our Hackett Patent Grate, illustrated and explained on pages from 39 to 49 inclusive.

We recommend this grate to you for its superior heating power, economy of fuel, and cleanliness.

We have a very complete line of frames, fenders, summer-fronts, baskets, and blowers on hand, and any orders for repairing or replacing that you may send us will be promptly attended to at reasonable rates. *We offer you liberal commissions on all sales made by you.* Please favor us with a call and examine our samples.

Very respectfully, Bennett & Walcott.

CAST-IRON IN FURNACE CONSTRUCTION.

Boston, January 19, 1880.

To the Editor of the American Architect:

Dear Sir, — I notice in your issue of January 17 an article on the open fireplace in which the properties of cast-iron as a material for heating furnaces are discussed, and where certain facts and experiments are adduced to show its porosity or permeability under a pressure of several atmospheres. I do not wish to appear as the advocate of cast-iron as the best material for stoves, but I believe in giving everything a fair chance, and do not believe in the course of reasoning which is adopted in this article. In the first place, it does not seem to me to follow that because cast-iron is permeable under a pressure of several atmospheres, it must be also permeable at a pressure of eight millimetres of water, which is about one twelve hundredth part of an atmosphere, or one twenty-five hundredth part of two atmospheres! Although such a deduction is not expressed in so many words, it is left to be inferred from the tenor of the article referred to.

Again, the outward pressure measured by three to eight millimetres of water, as quoted, seems to me to be due to the fact that the furnace in question had no escape for gas and smoke at the top of its dome, but only at its base, near the floor. This is not the case in all furnaces, and must be considered as a defect in all where it exists, for this very reason, that it allows an outward pressure to exist all the time from the upper part of the furnace which might be avoided if the smoke-pipe were connected near the top. Now, whatever the material of a furnace may be, it is not an easy matter to keep it perfectly air-tight at the joints for any length of time after subjecting it to such excessive alternations of temperature as furnaces always must endure, so it seems to me best to construct them in a way which will avoid the pressure of gas from within outward so far as possible, as a measure of prudence. All furnaces that have the smoke-pipe attached near the base must needs have an outward pressure from the dome, which acts like a balloon, only its skin is rather too heavy to allow it to soar upward. The contents are always pressed upward by the atmospheric pressure below, acting through the fire, and as the column of air outside is heavier than the column of same height of heated gas inside, the latter shows its tendency to escape upward as indicated by the manometer in the experiment quoted. If in that experiment the smoke-pipe had been attached at the top of the dome, giving a free escape for the buoyant gases at that level, I feel pretty confident that the pressure would have vanished, and a good chimney draught may turn it in the other direction, namely, inward instead of outward. Edward S. Philbrick.

PUBLICATIONS RECEIVED.

Experiments on the Strength of Wrought-Iron and Chain-Cables. Report of the Committees of the United States Board appointed to Test Iron, Steel, and other Metals, on Chain-Cables, Malleable Iron, and Reheating and Rerolling Wrought-Iron, including Miscellaneous Investigations, with the Physical and Chemical Properties of Rolled Wrought-Iron. By Commander L. A. Beardslee, U. S. N., Member of the Board and Chairman of the Committees. Revised and abridged by William Kent, M. E., formerly Assistant to the Committee on Alloys of the United States Board, Associate Editor of the *American Manufacturer and Iron World*, Pittsburgh, Pa. New York: John Wiley & Sons. 1879. Price $2.00.

American Water-Color Society. Catalogue of the Twelfth Annual Exhibition. With illustrations. 1879.

NEW JOURNALS.

With the new year another periodical enters the field of independent journalism, and assures its subscribers that fearlessly and conscientiously its editor, Dr. P. H. Vander Weyde, will uphold the purity of its columns against the wiles of the promoters of fraudulent enterprises and the blandishments of the advertiser who expects three or four *quids* for his *quo*. For eleven years Dr. Vander Weyde was the editor of the *Manufacturer and Builder*, so he probably understands the difficulties that will beset his course in making the *Practical American* as independent as he would have it be. As Dr. Vander Weyde is the proprietor as well as editor, his course will not be obstructed by the lack of harmony and division of counsel that might otherwise arise. As might be expected from his long connection with that journal, the *Practical American*, which is to be issued monthly, is essentially like the *Manufacturer and Builder* in appearance and material. We trust that in succeeding issues there will be less carelessness shown by the proof-readers.

Another familiar visitor appears in a new dress. This time it is the journal, not the editor, which assumes new attire. The *American Builder* will henceforth be known as *The Builder and Woodworker*. Beyond the change of title and title-page, we do not perceive any alterations which call for mention.

NOTES AND CLIPPINGS.

Governor Cornell on the Capitol at Albany. — In his inaugural speech Governor Cornell said: "As a member of the New Capitol Commission in 1868, my most earnest endeavors were made in opposition to commencing the Capitol, in the belief that it could not be constructed within the limit of $4,000,000, as then fixed by the Legislature; but the commission decided to proceed, and the building was begun. The work has progressed under appropriations by successive Legislatures, notwithstanding the pronounced objections of the last three executives, until it is now so far advanced that there seems to be no rational course left but to provide for its completion in the most advantageous manner possible. In this view it is suggested whether it may not be best to provide the necessary means by a loan under the twelfth section of article seven of the Constitution, by which arrangement a portion of the burden would be placed upon the future tax-payers, who will enjoy the use of this grand but costly edifice."

The New York Sanitary Bureau. — The reality of the service rendered to the city of New York by the Sanitary Bureau of the Board of Health is shown by the following record of the work performed for the week ending December 27, 1879: The total number of inspections made by the Sanitary and Assistant Sanitary Inspectors was 1,425; as follows, namely, 2 public buildings, 725 tenement-houses, 96 private dwellings, 85 other dwellings, 4 manufactories and workshops, 8 stores and warehouses, 27 stables, 14 slaughter houses, 1 lime kiln, 2 manure dumps, 1 garbage dump, 1 fat-rendering establishment, 1 fertilizing works, 1 railroad tank, 5 sunken and vacant lots, 1 smoke-house, 1 street dump, 45 yards, courts, and areas, 53 cellars and basements, 70 waste-pipes and drains, 177 privies and water-closets, 31 street gutters and sidewalks, 5 dangerous stairways, 4 smoky chimneys, 1 cesspool, 7 other nuisances, together with 68 visits of the Sanitary Inspectors to cases of contagious disease. The number of reports thereon received from the inspectors was 669. During the week 48 complaints were received from citizens, and referred to the Sanitary and Assistant Sanitary Inspectors for investigation and report. Permits were issued to the consignees of 42 vessels to discharge cargoes on vouchers from the Health Officer of the Port; 56 permits were granted scavengers to empty, clean, and disinfect privy vaults. The Disinfecting Corps have visited 74 premises where contagious diseases were found, and have disinfected and fumigated 67 houses, 67 privy sinks, together with clothing, bedding, etc.

Fire-Proof Building. — The large store now building on the corner of Broadway and Grand St., New York, to replace the building burnt last spring, is to have no fire-proof construction. It is understood that the owners contend that they can get no rebate in insurance on the building, nor the lessee on insurance on stock, owing to the competition in insurance circles. This question must sooner or later be settled, as pure logic must convince every one that a fire-proof building does not stand the same risk of fire as one with no safeguards, and if, as insurance people claim, they can afford to make no reduction, it merely shows that they are taking too much risk for too little money, and owners will do well to think on the question of how soon insurance will be on a solid basis So soon as it is, a marked difference will be made in the rates on fire-proof buildings and fire-traps.

Verdict against a Contractor. — While the building of the American Express Company, extending from No. 51 to No. 61 Hudson Street, New York, was being constructed in April, 1878, John Crane was kille. by a shutter falling upon him from an upper story. His wife sued the company and William E. Hanna, the contractor for the construction of the building, in the Superior Court, for $5,000 damages. The case was tried before Judge Freedman. The express company claimed that it was not liable, as the work was under the charge of the contractor. The contractor pleaded that the contract had been finished at the time, and he was then engaged as the servant of the company upon extra work. Judge Freedman dismissed the case as to the express company, and the jury gave a verdict against Mr. Hanna for $3,000.