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A BILL is now pending before the New York Legislature, providing for the restriction of the height of buildings to eighty feet as a maximum, the limit of vertical dimensions varying below this according to the width of the street upon which the buildings are situated. In general, the proposed law seems to be modelled on the new municipal regulations of Paris, which restrict the construction of lofty buildings in the same way, the limit varying from thirty to sixty-five feet, nothing being allowed to exceed the latter height except by special permission. It is very improbable, under the present circumstances, that such a bill can be passed, but there is, nevertheless, much to be said in its favor. The primary reason for limiting the height of buildings is to prevent the streets and the lower rooms of neighboring houses from being deprived of sunshine and air, and any one who will take the trouble to observe the vast shadow which is cast by the brick and iron giants along the south side of Fifty-ninth Street can see that even the wide avenues of the upper part of New York might easily be rendered dark and noisome by a bordering of such houses. Another reason for endeavoring to check the excessive loftiness of buildings lies in the fact that the danger from earthquakes is immensely increased in structures more than a hundred feet high. It is true that New York has never been visited by a severe shock, but it lies in a belt colored of a pretty dark shade on the earthquake maps, and an unusually violent shaking might bring down some of the most costly pieces of property in the city.

IT is commonly said that land suitable for first-class dwellings is so dear in New York that it is necessary to build high in order to accommodate all who wish to live on or near a given spot. To our mind this argument has always seemed to cast a little discredit upon the taste of the New York people. That some land on or about the Fifth Avenue sells for high prices is true enough, but the greater portion of its value is unquestionably due to the fact that business, which can and must pay at a high rate for good location, is rapidly invading what was once a quiet and retired street, and this very fact, far from making the Avenue more desirable for dwelling-houses, would certainly, in the eyes of people of refinement, in most towns, render it particularly distasteful. It is inevitable in old but growing communities that a palace should here and there be elbowed by a grocery, and that the dentist's assistants should regale themselves during their leisure moments by gazing into the windows of the noble mansions next door; but it is only in New York that we find such juxtaposition, if not actually courted, at least looked upon without aversion. It is not wonderful that with ladies' tailors, quack doctors, stable-keepers and millionaires all scrambling for the same house-lot, the price of such a house-lot should advance to correspond with the demand; but it does not follow that the operation of a wholesome law should be suspended in order to allow a larger number of persons to satisfy their peculiar taste than would otherwise be able to do

so. So far from the limits of Manhattan Island being too restricted to allow persons who love privacy and comfort to live within sixty feet of the ground, there are hundreds, perhaps thousands, of lots, such, particularly, as those bordering on the so-called Riverside Park, surpassing in beauty of situation any house-lots in the world, except perhaps a few along the lake front in Geneva, which seek in vain for purchasers at prices which would be considered low for average land in a second-rate western town. When half of these lots are occupied—let us hope by persons of sufficient discrimination to appreciate them,—it will be time enough to argue that there is not room enough in New York to allow of the people who walk in the streets enjoying the sunshine.

WE regret to hear of the sudden death of Mr. Henry Bevis of Cincinnati, a very well-known architect, prominent both before the public and in the profession, to the honor of which he contributed both by his efforts and his example. He was one of the earlier members of the American Institute of Architects, and always active in the affairs of the Cincinnati Chapter, the younger members of which looked up to him as a veteran in solid and intelligent constructive work. The same qualities which secured him the respect of those best able to judge of his professional character gave him the enduring esteem of his clients, and he acted for many years as architect to some of the largest estates in the city. More recently, he had acquired the confidence of the public authorities, and for the last five years had designed and constructed most of the public schools of the city. His death, occurring at the age of fifty, in the very prime of his professional life, was felt among his business associates as a sad shock. The Cincinnati Chapter of the American Institute of Architects immediately met and passed resolutions of regret and condolence, and his funeral was attended both by the Chapter and by the members of the Builder's Exchange.

ANOTHER of those buildings constructed in accordance with the owner's ideal of economy, rather than with that of better-instructed persons, fell down a few days ago at Memphis, Missouri. The structure was of brick, two stories high, and contained the town post-office, besides three stores of various kinds. No unusual vibration or shock seems to have been communicated to the walls or floors, and there was no warning whatever of the crash, the whole affair apparently collapsing at once, as if it were tired of holding itself up. Most of the inhabitants were in their own rooms, or in other parts of the building, and three, who happened to be in the basement, were buried deep in the ruins, and either crushed to death or burned by the fire which immediately spread among the splintered timbers from the stoves which fell with them. Four others, who were in the upper rooms at the time of the catastrophe, were seriously injured, but not killed outright. It has a heartless sound to say that we are glad to learn that there was no insurance, either on the building which fell, or on the adjoining ones which took fire from the burning debris afterwards, but, according to the usual reckoning, the owners, in bearing the whole burden themselves, have saved their fellow-citizens from being obliged to contribute twice the value of the property destroyed to make good their loss, and there is some satisfaction in the reflection that the lesson against insecure construction will probably be too severe to be lost.

FOR some time a discussion has been going on in the island of Nantucket, thirty miles south of the Massachusetts coast, over the introduction of a sewerage system. The island is a crescent-shaped mass of sand, having the town, which contains nearly all the inhabitants of the island, closely built on the inside of the crescent. A few years ago a public-water-supply was introduced, from a pond in the interior of the island, and the inevitable result has followed, in the overflowing of the ancient privy-vaults and cesspools which had served for a century without giving obvious trouble, and the saturation of a piece of marshy ground near the harbor with foul liquids. Whether the extreme conservatism of the inhabitants of the island will actually consent to the expenditure of the sum necessary to build the sewers is at present uncertain, but it is a

little remarkable that the scheme of sewerage presented in the report drawn up for the citizens by Mr. Ernest Bowditch provides for the disposal of the waste liquids by irrigation upon some unoccupied land a mile or two from the town. So far as we know, this is the first instance of an engineer of reputation venturing to propose the utilization of sewage upon the soil of an island in the sea, surrounded by an illimitable extent of those "tidal currents" which are popularly supposed to be the best receptacles of filth; but there is a great deal of unoccupied and useless territory on the island, and Mr. Bowditch seems to have met the conditions of the case with peculiar success. The sewage would have to be pumped to enable it to be applied by gravitation on the land, but this would not be an expensive matter, and the warm sandy soil of the island, which, when enriched, is remarkable for its productiveness, together with the favorable climate, and the proximity of the markets of the large Eastern cities, would seem to promise almost certain success to a well-managed sewage farm.

ACCORDING to the *Scientific American*, an improvement in wire-cloth lathing has been introduced which promises to be of great practical value. Every one who has used wire lath knows that there is much difficulty, especially with the lighter kinds, which contractors think it for their interest to use, in making it so firm as to bear the necessary trowelling, which is apt, if the wire springs under the pressure, to roll the mortar on the underside of the lathing entirely off. The old way of applying the cloth was to stretch it with great force, by means of a special machine, between the beams to which it was nailed, the tension thus taking the place of inherent stiffness. This being a troublesome and expensive process, was superseded, as the use of the lathing became more common, by multiplying the furrings, placing them, for ordinary purposes, six inches apart, so as to get very frequent nailings. The increase in the number of thin wooden furring strips behind the wire takes away something from the advantage of employing it as a protection from fire, and architects experienced in using the material generally found it desirable to specify the heaviest quality of cloth, and diminish the number of furrings accordingly. The new invention which is described in the *Scientific American*, and which consists simply in corrugating the wire cloth at intervals of about six inches, seems likely to meet two important requirements with great advantage. The corrugated cloth, by being placed with the indentations upward and nailed in them, is held a little away from the beams, so that a good key for the plaster is obtained under beams or planks without the use of wooden laths or strips. The corrugations, moreover, stiffen the cloth very materially, and a light fabric, so treated, can be worked upon as well as a much heavier cloth of the ordinary kind, the number of furrings being equal in each case.

A CURIOUS system of ventilation, which has been introduced into a church in London, is described in the *British Architect*. The church, which some of our readers may wish to visit next summer, is that of St. John, on the Wilton Road, and is intended to accommodate a congregation of a thousand persons. As in most churches, the air at evening services was for a long time observed to be very close and oppressive, and it was decided to adopt a "thorough system of ventilation." Two shafts are therefore set in the west end of the church, communicating with the external air, and fitted with water-pipes, which, when desired, throw a fine spray down the shafts. The falling drops carry with them a considerable amount of air, which issues from the shaft into the church through a number of openings about nine feet above the floor. In passing out, the currents of air are led through tubes, around which are groups of gas-jets, and these, when lighted, warm the air to a pleasant temperature, which can be varied by turning on more or less of the gas. Above the gas-jets are extraction shafts, with caps to produce a vacuum, and these are said to carry away, as fast as vitiated, the air delivered from the "spray tubes" as well as that from a small furnace in the basement, which supplies three registers in the nave floor. The whole affair seems to have a primitive simplicity which is very amusing. According to the *British Architect's* description, the total capacity of the apparatus extends to the admission of "no less than seventy thousand cubic feet of warmed fresh air per hour," "and this," it goes on to say, "it is evident, is enough to effect

a good change in the air of the place." We do not know exactly what an English church-goer would consider a "good change" in the air of an ecclesiastical building, but architects in this country, where ventilation is a matter of every-day practice, will hardly need to be reminded that seventy cubic feet of fresh air per hour for each of a congregation of a thousand persons is less than one-twentieth of the standard allowance in buildings pretending to any ventilation at all; and only about one-fortieth of that provided for some of our best theatres and churches, to say nothing of hospitals and first-class schools. The idea of warming the fresh-air supply for a large church by means of gas-jets is also novel, and will, we venture to say, commend itself more to the gas-companies than to those who pay the church bills.

THE ingenious agent for the United States of a certain kind of wall-decoration informs the readers of one of the New York papers that his goods are "sold by all reliable Architects," etc., "in the United States." Without failing to notice, with grateful appreciation, the compliment intended to our modest profession in spelling the appellation of those who practise it with a capital A, we cannot refrain from remarking that the polite advertiser seems to be laboring under some mistake. Applying to ourselves with strictness those rules of logic which we like to see others observe, we will, instead of indulging in mere contradictions, point out that the expression "sold by all reliable architects," inevitably implies its converse, that "no architect is reliable who does not sell this particular wall-decoration." Now this proposition we may venture with considerable confidence to dispute, being personally acquainted with several architects whom we know to be reliable, and who do not sell this wall-paper material, or any other. We do not doubt that many of our readers have had the same experience as ourselves, and would even support us in the broader assertion that not only is it possible for architects to be reliable who do not sell stamped putty at a high price, but that few, if any, reliable architects do so; and that if any architect were known to deal in such merchandise, while ostensibly engaged in the practice of his profession, he might safely be regarded, not as reliable, but as unreliable; and people of sense would do well to avoid him and his wares. If this view of the subject could be brought to the notice of the enterprising individual in question who, as we may suppose, knows little of the habits of architects, we have no doubt that the offensive advertisement would be changed or withdrawn, and we can assure him that it would be for his interest to have this done at once.

IT is curious to see how difficult it is for the average commercial mind to comprehend the idea of a professional life, to realize the possibility of one man's responding to the confidence placed in him by another, and endeavoring to serve him to the best of his ability, without trying to take advantage of the relation to get away secretly some of his money. If it should happen, as it does occasionally, that the slur cast upon architects by such announcements as the one in question is resented by a number of them, the consternation of the offending merchant is as ludicrous as his patronizing offer to purchase the profession; and in some cases, as we know, a better understanding, accompanied with mutual respect, has been established between the two parties to such a discussion, much to the satisfaction of both. Since the announcement by the editor of *Truth*, that "the chances were fifty to one that if an architect strongly recommended any particular commodity to his client, he had a pecuniary interest in the sale of it," an announcement, by the way, which is certainly, for a devotee of truth, what the boys would call "a good healthy lie," the impression which he desired to convey seems to have spread rapidly, and the people who wish to take advantage of the services of so complaisant a profession are apparently more numerous and more impudent than ever. It is quite time that a lesson was given to these gentry, and while it would be unfair to those who employ architects to dissuade them from purchasing a given commodity simply to punish the effrontery of the manufacturer or dealer, it is a fact worth laying to heart by those who depend for a considerable portion of their business upon pleasing the taste of architects that the worst possible advertisement of their goods, both among the architects and their clients, is one which suggests, however remotely, that the architect might not act with perfect good faith in recommending them.

SPANISH ARCHITECTURE.¹—XI.

AVILA.—SEGOVIA.



ALTHOUGH I give the cathedral its accustomed precedence, in description, I found, in fact, the church of San Vincente without the walls more attractive, and to it devoted my first days. It is not very large, nor is it lavishly ornamented, nor does it show any clever novelties of design; but for nobility and calm dignity, it is one of the best buildings I ever saw. There are, of course, several other churches of the same character rivalling it in these qualities, but San Vincente, more particularly in its interior, has individuality and deserves a reputation of its own. The ground-plan is simple. A nave about twenty-five feet wide, of six bays with side aisles about fifteen feet wide, is crossed by transepts of same width as nave and without aisles. East of the transepts and opposite the nave and aisles are three apses, each planned upon the proportions of a square with semicircular end. At the west

end two towers stand before the aisles, and while the ancient west door is on the line of their eastern walls, a fine arch on the western line makes a porch of all the space between them into which the towers open.

The total internal dimensions are, about: length, one hundred and seventy-five feet, breadth over transepts, one hundred and twenty-five feet. The exterior is very striking but its beauty is much marred by the unkempt spot upon which it stands. Disorderly heaps of earth and rubbish affording amusement to a few mendicant chickens, upon one side; and a bleak, neglected plaza usually infested by a half-dozen of juvenile beggars, on the other. Yet this site might be made one of the prettiest in Spain, and that with very little trouble. The view of the west front is taken from a knoll at the base of the city walls looking over some tiled-roof sheds which stand on lower ground. As can be readily seen the lower parts of the towers are earlier than the second stage, and by comparing with the east end it is equally evident that though they more nearly agree with it in age, yet they are somewhat later. The very characteristic buttresses and weatherings are in the same style as those to the north transept, which seem to have been added to strengthen that part after its erection. For these reasons I am satisfied that the west front as originally designed was on the line of the back of the towers, that the superb west doorway was projected instead of recessed as now, and that the towers and the lofty arch forming the porch between them were additions which the first architect did not contemplate. This view is further supported by the

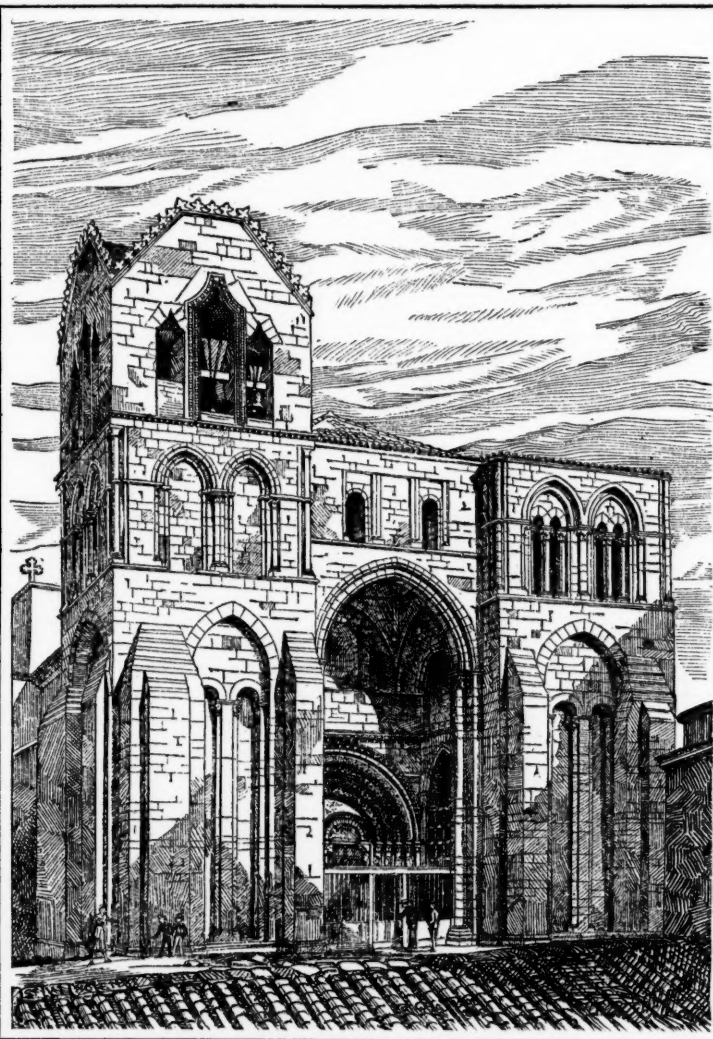
fact that the towers do not open into the church, but have on that side enormous walls; in fact the older west wall and their own east walls combined. Nevertheless, the whole composition is very fine except for the stupid third stage of the northern tower. This ugly termination is considered by Mr. Street to be of the fifteenth century; but, though I willingly admit the greater value of his opinion, I am inclined to ascribe it to a later age.

It is to be regretted that they who built the beautiful arcaded second stage in the thirteenth century did not finish the towers in the same style. The old doorway is superb. It is without exception the finest example of Romanesque architecture that I have seen. A great round arch in five orders, each elaborately carved, rests upon shafts, five on each side. Low down on each shaft (except the outer ones) a kind of capital supports a statue. Beneath this main arch a middle column and side corbels support smaller round arches and a statue of Our Lord occupies the central position on the shaft. It looks as if the original intention had been to make the twelve apostles the subjects of the jamb statuary, but there are only five figures on either side as the work is executed. In the tympana of the smaller arches are bas-reliefs illustrating the story of the rich man and Lazarus. All the carving, acanthus and other leaves, animals' heads, and simpler forms, is executed with a grace and delicacy rivalling the Greek, while it has to the full that vitality which characterizes its own epoch. The figures, it is true, are rather meagre and the drapery crude and rigid, as is always the case in statuary of this date, but the rest is perfect. In the drawing of this doorway the people squatting and leaning against the doors are beggars, from life. This is the way almost every church-door in Spain is infested with unclean, cringing paupers. They are not discouraged, because if their betters are to quiet their consciences by giving an *ochavo* to the poor, it is clear that the recipients are part of their religious equipment. On the south side of the building is a peculiar lofty open loggia or cloister, as it has been called, of probably the fourteenth century. The arches are round (one of the few instances where mediæval builders modified

their forms for the sake of harmony with older work) and rest upon clustered columns which look slim compared with the massive structures near. I do not think it is an improvement to the church or even beautiful in itself, and the reason for its existence is not now apparent.

Beneath this is found another round-arched door smaller than the other, and apparently contemporaneous with the wall it pierces, while the western door was probably one of the last executed portions of the original design. This south door is also a beautiful work although comparatively simpler. There is a charm about the Romanesque and Transition doorways which it is difficult to analyze. The treatment is usually so simple that no great intellectual effort is exhibited and often the detail is rude even to grotesqueness. But there is something, perhaps the straightforward unforced earnestness of the workers which shines (to use a metaphor) out of their ancient stones.

The east end of this church is also very striking, though not so thoroughly *sui generis*. The large *capilla mayor* with round end, and with similar but smaller chapels beside it are the components of many another eastern end in southwestern Europe. This composition and detail are characteristic of the fully developed Romanesque



San Vincente - Avila, Spain: West-End.

style. Here at San Vincente it happens that the slope of the ground, which is such that the floor at this part is high above it, causes unusually lofty proportions. The round-arched windows following the curve of the plan are very beautiful, although not quite good on theoretical

¹ By Robert W. Gibson, Travelling Student of the Royal Academy. Continued from page 113, No. 428.

grounds. The carved string-courses are telling in the way they bind together the mass and bring out the beauty of the curve of walling. The tall engaged shafts so suggestive of the Roman extraction of the style are expressive of that vertical movement of composition which soon after was to be emphasized more and more until it became the dominant thing in the perfected Gothic. The cornice, a small projecting carved moulding, supported by corbels sculptured in ever-varied forms, is also a rich feature and has that same straightforwardness noticeable elsewhere.

The central lantern seen in this view is a work of the end of the thirteenth century, when it was rebuilt, together with the pillars supporting it, probably after a failure of the original structure.

The interior of San Vincente is even better than the outside. The columns are massive, simply and logically composed of square piers and round engaged shafts all resting upon a bold circular base. These support severe arcades of round arches, and the vaulting piers continue upward to receive the very strong ribs of the groined roof. A good triforium (rare for this time and country) goes far to make the interior what it is. There are several churches which present very similar arrangements of the other parts, but the effect of the round-arched triforium in this example as compared with those without it demonstrates the value of its shadowy recesses. The clerestory is very plain; perhaps a little more detail here would be an improvement.

The severe simplicity of the design is moderated and softened by the richly carved capitals. All of these are large and important, and it is astonishing to what an extent they refine the sternness of the composition without detracting from its grandeur. The side aisles have groined vaults also, carried by shafts attached to the main piers and to the walls. They are dark and thus bring out in strong relief the effect of the arcades of the lighter nave. Altogether there are few ancient buildings more deserving of close study than this church, or in which the principles of truthful design are better exemplified. And especially is it valuable if, remembering that its round-arched style is on the verge of the transition marked by the introduction of the pointed arch, it is observed in connection with a few later examples (such as Salamanca Old Cathedral to be hereafter described) wherein may be found the same unaffected method of design, dealing with newer forms in less austere treatment.

There are few accessories to be described here. The church seems to be used only for the simplest services now, and most of the furnishings are commonplace. There is an iron screen across the church, one bay westward of the crossing, probably marking the extent of a former small *coro*. On the south side of the crossing stands the shrine of the patron saint, a remarkable structure of different dates, which Mr. Street describes in detail.

San Pedro, the other church outside the walls, greatly resembles San Vincente, so that, as I have no illustrations of it, lengthy description would be superfluous. It has a very similar arrangement of three eastern apses with round-arched windows while the west front remains more in its original Romanesque form with large round-arched central door and circular window over it filled with wheel-tracery, and smaller circular windows at the ends of the aisles. The interior has the same massive character, but it is inferior in having no triforium. The detail generally is not so rich as on San Vincente, there is not so much carving; but were it not so near and so similar to that just described San Pedro would deserve very close attention.

All about the city are to be seen some interesting bits of granite-work in arches and lintels, etc., upon the old houses: many of them are quaint and curious rather than artistic.

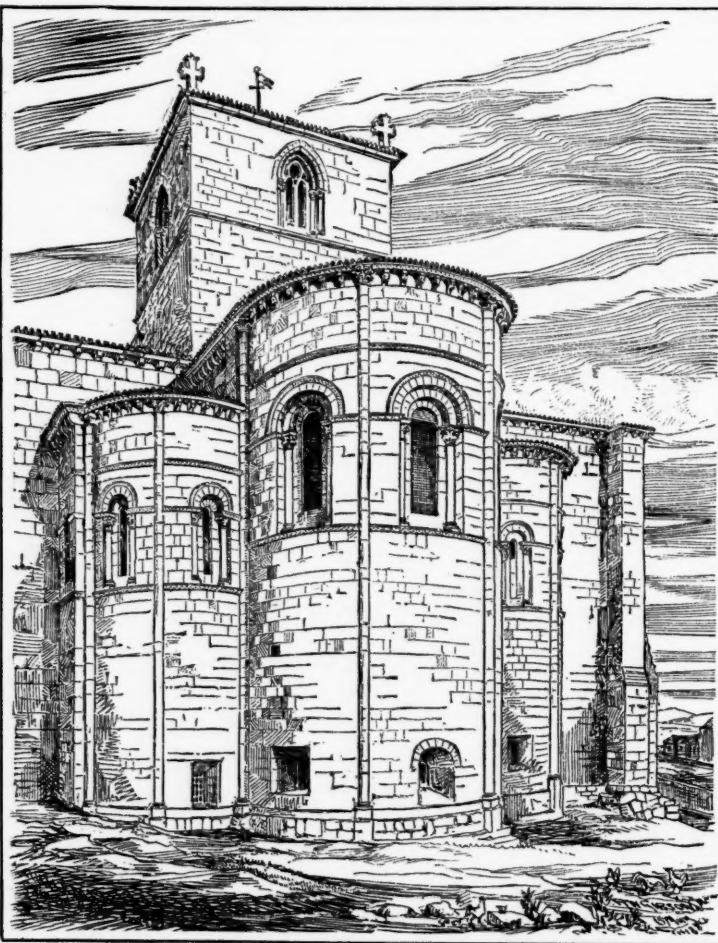
There is at a little distance from the town a great convent dedi-

cated to San Tomas, founded about 1482, by Ferdinand and Isabella. It is mentioned historically in connection with San Juan at Toledo, which it may be remembered is of the same origin and date. The church of San Tomas reminds one of San Juan. Like the latter, it has a broad nave with the arcades opening into chapels instead of aisles, a large west gallery for the *coro* with ambons corbelled out from the parapet, transepts which are of about the same shallow proportions, and a short chancel or *capilla mayor*. Besides these there is a curious eastern gallery, in which are placed the altar and retable, thus elevating them to the height of the monastic choir at the other end. The effect is extremely good; especially when the requirements of the church are remembered. The tomb of San Tomas is a delicately executed marble sarcophagus of Renaissance style.

En route for Segovia. I had already made one attempt to reach that old city, with very unsatisfactory results. Segovia is about forty miles from the northern railway from Madrid, either from Vilalba on the south, or Arevalo on the west, at both of which stations stage-coaches connect with the trains as well as the weather and the Castilian character will permit. I tried the former route first: it is the more regular one. But when I was fairly landed from the train, and that

servant of civilization had rattled away and left me at another of those abominable, desolate places with which Spanish travelling makes one familiar, I learned that I ought to have secured my seat before leaving Madrid; that there was no room for me, as all the places on the diligencia were taken, and so on. It was not true; they could have taken me had they not imagined a better plan, which was duly disclosed when the coach was disappearing. It was this: a smaller vehicle would convey me to Segovia, and the price should be four hundred reales. Perhaps that was not so exorbitant, had I wanted such service, but I was so indignant at the deliberate attempt at extortion from a stranger, that I refused to have anything to do with the plotters. They were astonished. Tourists had no doubt been in that predicament before, and had paid even more than this to get away from the wretched village. There was no train till evening, and it was raining dismally. But I had provisions (experience had improved my resources) and a book or two, and I declared I would await the train and go to Avila instead. It was worth the inconvenience to see the disappointment of these stable sharpeners, though I must confess that gratification did not last so long as my wearisome

stay at Vilalba. Now, from Avila I tried the other route. A night train deposited us at Arevalo, and a shaky old omnibus received myself and six or seven others into its stuffy interior. It was a stormy night, and these Spaniards, according to their custom, closed up every chink by which a trifle of fresh air might modify the fumes and vapors of our den. So we clattered away into the darkness, and, half suffocated, I watched our progress stage by stage, and managed to get the door opened once or twice upon some pretence or another; the real reason was quite unintelligible to my fellow-travellers. A superb sunrise rewarded my wakefulness. We came out of a forest of pines, upon a bleak, broken country dotted with sparse clumps of lean, starved trees, the road and land gleaming with irregular pools of the night's rainfall, and saw such black and purple curtains of clouds as painters rarely imagine, tear and rend away in the most glorious atmosphere of dawn, amber and emerald tinted, with such force that it seemed to be a convulsion rather than a daily work of Nature. And we reached a little town cleaner and more picturesque than usual, old as the forests, but called Santa Maria la Nueva, just as the crimson and yellow light blazed into full day. There we had a breakfast good enough to be enjoyable, and there, too, the fares were collected—twelve reales each person. This astonished me even more than



San Vincent Avila Spain: East-End:

the four hundred demanded a few days ago.¹ It was a "cutting rate;" a fight for a monopoly was going on, and I for one benefited, though the good humor of our young driver at his tedious work made me hope that the reduced fare was not made up by reduction of his wages.

MURAL PAINTING.²



IT has been thought by some that the paintings discovered in the excavations at Pompeii and elsewhere are evidence that the ancients were in possession of a process that would insure the permanence of paintings for some two thousand years at least, and doubt was thrown, therefore, for a time, on the possibility of their being fresco-work. But recent examination, while it has proved their claims to be classed among genuine fresco-paintings, has also explained the seeming mystery of their permanent qualities. In the first place, it must be borne in mind that they have been preserved from the action of air and light, and in some degree at least of damp also, for almost the whole of their existence; and in the next place, their apparently indestructible character has vanished before those simple tests to which fresco-painting has invariably succumbed. All such paintings as have been, since their excavation, exposed to the action of the weather, have undergone rapid decay; so much so, indeed, that within the short space

of nine years some of them have almost entirely disappeared. Most, if not all, of the modern substitutes for fresco, such as wax color, casein as employed abroad, do not profess to be capable of resisting the influence of weather when exposed to the open air. Mr. Gambier Perry's process of "spirit fresco" appears to contain merits beyond such methods as are employed abroad, but, like them, it is not intended for exposure to the open air.

The process, which it is my privilege to introduce to your notice this evening, is based on the stereo-chrome process of Schlotthauer and Fuchs, differing, however, from that in such important particulars as to constitute, practically, an entirely new process in itself. In the year 1818, Professor Schlotthauer, of the Munich Academy, who had for some time been engaged in experiments with a view to discovering some permanent process for mural paintings, turned his attention to the substance known as water-glass (silicate of sodium), the invention of the chemist Fuchs. The result was the adoption of the stereo-chrome process. In this process the surface to be painted on consisted of an ordinary mortar of lime and sand, impregnated with water-glass. Upon this surface the painting was executed in water-color, and was then fixed by water-glass thrown against the surface in the form of a fine spray, the water-glass in this case forming the fixative for the painting. In practice it soon became evident that a simple spraying of water-glass, applied to heterogeneous pigments, without reference to their peculiar properties as regards chemical composition, cohesive capability, etc., was not sufficient to insure their permanence. Certain colors in particular, as ultramarine, umber, and black, were observed to be always the first to detach themselves, in the form of powder, or by scaling off from the painting, thus pointing to the fact that their destruction was not owing to any accidental defect in the manner of their application, but to some radical unsuitability arising from the chemical conditions of the process.

In Mr. Keim's process great regard is paid in the first instance to the ground upon which the painting is to be executed. A careful study of the best examples of the fresco-paintings of former times convinced him that the painting ground was a feature of supreme importance. I have here some fragments of Pompeian wall-paintings, which will illustrate the extreme care which was bestowed at that time upon the preparation of the wall surface. An examination of them shows that two different qualities of mortar, in distinct layers, were employed in their construction. That which lay underneath is coarser in texture, but very firm and evenly mixed. Upon this is laid a very thin coating of a much finer composition, spread over the surface with the greatest care and accuracy. Here is a fragment of a Roman fresco, from Bavaria, of a much later date. The different character of the mortar can be seen at a glance. There is only one coating, and that not only far coarser than even the first coating of the Pompeian fresco grounds, but very roughly and carelessly mixed. No trouble appears to have been taken to sift the sand so as to produce evenness of texture, as is evident by the presence of small stones and lumps occurring throughout. The deterioration of character in the later specimen is very marked. In Mr. Keim's process great care is taken that the wall to be treated

contains no damp or decaying stones or bricks, and the latter must have been sufficiently baked, otherwise they will develop an efflorescence most injurious to the process. If the wall be already covered with stucco or mortar, this will serve as the first ground, provided it be in a thoroughly sound and dry condition, and it will then be sufficient to clean and level it before applying the second or painting ground. If not, the stucco must be cleared off, the bricks laid bare, and the mortar between the bricks picked out to a depth of about three-quarters of an inch. This more thorough preparation is always preferable in a work of greater importance, or where special pains are advisable to secure durability, as, for instance, when undertaking the exterior decoration of a building. Upon this surface a thin squinting is cast, composed of the following mortar: coarse quartz sand, infusorial earth, and powdered marble, mixed in certain proportions. Of this mixture four parts are taken to one part of quick-lime, slaked with distilled water. Upon this squinting-cast, the object of which is to secure adhesion to the surface of the wall, follows mortar of ordinary consistency, composed of the same ingredients, to fill up all inequalities and produce a smooth surface, and upon this again the second or painting ground is applied. The painting ground is composed of the finest white quartz sand, marble sand artificially prepared and free from dust, marble meal, and calcined fossil-meal (infusorial earth). The sand composed of these materials, carefully mixed in the proper proportions, is mixed with quick-lime slaked with parts of distilled water, in the proportion of eight parts sand to one part slaked lime. This mortar is applied to the wall as thin as possible, not exceeding one-eighth to one-quarter inch in depth.

For work executed on the exterior of buildings, Mr. Keim recommends the employment of pumice-sand in addition to the other ingredients of the mortar. When coated with a stucco of this composition the wall presents so hard a surface as to admit of sparks being struck from it with a steel. It is absolutely essential that throughout the work only distilled or filtered rain-water be employed. The reason for this is to obviate any possibility of the water containing lime, as that would affect the solution employed for fixing so as to impair the effect of the painting. The intense power of increased durability which Mr. Keim obtains by these improvements can be best estimated by a regard to the fact that paintings executed by the stereo-chrome process, while they have for the most part lost the coating of paint or their color, have, save in such cases where the preparation has been carelessly carried out, retained the painting ground up to the present day, after exposure to weather for nearly forty years, in perfect and sound preservation.

When the mortar is perfectly dry down to the stone or brick of the wall, it is treated to a solution of hydro-fluo-silicic acid, to remove the thin crust of crystalline carbonate of lime which has formed on the surface, and thus to open the pores. It is then soaked with two applications of potash water-glass (silicate of potassium) diluted with distilled water, and when dry the ground will be found hard, but perfectly absorbent and ready for painting. The surface layer of mortar, or painting ground, can be prepared in various degrees of coarseness of grain to suit the artist's requirements. The more smooth and polished, however, the surface is made, the greater are the difficulties in the subsequent process of fixing, owing to the absorbent qualities of such a ground being necessarily less perfect. The ground can also be prepared in any tint or color that may be desired, and can be applied to any suitable substance, if needed for a removable decoration. Stone, tile, slate, wire-gauze, glass, and canvas form an efficient substitute for the wall in such cases. If applied to canvas, it can in this form be fixed to wood-panels, mill-board, ceilings, etc., and admits of being rolled with perfect safety. The advantage of this to the artist is sufficiently obvious. If a ceiling, for instance, has to be decorated by this process, it can be painted with the same convenience as an ordinary picture in the studio. After it is fixed it can be rolled up, taken to its destination, and fastened onto the ceiling, either temporarily or permanently, at the cost of very little expenditure of time or labor. Similarly (unless it were permanently fastened up), the ceiling would admit of being removed for the purpose of being cleaned.

I come now to speak of the colors used in this process. Certain pigments only are admissible, in order to insure permanence, and regard must be had to the purity of these, and to their absolute freedom from adulteration. All the colors found available for the stereo-chrome process can be employed; these are, for the most part, composed of natural earths or metallic oxides, since experience has proved that the most permanent colors are those derived from such sources. In their preparation, due account has been taken of the well-known law in optics which teaches that color does not lie in the substances themselves, but in the rays of light, which are divided, reflected, or absorbed by the substances in such a manner as to produce the effect of color upon the eye. Substances, therefore, which readily undergo change, whether by reason of their affinity to other substances with which they are brought into contact, or by the action of the light itself, which often causes molecular change, must, whenever such change takes place, lose or modify their original color, since, under their altered conditions, they absorb or reflect the rays of light in a different manner. Each pigment should remain chemically unaffected by the substance of the painting ground on which it is laid, and by the substance of any other pigment employed, as well as by that of the material used for fixing them. To meet this end, the colors in this process are treated beforehand with alkaline

¹ The reale is five cents.

² Extracted from a paper read by the Rev. J. A. Rivington, M. A., at the meeting of the Society of Arts, February 13, entitled "A New Process for producing Permanent Mural Paintings, invented by Adolf Keim, of Munich."

solutions (of potash or ammonia), to anticipate any change of hue which might result from the use of the alkaline liquids which form the fixative. In addition to this, they are further prepared with certain other substances, such as oxide of zinc, carbonate of baryta, felspar, powdered glass, etc., as required by the peculiar properties of each, in order to obviate any other danger of chemical change taking place.

The colors found available present a very full scale. They are thirty-eight in number, and there are several other colors which could be added if required. They consist, speaking in general terms, of four varieties of white, six of ochre, two of sienna, ten of red, two of brown umber, two of Naples yellow, two of ultramarine, five of green, three of black, and cobalt blue. Cadmium will shortly be added to them. The whites are, perhaps, in unnecessary profusion. Zinc white for its opaque qualities, and baryta white for purposes where great opacity is not desirable, would be probably found quite enough in practice. From the various nature of the properties possessed by some of the pigments, it was found that their capacity for absorbing the alkaline silicate with which they were fixed varied very greatly. There was also a marked difference in the degree of mechanical cohesive capacity which they respectively possessed. To equalize them in these respects, without which the fixing would have been a work of great difficulty and uncertainty, alumina, magnesia and hydrate of silica were added as required. The result was that all the colors are equally acted upon by the fixing solution, and all attain an equal degree of durability after fixing, both as regards the mechanical and chemical action of this process upon them. In the year 1878, a large mural painting was executed by this process on the exterior of the parish church at Eichelberg, near Regensburg. Before its completion, and therefore before any of the fixing solution had been applied to it, it was drenched by a heavy storm of rain. Contrary to anticipation, it was found that the painting, so far from being in any degree washed away, had held perfectly firm, and even in some places seemed to be as hard as if already fixed. Mr. Keim's explanation of this unexpected result, which he subsequently confirmed by experiments, was that a chemical cohesion had already taken place by the action of the alkali, set free in the mortar, upon the silicates in the pigments. Again, when it was determined to execute the mural paintings in the Franciscan monastery at Lechfeld, in 1879, it was desired to wash off a painting executed in this process a year previously, which had never been fixed. Neither water nor even a tolerably strong solution of acetic acid had the slightest effect upon it.

If the process appear to be somewhat of a complicated character, the reverse is the case as regards the use of this process from the artist's point of view. For him are no complications or difficulties whatever. So far from approaching in any degree the difficulties or inconveniences possessed to a greater or smaller extent by fresco painting, or any of its more modern substitutes, this process is even far pleasanter and easier to work in than oils or water-colors. Every variety of treatment is possible, and it adapts itself to any individual style of painting. It presents as perfect facility for transparent glazing as a water-color, and for painting in body-color it even surpasses the capabilities of oil-colors in its power of opaque treatment.

Moreover, the most delicate tints, when laid over darker tones, do not in the slightest degree darken over them, as they are apt to do in oils, but keep their full value perfectly. Retouching and correction can be effected with the greatest ease, and to an almost unlimited extent. The system admits also of great economy. To begin with, the pigments are by no means expensive, in spite of the labor expended on their preparation, and a very sparing use of them is sufficient to meet all possible requirements in painting, a far less amount requiring to be expended than in other processes. This is due mainly to their being ground so exceedingly fine, so that they need only be very thinly laid on; in fact, this consideration has always to be borne in mind, that the thinner the coat of painting is the greater the degree of security that can be attained by the fixing. Moreover, there need be no waste of pigment at the end of the day's work, as in oils. The palettes employed for the process, as you see by the one before you, are constructed with small pans to hold the pigments. If any paint remains after the work is finished, it can either be replaced in the bottle, or it can be kept moist in the pan with distilled water for the next day's work. Even if a considerable amount of the pigment should, by inadvertence, have been allowed to become dry, all that need be done is to grind it up again with a little distilled water, a task involving no labor.

The last stage in the process is the work of fixing. In the stereo-chrome process the fixing medium employed was silicate of potash, thoroughly saturated with silica, in combination with sufficient sodic silicate to prevent it from opalescing. The chief defect of this lay in the fact that it was often apt to produce spots upon the painting. Mr. Keim has substituted silicate of potash treated with caustic ammonia and caustic potash. The action of the carbonic acid in the atmosphere and in the water during the process leads to the formation of carbonated alkali, which makes its way to the surface, and would form, when dry, a whitish film over the painting. To obviate this danger, as well as to expedite the process of converting the silicate of potash with the basic oxides existing in the substance of the painting into silicate, the fixing solution is heated further with carbonate of ammonia. The effect of this upon silicate of potash is that silica is precipitated in a fine gelatinous form, and ammonia set free. This latter volatilizes, and carbonate of potash is formed, which is easily removed by washing after the completion of the fixing.

The fixing solution is employed hot, with the advantage of obtaining a quicker and more perfect formation of silicate than was possible in the stereo-chrome process, where the solution was applied cold. The effect of the fixative as it sinks into the ground, which has already absorbed the pigments, is to convert the painting into a veritable casting, uniting with colors and ground in one hard homogeneous mass of artificial stone. The finished painting has proved itself impervious to all tests. It will admit of any acid, even in a concentrated form, being poured over it (save, of course, hydrofluoric acid).

Caustic potash, also, has no effect upon it; indeed, nothing can be employed with greater advantage than this for cleansing the painting when its condition requires that process. In Munich a specimen of the process was subjected to incessant tests, and put to every form of torture without intermission for two years, and I may say, in language which, if not classical, is at least familiar to English ears, it "came up smiling" after each attack, and, at the end, was as fresh and uninjured as at the beginning.

Although this process has been designed to meet the requirements of mural paintings, it is capable of application to other purposes with great advantage. For instance, it would have great merit in its durable qualities, and in the readiness with which it can be cleaned, for scene painting; in addition to which it possesses the important advantage of being unflammable, owing to the presence of the silicate. For ordinary house painting it would last as long as the building itself, only needing to be scrubbed down from time to time. I need scarcely point out that it would, when used for this purpose, be an effectual protection against damp. It can also be employed for tapestry painting. It might, perhaps, be feared that such exceptional qualities could only be taken advantage of at a prohibitive cost, but this is not the case. The expense will bear favorable comparison with that of other systems, without taking into full account the lasting nature of the work executed. It only remains for me to add the testimony of a commission appointed in the spring of 1882 by the Royal Bavarian Academy, at Munich, to examine into and report on this process. The members of the commission consisted of Professors Lindenschmit, Müller and Max, artists; Albert Schmidt and Fritz Hasselmann, architects; and Dr. Lietzenmayer, chemist. The chemical report says: "Mineral painting guarantees with certainty that, by means of this process, mural paintings can be executed which—presupposing a correct and conscientious treatment—are capable of the greatest and most enduring resistance to climate."

The architects conclude as follows: "The evident hardness and capability of resistance presented by the specimens laid before us, as well as the fact that, amongst others, Professor Lindenschmit has buried one such painting a whole winter under a roof-gutter in the snow without its having received the slightest damage, leave no doubt that Mr. Keim has, through his very able method, succeeded in perfectly solving the problem of producing mural paintings indestructible by weather."

The artists on the commission sum up their report with these remarks: "According to the foregoing opinions, Mr. Keim has undoubtedly succeeded in providing a method of monumental painting, carefully thought out, even to the smallest detail, grounded on scientific principles, and practically verified by visible facts, which is by far to be preferred to all methods of painting hitherto existent, and which, once recognized for its high value, would bring about a complete revolution in all our monumental and decorative art, and which deserves the widest publication and practical employment."

THE ILLUSTRATIONS.

LINCOLN LIBRARY, LINCOLN, MASS. MR. W. G. PRESTON, ARCHITECT, BOSTON, MASS.

THIS building has been erected through the munificence of Mr. Geo. G. Tarbell, of Lincoln, for the use of his fellow townspeople. A book-room, with an open-timbered roof, is entered directly from the vestibule and porch, and is capable of accommodating twenty thousand volumes. Adjoining the book-room is a librarian's room, having a circular bay at one corner, an open fireplace, lavatory, etc. Accessible from both the former rooms is the reading-room. This room, which will also be used for certain social purposes, has a deep-seated mullioned window at one end, and opposite the entrance-door a "chimney-corner" eighteen feet in width, with settles, a massive fireplace and an oaken arch. The building is finished in oak and cherry, and all the construction is of the most permanent character. Without being entirely of the so-called "fire-proof" construction the vaulted walls are all plastered upon the brick; all the inside partitions are of brick, and both floors and roof are of heavy matched plank laid directly upon girders or rafters; and where ceilings are plastered they are wire-lathed directly upon the under side of the plank. All the timbers of construction are visible in the building, and are chamfered and polished. The exterior is of dark brick laid in red mortar, Longmeadow freestone and terra-cotta. The roofs of slate and copper. The building stands in the centre of the town, on an elevated site, with ample grounds about it. The cost of the building is about \$25,000.

WESTERN DOORWAY OF SAN VICENTE, AVILA, SPAIN. SKETCHED BY MR. R. W. GIBSON, ARCHITECT, ALBANY, N. Y.

SEE article on "Spanish Architecture" in this issue.

DRY-GOODS STORE OF MR. T. T. WRIGHT, BIRMINGHAM, ALA.
MESSRS. OLIVER MARBLE & SON, ARCHITECTS, BIRMINGHAM, ALA.

This building cost \$15,000.

DESIGN FOR "LUTHER HALL," AUGUSTINA THEOLOGICAL SEMINARY, ROCK ISLAND, ILL. MR. E. S. HAMMATT, ARCHITECT, DAVENPORT, IO.

The first story of this building, which will cost \$90,000, will be built of stone, the remainder being of brick and terra-cotta.

THE ARCHITECTURAL HISTORY OF THE CITY OF ROME.



The Roman Academy Building, Palazzo Medici.

"The contents . . . are little else than a condensation of the large works in Roman archaeology by Mr. J. H. Parker, of Oxford, who but lately received from the Italian authorities a high recognition of his services in restoring 'the true history of the city of Rome.' It aims 'to put before readers, in small compass, the elementary information necessary for understanding the history of the rise and progress of the city of the Seven Hills.'"

It amounts, therefore, to an archaeological commentary on the historians of Rome, and particularly of early Rome. The student to whom it is adapted is not the architectural student, nor the student of general history, but the advanced classical student; especially him who works in Rome itself, and who wishes to illustrate the Roman historians as he reads them, or recent excavations as he sees them, by the light of the archaeologist.

Now that archaeologists are mourning the death of Mr. Parker, Mr. Shadwell's compendium is but too timely. We might have assumed that so advanced and special a student as we have mentioned would prefer to look for his archaeology in Mr. Parker's monumental volumes; but Mr. Parker himself instigated the compendium, we are told, and the fact that we have here the second edition shows that there is call for it. If Mr. Shadwell has aimed at a larger audience we cannot think that he has aimed very well. For the general student or the cultivated reader the method of Ampère's "*L'Empire Romain à Rome*," or that of Gaston Boissier's "*Promenades Archéologiques*," would be not only more attractive but more instructive, and either book would leave more behind it than one of this kind. Mr. Shadwell does not present his subject too well; he does not give a sketch or a *résumé* of Mr. Parker's work, but shows it, as it were, through the wrong end of a telescope. There is too much detail, too little ensemble and subordination to make a clear picture, or one that takes hold on the memory.

Of the fifteen chapters in the book seven are taken up with the walls of ancient Rome, mostly with discussions of sites. The outlines of the topography of the oldest city, of the walls of Tarquin, Servius Tullius and Aurelian, and of the extension of the city from one hill to seven are shown perhaps as clearly as the case allows, though overlaid with particulars that are more obstructive than helpful to the general student. There is a chapter containing interesting matter on the streets and roads of Rome, and separate chapters on Aqueducts, on Baths, on the Roman Forum, the Mamertine Prison, the Tombs, the Colosseum and the Palaces of the Cæsars.

The point of view is almost entirely topographical or historical, and references to the old historians are frequent. A great deal of information is to be found in the book; facts of interest lie about in it like plums in a pudding, but there is no general *conspectus* either of topography or of history; no historical thread connecting the various topics. The book might be parcelled out into notes on any good history of Rome with little loss of unity or proportion.

Of architecture, as we have said, there is nothing. There is no description of the buildings of Rome; hardly a mention of temples, arches, basilicas, houses or monuments; no general account of the buildings to which separate chapters are devoted. The substance of the book is the additions to the knowledge of Roman topography which have come from the excavations and studies of the last dozen years. Other material is only incidentally brought in, or taken for granted. The vexed topographical questions of the Roman Forum, the Via Sacra and the Palatine Hill are not discussed or even mentioned. The point of view is, of course, Mr. Parker's, a learned and intelligent one, to be sure, but not always the only one. There is a solitary reference to the views of other archaeologists in the preface, which shows that Mr. Shadwell, at least, does not like the German archaeologists.

We cannot leave this work without mentioning the illustrations, which are not what we have a right to expect, even in a school-book, from a house that has sent out so good work as Messrs. Parker &

Co., but are, to tell the truth, atrocious. They are spoken of in the preface as merely diagrams, and if they had only been simple, clear, neat diagrams there would have been no fault to find; but they are photographic reproductions of labored and pretentious pen-drawings, mostly without either clearness or effect, and reproduced with the extreme of shabbiness. And now lest we leave, with our criticisms, too bad an impression of the book, we will repeat that it sums up the conclusions of an archaeologist of great learning, diligence and intelligence; that, although it is a book very narrow in its scope, and its title altogether a misnomer, it contains a great deal of information of value to readers or students who have the faculty of picking out what belongs to them. A great many persons, we presume, have been waiting with interest for the volumes on the early and Mediæval castles, and on the Mediæval churches, which are to complete Mr. Parker's great work on the archaeology of Rome. If it falls to Mr. Shadwell to condense them we may hope that he will do it with a little more indulgence to the reader's sense of proportion, and to his powers of memory.

MARBLE AND MARBLE MOSAIC.²



Interior of a house at Nuremberg, Germany.

Of opaque colored materials, marble is the most perfect, and it has also the merit of having the widest range of color of any natural substance. Under marble I include all opaque stones that will take a polish, — limestones, dolomites, soapstones, porphyries and serpentines; and I use the term opaque in its common sense, for not only is marble translucent, but all materials are when cut thin enough.

I have seen Faraday produce a beautiful green color by letting light pass through a thin film of gold attached to colorless glass. Many of you have probably seen the windows of the cathedral at Torcello, glazed with some translucent stone, the alabaster windows at San Miniato, not to speak of modern windows glazed with Mexican onyx. What was the *lapis specularis* or *specularia* with which Roman conservatories were glazed? Was it really talc?³

Mr. Tadema has obtained beautiful and surprising effects by using as stained glass thin films of marble.

Marble, being one of nature's choice productions, has many merits; it is strong, hard and dense, will take the most delicate forms that are possible in stone, and allow of this delicacy being seen. Much of the beauty of Greek work arises from the material used being marble; it takes a high polish, affords the least footing for dust, and is easily cleaned; it is variously and beautifully colored, and, in many cases, its coloring has the highest attributes of nature's handiwork — infinite variety; for though we call one marble white and another black, and others red, yellow, gray, or green, it is almost always possible to find in a large slab a piece of the opposite or contrasting color; in black, pure white; in white, pure black; reds in the greens, purples in the yellows, and in the variegated sorts which are the most common, and more nearly convey the very notion of marble, we see an endless variety of tints and tones, and many varieties of color. For this reason alone the use of marble is always the simplest means of getting good colored effects; for nature has so varied its surface with vague but beautiful forms, — has so harmonized the colors, tones and tints, — has given such sudden and brilliant surprises in the shape of contrasts, flowers, bands, stripes, patches and spots — that it is more than doubtful if the highest human skill can surpass them by painted ornament or colored inlay. The lustre of the polish, the restrained tone of color, the calm dignity of marble when used in large masses is absolutely unapproachable.

Considering that there are forty different colored marbles in the quarries at Siena, ranging from white to black — that there are marbles in every division of the world's surface — that in France alone about 600 have been already catalogued — it would be quite impossible to give you the vaguest idea of their various merits in a lecture; but I may well dilate on a few of those that are commonly used in London, and on a few exceptional ones.

First, I may mention the imperial purples. You know imperial purple was of four kinds, — the amethystine; the Tyrian, of the color of clotted blood; the Hyginian, or puce, and the crimson.

The first marbles in rank are the purple Egyptian porphyries, which are truly imperial from their fine color, excessive hardness, and great durability; they will, moreover, take a polish like glass. Both purple and green Egyptian porphyry may be seen on Henry III's tomb in Westminster Abbey.

Lord Leconfield has two splendid table-tops of purple porphyry, formerly in Hamilton Palace. The altar-steps of Lord Ripon's church are of it, and plenty may be found in the Roman churches. In St. Mark's there is much, mostly stolen from the East by pious Venetians.

Still more splendid in color is red serpentine mottled with dark green and black, and flecked with gold, and no imperial robe can

¹ The Architectural History of the City of Rome, based on J. H. Parker's *Archæology of Rome: for the Use of Students*. By Arthur Shadwell, M. A., Oxon. Second edition. Parker & Co., Oxford and 6 Southampton St., Strand, London: 1883.

² From a lecture by Mr. G. Aitchison, A. R. A., delivered at the Royal Academy on Monday, February 18.

³ See Martial, epigram xiv., lib. 8.

exceed in splendor the dappled blood-red antique breccia of Numidia, nor the Griotte d'Italie, with its white veins and partridge eyes. The Rosso Antico, no longer antique since the quarries have been found in Greece, is of a deeper color than the robin's breast, and looks as if light fingers had touched it here and there before the color was dry; Languedoc, of a still more vivid red, powdered with flames of white; the Greek red, with fragments of pink and yellow embedded in it; the Cork red, speckled with white; the dusky red and gray of *rouge royal*; and red Devonshire. After these come the soft-colored mottled yellowish pink of Emperor's red and Verona; the deeper pink of St. Juan fretted with pinkish-white; the brilliant Devonshire spa mottled with violet-pink, or brownish-red; and the red-veined alabasters, of which the much-coveted alleys of our boyhood were made; but much more splendid alabaster is to be found in the English quarries, tinted with purple, not to speak of the pink granites and porphyries.

For yellows we have lordly Siena, with its deep orange ground streaked with purple, veined with black, and here and there spotted with white; the pure yellow Giallo Antico; the pale yellow of the Ivorio Antico of Numidia; the yellow Egyptian alabaster, with its eddying veins of white; Brocatello, which you may class with yellow or red, as in its fine brocade one or the other color predominates; and the Rose du Var, light tawny yellow, with red marks.

Nearly approaching the yellows are some of the tawny marbles of Numidia, almost like skins of lions glorified.

Of all the greens, some of the five Verd Antichi are the most splendid, and the noblest. Corsi names them the clear, the dark, the gray-flowered, the small-flowered, and the emerald.

We may see the dull sort in inlays on chimney-pieces of the last century, and it harmonizes more admirably with the creamy white of old statuary than any other inlay I have seen.

Perhaps the most superb of all is the one that looks like a field of emerald through which meander streams of milk-white, a mere streak in some places mixing with the green, inclosing small black lines and fragments, and spreading out into wide lakes with minute veins of the green passing them, and the whole taking a gem-like polish. A table-top of this may be seen at Dorchester House.

Next to these come Genoa green, that looks like a black delta marbled by a thin snow-filled valley, cut through by pale-green rivers full of black fragments; Greek green from Laconia, and the dark-green Vert de Corse, Vert Maurin intersected in every direction with light-green veins; the Campan Vert, like pinkish-white almonds embedded in pistachio paste; the Campan mélange, of a full green streaked with red, and flowered with white; the Cipollina, like a slice of green onion, though its name is said to be given from its smelling like an onion in the working; the Irish green, that varies from bold eddying streaks of dark gray, like Tartar clouds, to the pale yellow of spring leaves on trees in a water meadow, here and there interspersed with translucent spots of dark green, like seaweed seen through pools (fine specimens of the pale-yellow green may be seen at the Geological Museum); the cool green marble of Anglesea, spotted with black and brindled with white; the green Egyptian and Irish porphyries; green serpentines, of which the dark bands on Italian buildings are made; the gray-green and purple Purbeck and Petworth marbles, of which so many of the shafts in our Gothic cathedrals are made.

For white we have Carrara, Parian and Pentelic, the blue-white Sicilian from Carrara too, but called Sicilian because it was first brought to England by the good ship *Sicilia*; the white granites, and snow-white alabaster, the pale and deep-veined white marbles, the white pavonazzo and pavonezzetto, with purple veins and the peach-blossom, the three latter fit for a princess's boudoir.

For black, Nero Antico, Irish black, Belgian black, English black, black basalt and black granite, though this latter is gray.

For grays, the gray granites, dove, Belgian gray, the lovely pale-green bardilla, with its network of darker veins and black rivulets, and blue imperial.

For black and white we have Hachette and Grand Antique. A shaft of the latter still shows one bit, finely polished by the shoulders of the faithful, in a doorway of St. Mark's; Belgian blue and Nero de Seravezza, both veined with white.

But perhaps the most splendid marbles are those which can be put into no category of color, the different sorts of variegated breccias, and, if you will allow the word, bigaroon marbles, the pale fawn-colored Caserta, diapered with crimson patches, sometimes small like vine-leaves, with creamy-white stalks and tendrils, and sometimes in masses as big as your head, nearly resembling the false jaspers. The violet breccias from Rondone, with large round patches of purple, red, gray and purplish-white, bound with dark-gray and black veins; the breccia of Palermo in which fragments of white, dark gray and pale yellow are embedded in a morone cement; the gorgeous antique breccias of Africa, where large masses of black, bluish-gray and flesh-color are joined by large veins of blood-red and jet-black; the gray Sarrancolin veined with red; the dark brown breccia of Belgium, with black patches and red spots; the breccias of Septimius Bassus, of one of which the late W. Burges had a frustum. And all the antique breccias of Numidia; the Egyptian breccia, in which green and purple pebbles of porphyry start out from a golden ground, to be seen at St. Vitale, Ravenna, at the Campo Santa Pesa, and as slabs on Louis Quatorze furniture; yellowish-white jasper, with flaming bands of red, purple and yellow across them; the red and white striped African serpentines of inky black-

ness spotted with pink, and others like a serpent's back, olive, green and creamy white; deep flesh-colored, steel-gray, red, crimson, pink, green and black porphyries; white serpentine, with black spots like black peas on a table-cloth, and the deep brown and white Californian spa.

From these I have omitted the gems and precious stones, lapis-lazuli and malachite, coral, onyx, agate, real jasper, chalcedony and bloodstone, rock crystal and carnelian—all of which may be found used in the altar-pieces abroad; and let me say that the Mexican onyx is as lovely in Mr. Tadema's windows as it is livid on a wall.

Thanks to Il Cavaliere Giovanni Battista we can see at the Natural History Museum many of the famed marbles of Numidia, and at the Geological Museum Corsi's slab, containing 1,012 specimens of antique marbles.

We want a marble museum where we can find large polished specimens of all the known marbles in the world, so that when our people have shaken off their apathy for beauty we may see the riches we have to deal with. Supposing the building provided, it would cost but a trifle to form the collection. Every civilized country would be pleased to exchange polished specimens of their own marbles for ours.

It is not surprising that a people fond of stately magnificence, like the Romans, should have been so passionately fond of marble that the whole world was ransacked for the finer varieties, that the emperors should have taken some quarries under their special protection, and have almost restricted their products to Imperial use; that when a new and beautiful marble was found, a specimen should have been set up in the Forum and greeted by the people as with a triumph; nor that vast sums should have been lavished on the purchase of a single column. What does strike one as surprising is the utter insensibility to the beauty of marble that the English have shown. We may say that till quite lately the use of marble, beyond statuary, has been restricted to hall floors, chimney-pieces, and the tops of wash-hand stands, if we except a few monumental slabs.

Most marbles lose their due effect when not used in masses. Their restrained tones harmonize with their own varieties, but when they are in small pieces they are obliterated by the general tone of fully-colored rooms. This may be particularly noticed in the case of chimney-pieces, and has greatly tended to the frequent use of white, which truly attracts the eye, but destroys the harmony of the whole room; still, if the room be white or some very light tone of color, the richer colored marbles may be used effectively as jewels. Polished marble harmonizes badly with a rough or dusty quality, such as that of distemper or fresco, brick and stone, but goes well with glazed tiles, burnished metal, polished wood-work, glass mosaic, and with the richer qualities of oil-painting. Even when using the fuller colored marbles of one tone much moulding or ornament is thrown away, and it is positively ludicrous to use these when the marbles are richly variegated, and of large figure.

I may here mention that though marble is one of the hardest materials it is also one of the most treacherous, and that almost all variegated and flowered marbles are full of flaws, cracks, vents, veins and sand-holes; this does not much matter when the marble is used for casing or for columns that carry no weight, but when we build monumentally, discard iron, and lath, and plaster, and let our columns carry real arches, vaults and domes, no column should be used without careful examination and subsequent testing by the press.—*The Builder*.

THE MISSION DOLORES.



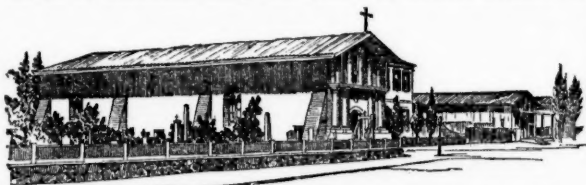
IN an old suburb of San Francisco, where Sixteenth and Dolores Streets meet, not far from Mission Bay, stands the old Spanish Church of the Mission Dolores, surrounded by its cemetery, and shaded by the large trees growing around on either side; one of the very few relics of the last century, in this new city. In the neighborhood,

along the streets are several adobe houses of considerable age, as their ragged walls and sunken roofs indicate, although the trough-shaped tiles on the latter, fitting into each other so cleverly, appear to be quite weather-proof. The small white front of the church presents a picturesque, if not imposing appearance, with its upper and lower rows of heavy columns shaded by the over-hanging roof—still covered with the original large red tiles;—and the bells hanging in three openings in the thick front wall. The exposed side of the building is covered with clapboards which are even placed over the heavy buttresses as a protection against weather, so that we could not learn their condition, but the front, covered with stucco and painted white, seemed as sound as though recently built.

As we approached the church, the sexton climbed up to the bells and struck the hour of noon upon the central one, which responded to the hammer with a dismal clang, and while its echoes died away we were ushered in through an old-fashioned library in the adjoining residence, and entered the church through a small door. The interior is long and narrow, with a low, flat ceiling, supported on beams which are painted in diagonal cross-bands of red, yellow and white. The sunlight streams in through two deep windows, pierced in the four-foot wall, throwing the shadow of the clumsy dark wood seats on the stone floor, and lighting up the inner walls, which are white-

washed and hung with canvas rudely painted with religious pictures and effigies of saints. The ceiling and mural decorations were doubtless a source of much edification to the Indians and the simple brotherhood of monks, as was also the arrangement of arches and rough wood-work, standing along the wall behind the plain altar, that should, I suppose, in courtesy be called a reredos. Everything appears evidently to have been made by men of considerable skill, but accustomed to simple habits of life and thought.

The native Indians around the bay were doubtless much surprised when the Spanish ship, *Don Carlos*, with a crew of adventurers, sailed in through the gate, — in 1775, — and explored the great sheet of water and the surrounding shores; but they went away, and were forgotten, until with the passage of another year a band of Franciscan monks came up from the flourishing settlement of Monterey on the coast, to establish another mission here. They were pleased with the place, naming it Yerba Buena (Good Herb), and immediately commenced the erection of dwellings and a church, with the Indians' help, surrounding their claim with a high adobe wall. Here they lived quietly for more than half a century in their small community, and probably exercised a considerable influence upon their Indian neighbors, while maintaining their position as the most northern out-



MISSION DEERET, NEAR SAN FRANCISCO, CAL.

post of the Spanish missions. But their tranquil life, and their work among the natives, and those who might wander to that far-off and little-known land, were brought to a rather abrupt close in 1845-46 by the Mexican disturbances, and their attendant results, which caused the disbanding of this and many other monasteries on the western slope.

Side by side in the quiet graveyard, sleep the early missionaries, with the Christian Indians, and many of later generations who had accepted the faith, and over all broods an air of tranquillity under this southern sky very suggestive of the spirit of the old monks, which may be still lurking in the shy corners. The church appears to have stood with very little change during the century of its use, although within a few years a busy city has grown up around it, extending out to the sand hills on all sides, but leaving the Mission to itself, in this little-used street, surrounded by a belt of palms.

CHARLES W. STOUGHTON.

GROSS PLAGIARISM.

February 25, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — We send you by this mail a pamphlet book of plans published by the "Presbyterian Board of Church Erection." We have marked some designs in it by Lawrence B. Valk, which have been unblushingly appropriated by that enterprising gentleman. One stolen design belongs to John A. Fox, and the other two are from your \$3,000-house competition. All three designs have appeared in the *American Architect*. In connection with the design stolen from "Pecksniff," we are surprised to discover that "Pecksniff" himself has been guilty of a still worse plagiarism than Valk has. This design is evidently taken from a house at Short Hills, N. J., by W. A. Bates. The exterior has been slightly changed — not enough to destroy its identity, but the plans are almost identical. It is a serious thing to charge any one publicly with plagiarism, but we think such plain cases as these deserve publicity. This is especially so in connection with the competition designs, in which your obligation to your contributors is greater than common.

Yours, etc.

X. & Y.

[We have ascertained from the officials of the Board of Church Erection that the designs so "unblushingly appropriated" by Mr. Valk were contributed by Mr. Valk as specimens of his own work, and our correspondents may feel easy that they do him no injustice in preferring their charge of plagiarism. — EDS. AMERICAN ARCHITECT.]

THE CLEVELAND GARFIELD MONUMENT COMPETITION.

CLEVELAND, O., February 29, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — My attention has been called to two paragraphs in your issue of the 9th inst., in which you make certain alleged "news," which you say you have received from Cleveland, the occasion for some remarkable comments. The Garfield Monument Association is not responsible for your singular "news," and the Trustees have never thought of "examining designs, one by one, as leisure or inclination might suggest," as you say. On the contrary, they have always expected to employ the method of examination which you commend as prevailing "in countries where artists or their work are held in respect." Moreover, our trustees are so "ignorant and incompetent," as you suggest, that they have always expected

to avail themselves of the aid of the best expert judges of designs that they can secure.

Although Boston has given scarcely anything in money toward the erection of the monument at Cleveland we still regard it as a national undertaking, and the Trustees are grateful for any suggestions that the *American Architect* can make to enable them in the coming competition for designs to do their work more wisely. The eagerness with which you comment on the alleged "news" from Cleveland leads me to think you are more inclined to embarrass than to assist us, which I hope is not the case. Respectfully,

J. H. RHODES, Secretary.

[Our news in regard to the Garfield competition was obtained from printed items in the Cleveland daily papers. As to the rest of Mr. Rhodes' letter, we need only say that our criticisms of the way in which it is proposed to conduct the affair were based upon the circular issued by the Trustees; and it is not our fault if we found the terms of that circular so objectionable that it has seemed to us a duty to point out to artists and the public the discredit which a competition managed in such a way is sure to bring upon all those who have anything to do with it. We should be the last to try to embarrass any attempt at adorning our country with works of real art; but of the dreary burlesques upon which so much public and private money has been spent we have had enough, and if our influence can help to dissuade our fellow-citizens from contributing further to the production of such works, both they and all the American artists worthy of the name will have reason to be grateful to us. — EDS. AMERICAN ARCHITECT.]

THE TRANSVERSE STRENGTH OF BEAMS.

NEW YORK, February 13, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — The experiments conducted by Professor Lanza at the Massachusetts Institute of Technology have greatly interested me, and, no doubt also, many others in the profession. I trust that Mr. Babcock's remarks in last week's issue will not discourage him, but that he will persevere, and so take the liberty of suggesting that he now experiment on white-pine beams and cast-iron lintels; and also give us reliable data for the shearing strength of timber, both transversely and longitudinally.

His article in the number published November 10, 1883, on the "Common Theory of Beams" is interesting, and the matter handled ably and concisely; I regret, therefore, that a number of *errata* have remained so far without correction, greatly impairing the value of the article, viz.: —

Page 221, first column, thirty-sixth line from top,
 $\frac{36p}{2}$ should read, $\frac{63p}{2}$.

Page 221, second column, thirty-second line from bottom,
 $\frac{6Wa(l-a)}{bh^3}$ should read, $\frac{6Wa(l-a)}{bh^3}$.

Page 221, second column, fifth line from bottom,
 $\frac{3}{8}f$ should read, $\frac{3}{8}f$.

Page 222, first column, eighth line from top,
 $\frac{3clbh^3}{6a(l-a)}$ should read, $\frac{3a/bh^3}{a(l-a)}$.

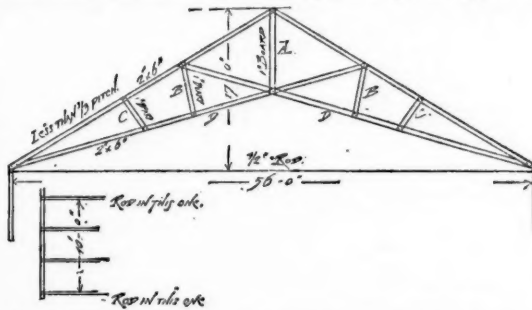
The four formulas given for deflections (on p. 222) have been considerably mixed up. The first and fourth should be for beams fixed at both ends, while the second and third should be for beams fixed at one end only, and free at the other. The formula for longitudinal shearing is new to me, but should read $\frac{3F}{2bh}$ or else the following formula for the greatest intensity i is impossible. In making these corrections I trust you will instruct your printer's devil to see that any further mixing up of the type is avoided. L. DE C. B.

A FAIRLY GOOD TRUSS.

February 22, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Gentlemen, — I enclose a sketch of truss being put on a building in this place, for your opinion. The walls that are to carry this roof are 2" x 4" stuff, without braces, 17 feet high. The $\frac{1}{2}$ " rod is put in every



10 feet, I think, and there are two trusses without rods between; the rod is not in the truss but below the plate. I have not seen it for a few days, but I understand the trusses have held together long enough to begin to shingle. Very truly,

SUBSCRIBER.

[FROM the tone of "Subscriber's" letter we judge that he will be surprised to have us say that we consider the truss shown in his sketch a pretty good one, and if the feet of the pieces B and C could be brought together we

should think it a very good and ingenious one for its purpose. A moment's consideration will show that a truss of this shape is a totally different affair from the old-fashioned "cross-tie" or "scissors" truss, the suspension piece, A, which is lacking in the scissors-truss, supplying just the rigidity which that wanted. It is evident that the present truss, if the joints are securely fastened, cannot spread except by tearing A or D asunder; and although A is described as being merely a strip of board, its tensile strength would probably be adequate to resist the strain which would be brought upon it by the weight which the truss has to bear. The ties D endure a much greater strain, but one, we should judge, well within their capacity. The weakest part of such a truss is almost always the joints. The suspension piece A is probably nailed at head and foot, and the nails, as commonly placed, would be likely to draw out before the stick would part. To make it safe, the board should be doubled, one being put on each side the truss, and both thoroughly nailed with clinch nails, or bolted through. Thus fastened, the joint would be as secure as any part. The joint at the foot of the truss is also apt to be weak. Mere notching or tenoning is not enough, as the smallest shrinkage of a notched piece or a tenon under such circumstances would cause a very disproportionate settlement; the joint should be strapped or bolted. With a good joint here, as we have said, the truss cannot spread, the feet being firmly tied together and to the apex of the truss. The additional iron tie-rod is in theory, therefore, under such circumstances entirely superfluous, although its introduction here was probably, in view of the possible weakness of the joints, a wise precaution. So long as the joints hold, however, the rod simply hangs loose, enduring no strain at all. If the tenons at the feet of the rafter should break out, or the nails at the foot or head of A break off, a strain would come upon the rod of an amount which would be entirely uncertain, depending upon the remaining resistance of the imperfect joints; but with good materials and careful workmanship, particularly if the board A is doubled and nailed as we have suggested, we should say that a half-inch tie at every third truss would be a sufficient provision for contingencies. The sketch being a rather hasty one, we cannot tell just how the lower portion of the principal rafters is held, but the short board strut C evidently supports it from the cross-tie. If B, instead of being vertical, as appears to be the case, were so inclined as to reach the foot of C, the lower portion of the rafter would be sustained in an excellent way, and without the severe and unnecessary cross-strain upon D which the arrangement shown involves.—*EDS. AMERICAN ARCHITECT.*]

NOTES AND CLIPPINGS.

CHINESE ARCHITECTURE.—It is said that the Chinese are making sad havoc with the remarkable archaic architecture of Central Asia, and the Institute of Architects of St. Petersburg has been considering means for preventing them from continuing the work of reckless destruction. It has been suggested that the Russian Government send a committee of antiquarians to Peking in order to interest China in her own ancient relics.

WATER, GAS AND HOT-AIR ENGINES.—Some experiments lately made with the hot-air, steam and gas engines to determine their relative cost of running show that an eight-horse-power gas-engine running ten hours costs, in water, lubrication, labor, depreciation and interest, \$7.04 per diem; a steam-engine of similar capacity cost \$2.86, while a hot-air engine of two-and-one-quarter horse-power, working ten hours, cost ninety-nine cents per diem. This gives a comparative cost of one horse-power of each: For a gas-engine eight and three-quarter cents; for the steam-engine three and one-half cents, and for the hot-air engine four cents. With cheaper kinds of gas the cost of the gas-engine may be greatly reduced. In England and Germany, where illuminating gas only costs from fifty to seventy-five cents per 1,000 cubic feet, instead of \$7.04 per diem this engine would cost but \$2.75, or less than steam.—*New York Evening Post.*

APPARATUS FOR REGISTERING DEFLECTIONS.—A foreign paper gives a description of an ingenious apparatus, brought out by a Mr. Biadego, for registering the deflection of a girder under dead and moving loads. According to the particulars at hand, the lower flange of the girder is furnished with a brass stile attached by means of a vise, and projecting from one side. On a scaffold, independent of the bridge, is placed a tripod carrying a recording paper, placed so that the stile shall touch it. The paper is carried on revolving drums, which are turned at a uniform speed by means of clock-work. If a train passes over the girder when the instrument is properly adjusted, a line is drawn upon the paper indicating the motion of the point of the girder at which it is fixed. It can be so placed as to show either the vertical or horizontal oscillations of the girder, or, if desired, two instruments can be applied at the same time, one to record the vertical, the other the horizontal movements. For the latter the paper may be fixed instead of revolving. The instrument was used in testing a bridge of three continuous spans of 263, 312 and 263 feet, and is of interest and value as indicating continuously the behavior of the structure under various conditions.—*The Iron Age.*

THE FRENCH ARCHITECT'S PROPERTY IN HIS DESIGN.—From a case reported in a recent number of the *Paris Gazette des Architectes* it would seem that the French Government, unlike ours, recognizes some degree of legal property on the part of an architect in his design. A provincial paper, the *Revue de l'Architecture en Belgique*, had published a view of a building at Antwerp designed by M. Beyaert, contrary to the expressed wish of the architect. The latter brought an action against the editor of the paper, his counsel pointing out that copyright in every other branch of art was defended by law, and that it would be an anomaly if architecture were excepted. As he was pleading to French and not to English judges the claim was allowed, and the proprietors of the journal compelled to publish an apology and to pay all costs. The argument for the defendants was that the building, being finished and standing in a public place, was public property. This would unquestionably be allowed in England, and there may be something to be said on that side of the matter; but the case illustrates, at all events, the far greater respect paid to artists and artistic rights in France as compared with our own country. We have known a case in which a journal procured *sub rosa*, by means best known to itself, an architect's lithographed illustrations to a lecture, published them, and boasted of the exploit. In France such a piece of "industry" could probably have been met by a sharp practical rebuke at the hands of the law.—*The Builder.*

SUBTERRANEAN TELEGRAPHY IN FRANCE.—The experience of subterranean telegraphy in France has been both extensive and favorable. We take from *L'Electricien* a résumé of the results. It was in the year 1879 that the adoption of this system was finally decided on, and although all the projected lines have not yet been laid down, a large number are established and working satisfactorily. They are divided into two categories—the main lines and the *armés* cables. The main lines include at least six conducting wires, inclosed in two cables, which are again inclosed in jointed cast-iron tubes, which can be inspected and taken up every 1640 feet. The *armés* cables form the branch lines; they contain one, two, or three wires, and are merely laid in trenches of about four feet deep. The chief interest attaches, of course, to the main lines, on account of the technical difficulties of their working, in consequence of the effects of condensation, of mutual induction between the wires, and of the earth currents to which they are exposed. The difficulties arising from condensation are not greater than those met with in submarine telegraphs, while the subterranean line possesses the great advantage of being able to be worked in sections with relays. It is found that up to 400 kilometres (248 miles) the line gives the same speed of transmission as an aerial one, and as the interposition of a relay with a light armature causes no retardation, the length of the line laid down in sections of this length may be practically unlimited. The currents with which the Hughes instruments work (this being the system employed) are slight; and therefore the dynamic induction is of small importance, while the chief difficulty is caused by the mutual electrostatic induction of the currents in the different wires, which increases as the square of the length of the line. This has been greatly diminished by the ingenious device of placing the wires of long and short lines together. In the case of powerful earth currents, electric storms, etc., the wires can always be joined; and by working thus with a complete metallic circuit entirely isolated from the earth, much greater immunity from disturbances can be obtained than with the aerial lines. The "wires" of the main lines consist of seven strands of copper wire covered with three layers of gutta-percha, cemented on with Chatterton composition. The whole is then covered with several folds of tanned jute coarsely woven, secured by an outside bandage of tanned cotton cloth. 11,184 miles of this line are now in daily use, and the quantity is steadily being increased.—*Engineering.*

THE AMENITIES OF AN ENGLISH FIREMAN'S LIFE.—Our English friends have at times enjoyed a laugh at the accounts given of the recklessness occasionally displayed by our old volunteer firemen, their frolics and their fights, but a recent occurrence in England is fully equal to any exhibition of recklessness displayed by our volunteers. A fire of considerable extent occurred in Chatham, and the firemen of Rochester came to the rescue. This was distasteful to the Chatham firemen, and they did everything they could to prevent the Rochester boys working, finally cutting their hose. New hose was supplied, and the obtruding firemen commenced working again when the chief of the Cambridge brigade ordered the water turned off. This was a squelcher not only to the Rochester firemen but the Cambridge force as well, and they all stood around and watched the fire burn itself out. But the worst phase of it was that the Cambridge authorities approved the acts of their firemen. At the recent annual dinner of the brigade the chairman censured the firemen for an excess of zeal, and thought they often put out fires in buildings that might better have been left to burn. He cited the fire referred to, and said if those buildings had been permitted to burn the local authorities would have been able to have bought the ground for some local improvements for a less price than they would now have to pay. The Cambridge firemen excused themselves by asserting that it was the Rochester firemen who extinguished the flames in the objectionable buildings. After this, Englishmen have no occasion to go abroad for illustrations of recklessness and rowdiness on the part of volunteer firemen.—*The Fireman's Journal.*

A CASE INVOLVING ARTISTIC COPYRIGHT.—An important question of artistic copyright is now pending before the Paris Civil Court. A Paris tailor, named Godchau, is proprietor of a small publication, half newspaper and half advertisement sheet, called the *Chronique Parisienne*, in which items of town gossip figure side by side with trade puffs. For the engravings with which his paper is illustrated, M. Godchau recently took advantage of a sale of old blocks by the *Petit Journal* to purchase those of two well-known pictures by the military painter De Neuville, *The Reconnaissance* and *The Battle of Le Bourget*, which were obtained for the modest sum of 140 francs. The engravings subsequently appeared in the *Chronique Parisienne* in company with portraits of gentlemen wearing the elegant coats or walking suits supplied by the Maison Godchau. M. Goupil, the art-publisher, however, who possesses the exclusive privilege of reproducing De Neuville's works, looked on this publication as an infringement of his copyright, and has brought an action to obtain the suppression of the incriminated number of the *Chronique Parisienne*, and payment of damages. M. Godchau called into the action the proprietors of the *Petit Journal*, and the latter, on their side, brought MM. Tolmer, the printers from whom they had purchased the engravings. Both parties argue that in selling the blocks they had only disposed of the material objects, and that it was for the purchaser to obtain from the holders of the copyright the authorization to use them. The Court has deferred judgment for a fortnight.—*The Architect.*

THE CHURCH PUNKAH.—A peculiarity of the churches in India is the punkah, which is a framework of wood covered with cloth and with a deep white frill. Rows of these hang from end to end of the church, suspended from the ceiling, and are swung by ropes, which pass through holes in the wall, and are pulled by natives (in private houses there are relays of punkah coolies, who relieve guard night and day). Why some simple machine has never been devised to do this tedious work is matter for wonder, but some one suggests that no machine would do it for 6d. a day, which is the wage of these men—certainly none would be so noiseless. And the gentle Hindu has no objection to work that merely involves sitting still and pulling a rope.—*Exchange.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

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

BUILDING PATENTS.

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

294,212. ELECTRIC ANNUNCIATOR.—Isaiah H. Farnum, Portland, Me.
 294,223. BRICK-KILN.—Willis N. Graves, St. Louis, Mo.
 294,233. WINDOW-BLIND.—Alexander H. Hill, Oskaloosa, Iowa.
 294,239. FIRE-ESCAPE.—William Jensen, Victoria, British Columbia, Can.
 294,255. WOOD-SCREW.—Samuel Montgomery, New York, N. Y.
 294,256. METALLIC SHINGLE.—Levi H. Montross and John C. West, Simcoe, Ontario, Can.
 294,257. WEATHER-STRIP.—Devoleo C. Potter and John Stone, Pittsburgh, Pa.
 294,275. FIRE-ESCAPE.—Chester A. Roberts, Caledonia, N. Y.
 294,278. WINDOW SHADE FIXTURE.—Anton Schmackers, Birmingham, Ala.
 294,308. FIRE-EXTINGUISHER AND FIRE-ALARM.—Charles E. Buell, New Haven, Conn.
 294,319. FOLDING FIRE-ESCAPE LADDER.—Ferdinand W. Hofele, New York, N. Y.
 294,324. WINDOW-BLIND AND AWNING.—Edward Lee, Danmora, N. Y.
 294,326. DOOR-LATCH.—Ephraim S. Morton, Plymouth, Mass.
 294,327. DEODORIZING AND DISINFECTING APPARATUS.—George Nobes, 27 Dudley Grove, Harrow Road, County of Middlesex, Eng.
 294,329. FASTENER FOR MEETING-RAILS OF SASHES.—Frederick W. Otis, Ansonia, Conn.
 294,342. TILE-MACHINE.—Wm. J. Woolley, Hilliard, O.
 294,343. TOWER.—John S. Adams, Elgin, Ill.
 294,344. SKELETON IRON TOWER.—John S. Adams, Elgin, Ill.
 294,360. FIRE-ESCAPE.—Nicholas H. Borgfeldt, New York, N. Y.
 294,368. BRICK-MACHINE.—Anthony Cramer, Detroit, Mich.
 294,365. STEAM-DERRICK.—Chester C. Lyman, Cleveland, O.
 294,401. MACHINE FOR DRESSING STONES.—Francis Meisel, Boston, Mass.
 294,413. WRENCH.—Judson A. Stanton, Sauk Rapids, Minn.
 294,430. ROCK-DRILL.—Chas. O. Barlow, Nevada City, and Geo. T. Emery, San Francisco, Cal.
 294,435. SASH-FASTENER.—Napoleon Bonaparte Bandy, Galveston, Tex.
 294,474. WINDOW AND DOOR BUTTON.—Eleazer Kemshall, New Britain, Conn.
 294,475. MANUFACTURE OF MOSAIC AND OTHER TILES.—Jean Larmanjat, Paris, France.
 294,476. HANGING-DOORS.—Alexander H. P. Leuf, Brooklyn, N. Y.
 294,484. REAMER.—Chas. H. Malmédie, New Bedford, Mass.
 294,485. PROCESS OF MAKING COPIES OF TRACINGS.—Philip H. Mandel, Ashtoria, N. Y.
 294,480. REMOVABLE BOTTLE-TRAP.—George M. McCloskey, Brooklyn, N. Y.
 294,497. WINDOW-BEAD FASTENER.—Horace F. Neumeyer, Macungie, Pa.
 294,503. WASTE-PIPE VENTILATOR.—Johannes Persson, New York, N. Y.
 294,511. SEWER-GAS CHECK.—Charles Andrew Schoeller, Chicago, Ill.
 294,514. ROTARY DRILLING-ENGINE.—Eliel L. Sharpneck, Denver, Col.
 294,522-223. FIRE-ESCAPE.—Jeremiah Stever, Bridgeport, Conn.

SUMMARY OF THE WEEK.

Baltimore.

FACTORY AND ENGINE-ROOM.—George A. Frederick, architect, has prepared drawings for Messrs. Bailey, Breivington & Dorman, for a three-story brick building, with ornamental brick finish, 50' x 150', and a one-story brick boiler and engine room, 30' x 50', to be erected cor. Sharp and West Sts.; cost, \$20,000; Frederick Decker, contractor.
 BUILDING PERMITS.—Since our last report fourteen permits have been granted, the more important of which are the following:—
 Breivington, Bailey & Dorman, three-story brick building, 50' x 150', n w cor. Sharp and West Sts.
 John M. Geitz, 6 three-story brick buildings (square), e s Eutaw Pl., commencing s e cor. Wilson St.
 John Kuper, 6 two-story brick buildings (square), commencing s e cor. Pratt St. and Woodyear Alley.
 Henry Schaumburg, 2 two-story brick buildings, commencing s w cor. Hamburg St. and Burgunder Alley.
 Lawrence Turnhall, 19 two-story brick buildings and 1 three-story brick building, n s Federal St., between Greenmount Ave. and Carter Alley.
 Nicholas Richers, three-story brick building, in rear n e cor. Charles and Little Hughes Sts.
 Conrad Ripple, two-story brick buildings, w s Poca St., between Hamburg and Sterrett Sts.
 Stephen R. Mason, three-story brick building, n w cor. Townsend and North Sts.

Emily Fisher, three-story brick shop, 30' x 44', in rear n s Fayette St., between Howard and Park Sts.
 B. H. Unger, three-story brick building, n e cor. Biddle and Wilcox Sts.
 S. A. Plummer, three-story brick building, n s Biddle St., e of Wilcox St.

Boston.

SUMMARY FOR 1883.—The following items are taken from the Annual Report of the Inspector of Buildings:—

During the past year the number of brick, stone and iron buildings for which permits were issued were 236; for wooden buildings, 1024 permits; for additions, alterations and repairs, 2,144.

The estimated cost of completed brick buildings was \$5,864,577; of wooden and frame buildings, \$1,670,806; and of additions, alterations and repairs, \$2,985,226; while the amount of loss by fire on 431 buildings was \$563,679.

BUILDING PERMITS.—Brick.—Tremont St., No. 258, Ward 12, for Patrick McAleed, hotel, 36' 7" and 42' 8" x 81' 6", six-story flat; Patrick McAleed, builder.
 Boylston St., cor. Exeter St., Ward 11, for H. B. Williams, family-hotel, 90' x 112', six-story flat; Albert Currier, builder.

School St., cor. Tremont St., Ward 10, for Harvey D. Parker, hotel, 21' x 87', eight-story pitch.

Falmouth St., No. 22, for H. M. Whitney, 6 dwellings, 18' x 37', three-story flat; Vinal & Dodge, builders.

Brooklyn.

BUILDING PERMITS.—Masevole Ave., s s, 30' e Leonard St., three-story brick store and tenement, gravel roof; cost, each, \$11,000; owner, John P. Wierk, 158 Eagle St.; architect, H. Vollweiler.

Masevole Ave., s s, 56' 6" e Leonard St., three-story brick tenement, gravel roof, wooden cornice; cost, \$8,000; owner and architect, same as last.

South Ninth St., No. 174, rear, two-story brick stable, tin roof; cost, \$5,000; owner, Christian Friedmann, on premises; architect, C. Rentz, Jr.

Third Ave., s w cor. Baltic St., 7 four-story brick stores and tenements, gravel roofs; cost, each, \$10,000; owner, George Beach, 467 Hicks St.; architects, Parfitt Bros.; builder, T. J. Nash.

Locust St., n s, 160' w Beaver St., 3 three-story frame tenements, tin roof; cost, each, \$4,500; owner, John Kramer, 297 Floyd St.; architect, F. Weber; builders, E. Straub and J. Rueger.

Park Ave., s s, 250' w Sumner Ave., three-story frame tenement, tin roof; cost, \$4,200; owner, Jacob Comes, 820 Park Ave.; architects, H. J. Schwarzmann & Co.; builders, J. Armendinger and J. Rueger.

India St., n w cor. Oakland St., four-story frame tenement, tin roof; cost, \$8,000; owners, O'Keefe & Doyle, cor. North Sixth and Fifth Sts.; architect, A. Herbert; builders, Joseph Gately and John Fallon.

York St., n e cor. Washington St., six-story brick factory, gravel roof; cost, \$24,000; owners, Ketcham & McDougal, cor. York and Washington Sts.; architect, Mercein Thomas; builders, P. J. Kelly and L. W. Seaman, Jr.

Elm St., No. 128, e s, 200' n Central Ave., three-story frame tenement, tin roof; cost, \$3,200; owner, Ann Shanahan, on premises; architect, E. P. Gaylor; builder, Robert McArthur.

Graham Ave., No. 90, e s, 50' s Selgel St., three-story frame tenement, tin roof; cost, \$5,300; owner, Mary A. Kuhn, 88 Graham Ave.; architect, Th. Engelhardt; builders, Martin Kuhn and Peter Kunzweiler.

Madison St., n s, 250' e Tompkins Ave., 5 two-and-a-half-story brown-stone dwellings, tin roofs; cost, \$5,500 each; owner, Jas. A. Thompson, 300 Lexington Ave.

Macon St., s s, 100' w Hopkinson Ave., 4 two-story brick dwellings, gravel roofs; cost, \$2,500 each; owner, Jno. G. Porter, 405 Pearl St., New York; architect, Thos. S. Godwin.

Washington Ave., No. 460, three-story brick dwell., slate roof; cost, \$35,000; owner, J. W. Hollenback, Wilkesbarre, Pa.; architect, Alfred H. Thorp; builders, Stevenson & Son and Morris & Solover.

Seventh Ave., n e cor. Fourteenth St., three-story brick store and tenement, tin roof; cost, \$8,000; owner and builder, R. F. Clayton, 471 Fifth Ave.; architect, J. D. Hall.

South First St., n s, about 150' e Tenth St., 3 three-story brick tenements, tin roofs, iron cornice; cost, \$4,000 each; owner and mason, Jas. Rodwell, 99 Division Ave.; architect, E. F. Gaylor.

Seventh Ave., e s, 20' n Fourteenth St., 4 three-story brick tenements, tin roofs, wooden cornices; cost, \$6,000 each; owner and builder, R. F. Clayton, 471 Fifth Ave.; architect, J. D. Hall.

Prospect Pl., s s, 160' e Rogers Ave., two-story brick dwell., tin roof, wooden cornice; cost, \$3,500; owner, Edward Tuite; builders, Philip Sullivan and Edward King.

Lafayette Ave., n e cor. Steuben St., 4 four-story Trenton stone brick double flats, felt, cement and gravel roofs; cost, \$20,000 each; owner, Paul C. Greuling, 420 Gates Ave.; architect, Amzi Hill.

Eagle St., e e cor. Provost St., two-story brick storehouse, gravel roof, brick cornice; cost, about \$7,000; owner, John C. Provost, 136 Hewes St.; architect, F. D. Norris; builder, John B. Woodward.

Eagle St., s s, 250' e Provost St., two-story factory, with one-story extension as engine-room, gravel roof, brick cornice; cost, about \$8,000; owner, John C. Provost, 136 Hewes St.; architect, F. D. Norris; builder, John B. Woodward.

Eagle St., s s, 330' e Provost St., rear, one-story brick saw-mill; cost, about \$5,500; owner, John C. Provost, 136 Hewes St.; architect, F. D. Norris; builder, John B. Woodward.

Van Buren St., n s, 224' w Sumner Ave., 4 two-story brick dwellings, tin roof, wooden cornice; cost, \$4,000 each; owner and carpenter, F. Sloat, 286 Kosciuszko St.; architect, H. M. Sloat; mason, J. Lynch.

Flushing Ave., n s, 267' e Bushwick Ave., three-story frame store and tenement, tin roof; cost, \$4,300; owner, W. Koehler, 1'03 Flushing Ave.; architects, H. Vollweiler & Co.; builder, Jacob Schoch.

Flushing Ave., n s, 300' e Bushwick Ave., three-story frame tenement, tin roof; cost, \$5,000; owner, George Kesseling; architects, H. Vollweiler & Co.; builder, Jacob Schoch.

Stockton St., n s, 175' e Sumner Ave., 3 buildings, and 5 buildings on s s Stockton St., 225' e Sumner Ave., in all 8 three-story frame tenements, tin roofs; cost, \$4,500 each; owners, Konrad Hartmann and Carl C. Grau, 244 Sumner Ave.; architects, H. Vollweiler & Co.

Broadway, Nos. 600 and 602, 2 two-story brick stores and dwellings, tin roofs, iron cornices; cost, \$3,500 each; owner, August Grill, Jefferson St., near Bushwick Ave.; architect, John Platte; builder, William Maske.

Myrtle Ave., n w cor. Canton St., four-story brick store and tenement, tin roof; cost, \$9,000; owner, Mrs. Jas. Ryan, 118 Prospect St.; architect, J. D. Reynolds; builders, Francis J. Kelly and Wm. Zang.

First St., e s, 100' n Broadway, three-story brick store and factory, gravel roof, iron cornice; cost, \$6,000; owner, W. W. Armfield, Penn Yan, N. Y.; architect, F. W. Wurster; builders, W. T. Lamb, Jr.

Sixth Ave., w s, 20' s Twelfth St., 10 two-story and basement brick dwellings, tin roofs; cost, each, \$3,000; owner, S. P. Lincoln, 184 Hall St.; architect and builder, Chas. L. Lincoln.

Irving Pl., No. 89, e s, 110' n Fulton St., two-story brick blacksmith-shop and dwell., tin roof; cost, \$3,700; owner, Julius Lebrunkraus, 377 Fulton St.; architect, Jakob Haugstatter; builders, Frank Curran and John King.

ALTERATIONS.—Washington Park, No. 180, late Cumberland St., two-story and basement brick extension and interior alterations; cost, \$15,000; owner, Mrs. J. M. B. Caruthers, on premises; architect, M. J. Morrill; builders, T. Donlon and Long & Barnes.

Chicago.

OFFICE-BUILDING.—The Secretary of State has licensed the Loomis Building Company, Chicago, to erect a building on LaSalle St., near the new Board of Trade, for office purposes; capital, \$400,000; incorporators, John M. Loomis, John McLaren and Geo. W. Kemp.

BUILDING PERMITS.—Home Insurance Co., eight-story office building, cor. Adams and LaSalle Sts.; cost, \$300,000; architect, W. L. B. Jenney.

F. E. Avery, three-story dwell., 13 Laue Pl.; cost, \$6,000; architect, C. P. Thomas.

Gurney Cab Co., two-story barn, 29 to 45 West Adams St.; cost, \$20,000. A. M. F. Cotton, architect.

U. Trotter, two-story flats, 127 Twenty-fourth St.; cost, \$9,000; F. V. Phillips, architect.

J. Cretsch, two-story flats, 382 Noble St.; cost, \$3,700.

F. Selbrandt, two-story flats, 234 Twenty-fourth St.; cost, \$5,000; architect, J. Frank.

C. Stren, two-story flats, 656 Nineteenth St.; cost, \$5,500.

P. Larsen, three-story shop and engine-house, 127 North May St.; cost, \$6,000; architect, A. Carlson.

C. Martens, two-story store and flats, 308 West Twenty-first St.; cost, \$4,000.

F. L. Breidenstein, two-story dwell., 791 Elk Grove Ave.; cost, \$3,000.

J. M. Loomis, nine-story office building, 210 to 224 LaSalle St.; cost, \$300,000.

W. D. Kerfoot & Co., nine-story office building, 230 to 236 LaSalle St.; cost, \$80,000; S. V. Shipman, architect.

C. Carr, two-story dwell., 191 Elm St.; cost, \$4,000.

J. A. McDermott, 2 three-story dwellings, 3542 and 3544 State St.; cost, \$12,000; Hollibird & Roach, architects.

Parks, two-story dwell., 237 Warren Ave.; cost, \$3,000; H. R. Wilson, architect.

Chicago Opera House Company, nine-story opera-house, cor. Washington and Clark Sts.; cost, \$5,000, 000.

Mandel Bros., three-story barn; cost, \$15,000; architects, Adler & Sullivan.

E. M. Fernandez, two-story dwell., 263 Bissell St.

O. Holenger, two-story dwell., 585 Chicago Ave.; cost, \$3,000.

R. H. Atchison, three-story dwell., 236 Winchester Ave.; cost, \$5,000.

Home Insurance Co., eight-story addition, cor. Adams and LaSalle Sts.; cost, \$90,000; W. L. B. Jenney, architect.

Hurston & Cassidy, two-story livery-barn, 978 Lake St.; cost, \$7,500.

John Q. Adams, ten-story office building, 116 and 118 Dearborn St.; cost, \$125,000.

C. Winkler, cottage, 96 Siegel St.; cost, \$3,500.

Compe & Haase, four-story factory, 179 and 181 Illinois St.; cost, \$12,000.

A. Deach, two-story store, cor. Ogden Ave. and Van Buren St.; cost, \$8,000; architect, L. J. Halberg.

J. J. Marnel, two-story flats, 123 Lytle St.; cost, \$5,000; Ruehl, architect.

J. H. Duig, two-story dwell., 946 West Adams St.; cost, \$3,000; H. Clynne, builder.

E. Hedrich, three-story dwell., 783 Larrabee St.; cost, \$5,000.

J. Becht, two-story dwell., 252 Larrabee St.; cost, \$4,500.

J. Schnoor, two-story dwell., 434 Dayton St.; cost, \$4,500.

Wm. H. Thompson, 10 cottages, Albany Ave.; cost, \$10,000; J. F. Gubbins, builder.

A. Jacobson, 3 cottages, 807-811 Seymour St.; cost, \$3,000.

G. M. Aykroyd, three-story dwell., 235 Winchester Ave.; cost, \$3,800; C. P. McKay, architect.

J. R. Winterbotham, four-story warehouse, 389 and 391 Fifth Ave.; cost, \$14,000; F. W. Ruehl, architect.

A. Brady, two-story store and dwell., 459 Taylor St.; cost, \$3,500.

N. Helbach, two-story store and dwell., 971 West Twenty-first St.; cost, \$3,000.

A. Benis, two-story store and dwell., 963 West Eighteenth St.; cost, \$4,500.

J. C. Comstock, centre wall to building, 291-295 Wabash Ave.; cost, \$15,000.

Herzog Bros., wagon-factory, 61 Wendell St.; cost, \$2,900.

J. L. Campbell, 7 two-story dwellings, 352 to 364 Campbell Ave.; cost, \$18,000.

M. J. Dowald, three-story store and dwell., 333 and 335 North Ave.; cost, \$7,000; A. F. Boos, architect; N. Garten, builder.

New York.

HOME.—Messrs. Renwick, Asplund & Russell have designed a Home for Old Men and Aged Couples, to cost \$225,000, to be built on the cor. of One Hundred and Thirtieth St. and Morningside Ave.

HOUSES.—For Mrs. Brennan, a three-story and basement brown-stone, terra-cotta and brick houses, of various dimensions, are to be built on the s s of Eighty-fourth St., e of Ninth Ave.; they will probably cost about \$75,000; Mr. Frank F. Ward, architect.

FLATS.—Mr. Jas. D. Fish will build 2 five-story brick and stone apartment-houses, at Nos. 107 to 115 West Thirty-ninth St.

For Mr. S. M. Milliken, a five-story brick and stone flat, 25' x 89', is to be built on the s w cor. of Tenth Ave. and One Hundredth St., at a cost of about \$20,000, from designs of Mr. Richard Berger.

For Mr. M. Eisner, 2 five-story brick and stone flats, 25' x 85' each, are to be built on the north side of Manhattan St., between Broadway and Tenth Ave., at a cost of about \$10,000, from designs of Messrs. Hugo Kafka & Co.

SEMINARY.—A building, 40' x 142', of brick and Belleville stone, is to be built on the s w cor. of Ninth Ave. and Twenty-first St., adjoining their present structure, for the General Theological Seminary; Mr. Chas. C. Haight is the architect.

BUILDING PERMITS.—Cherry St., s e cor. Jackson St., five-story brick store and tenement, tin roof; cost, \$15,000; owner, John Overbeck, 390 East Broadway; architect, J. Kastner.

Third Ave., w s, 100' n One Hundred and Forty-first St., 2 two-story frame stores and dwellings, tin roofs; cost, each, \$2,600; owner, John Bates, Morris-town, N. J.; architect and builder, H. S. Baker.

Cherry St., Nos. 468 and 470, six-story brick factory, tin roof; cost, \$20,000; owner, Henry A. Dingee, 130 East Sixty-first St.; architect, L. H. Broome.

Second Ave., s w cor. Sixty-eighth St., five-story brick and Long Meadow stone store and tenement, tin roof; cost, \$35,000; owner, Ellen S. Auchmuty; architect, G. B. Post; builder, F. Lyons.

Between Thirty-ninth and Fortieth Sts., near East River, brick tank for gas-holder; cost, \$5,800; owner, Equitable Gas-Light Co., Post Building, Exchange Pl.; architect, J. F. Harrison; builder, E. Deves.

One Hundred and Twenty-sixth St., s s, 237' w Fifth Ave., 4 four-story and basement Connecticut brown-stone dwellings, tin roofs; owner, Anthony Smyth, 165 East One Hundred and Twenty-fourth St.; architects, Cleverdon & Putzel.

Suffolk St., No. 10, four-story brick tenement, tin roof; cost, \$9,000; owner, Anna G. Huner, 215 East Twelfth St.; architect and mason, H. Hollwedel; carpenter, H. Antonius.

Academy St., No. 229, five-story brick tenement and store, tin roof; cost, \$12,000; owner, architect and builder, Ferdinand Sulzberger, 307 East Fifth St.

Tenth St., n s, 50' w Ave. D, rear of corner lot, four-story brick factory, tin roof; cost, \$10,000; owner, Eleventh Ward Bank, on premises; architect, W. J. Fryer, Jr.

One Hundred and Forty-third St., n s, 300' e Eighth Ave., three-story frame dwell., tin roof; cost, \$5,000; owner, Patrick J. O'Brien, One Hundred and Forty-third St., between Seventh and Eighth Aves.; architect, A. Spence.

West Twenty-eighth St., Nos. 422-428, four-story brick school-house, tin roof; cost, \$60,000; owner, City of New York; architect, D. J. Stagg, 146 Grand St.

One Hundred and Seventy-first St., s e cor. Audubon Ave., three-story frame dwell., tin roof; cost, \$3,800; owner, Ellen Newman, 88 Ninth Ave.; architect and builder, Edmund J. Conway.

Cherry St., No. 266, three-story brick workshop, tin roof; cost, \$3,000; owner, Jesse G. Keys, 19 West One Hundred and Twenty-seventh St.; architect, J. M. Farnsworth.

Eighty-second St., s s, 250' and 300' e Second Ave., 5 five-story brick tenements, tin roofs; owner, John Demphy, 465 Bedford Ave., Brooklyn; architect, James Stroud.

Courtland Ave., w s, 50' n One Hundred and Fifty-first St., three-story frame tenement, tin roof; cost, \$5,500; owner, Rosina Ferrioli, 629 Courtland Ave.; architect, A. Peiffer.

Orchard St., No. 39, five-story brick tenement, tin roof; owners, Morris and Joseph Glass, 99 Canal St.; architect, Henry Dudley.

East One Hundred and Twentieth St., No. 229, four-story brick stable, gravel roof; cost, \$8,000; owner, J. M. Horton Ice Cream Co., 305 Fourth Ave.

Broadway, Nos. 513, 515, 517 and 519, and Mercer St., Nos. 84, 86, 88, 90 and 92, 3 six-story brick, stone and iron front stores, tin roofs; cost, total, \$330,000; owner, Estate of D. H. Haight, John L. Smith, trustee, Long Island City; architect, Samuel A. Warner; builders, Masterdon & Harrison and John Sniffen.

East Sixty-second St., No. 203, three-story and basement brick stable, gravel roof; cost, \$7,000; owner, Mary Pine, 203 East Sixty-second St.; architect, F. T. Camp.

West One Hundred and Twenty-fifth St., Nos. 63, 65 and 67, 3 one-story brick stores, tin roofs; cost, \$3,225; owner, Susan A. Hoogland, 29 West Forty-eighth St.; architect, Jas. S. Wightman; builders, J. & W. C. Spears and Wm. Eldred.

ALTERATIONS.—Broadway, No. 803, new elevator, with iron bridge for entrance, etc.; cost, \$8,000; owner, Methodist Book Concern, on premises; architect, S. D. Hatch; builder, E. S. Miller.

West St., No. 181, repair damage by fire; cost, \$6,600; owner, New York & Erie R. R., by C. L. Atterbury, 7 East Thirty-third St.; architect and builder, H. Wallace.

Fourteenth St., Nos. 3 and 5, add one-story interior alterations; cost, \$4,000; owners, P. M. Suarez and G. Perez, on premises; architect, A. Craig; builder, not selected.

One Hundred and Twenty-fifth St., n s, 260' w Third Ave., add three stories, iron-work on front; cost, \$21,500; owner, G. G. Grennell, 149 East One Hundred and Twenty-fifth St.; architect and builder, G. Robinson, Jr.

Christie St., Nos. 213 and 215, one-story brick extension, front alterations, etc.; cost, \$4,000; owner,

Charles Kreppel, 213 Christie St.; architect, J. Hoffmann.

New St., Nos. 58, 60 and 62, and Beaver St., No. 23, interior alterations, etc.; cost, \$16,500; owner, John L. Cadwalader, 68 Wall St.; builders, S. Nieuwenhouse and John Downey.

Ace. D, n w cor. Tenth St., two-story brick extension; cost, \$4,000; owner, Eleventh Ward Bank, on premises; architect, W. J. Fryer, Jr.; builder, not selected.

St. Louis.

BUILDING PERMITS.—One hundred and forty-four permits have been issued since our last report, thirty-four of which are for unimportant frame houses. Of the rest those worth \$2,500 and over are as follows:—

J. Holwell, two-story brick dwell.; cost, \$3,000; J. Waters, contractor.

M. Moritz, two-story brick dwell.; cost, \$3,000; B. Dengler, contractor.

C. Heines, two-story brick dwell.; cost, \$4,000; Kergin Bros., contractors.

C. Giesler, three-story brick college; cost, \$7,000; H. E. Polpert, architect and contractor.

J. Schureman, two-story brick dwell.; cost, \$6,000; H. Kennedy & Son, contractors.

M. Lowenstein, two-story brick store; cost, \$5,000; Beinke, architect; W. C. Popp, contractor.

J. J. White, two-story brick dwell.; cost, \$10,000; J. B. Legg, architect; F. C. Honsack, contractor.

J. Kuhus, two-story brick dwell.; cost, \$5,500; W. G. Gaines, architect; F. W. Loffhagen, contractor.

H. S. Parker, two-story brick dwell.; cost, \$8,500; W. C. Slicer, architect; contract sub-let.

First Congregational Church, two-story brick church; cost, \$50,000; Hurd & Rice, architects; contract sub-let.

J. Steinwender, 3 two-story brick dwellings; cost, \$8,500; E. C. Janssen, architect; C. Gerhardt, contractor.

B. Brown, two-story brick dwell.; cost, \$2,700; J. E. Truitt, contractor.

W. J. Gleason, two-story brick dwell.; cost, \$2,500; J. E. Truitt, contractor.

P. W. Schneider, two-story brick dwell.; cost, \$3,600; H. Beckmeier, contractor.

M. Stander, two-story brick dwell.; cost, \$3,000; G. M. Theobald, contractor.

D. R. Garrison, three-story brick store; cost, \$17,000; T. Farlong, architect; Bude & Luke, contractors.

Mrs. W. P. Shroyck, three-story brick dwell.; cost, \$9,000; Legg & Hellmers, architects; Sam. Hoffmann, contractor.

Wm. Fogarty, two-story brick dwell.; cost, \$3,600; P. F. Mengher, architect; Chapman & Thursty, contractors.

J. Kollmeier, Jr., two-story brick dwell.; cost, \$3,500; A. Beinke, architect; J. Kollmeier, Jr., contractor.

St. Paul, Minn.

BUILDING PERMITS.—Thos. Grace, two-story double brick house on Fifth St., between Franklin and Washington Sts.; cost, \$10,000.

Philip Abbott, two-story double frame house, on Nelson St., between Josette and Nelson Aves.; cost, \$4,000.

Jas. Blakie, 3 double tenements, two-story frame, on Oakland St., between Summit and Grand Aves.; cost, \$12,000.

Thomas Bowers, 7 stores, two-story frame, on Seventh St., near Stahlman's brewery; cost, \$5,000.

Bids and Contracts.

BUFFALO, N. Y.—The following is a synopsis of bids for labor and materials and setting stone for the custom-house extension:—

W. D. Collingwood, \$12,990 (accepted).

Jared H. Tilden, \$17,641.

John Drnar, \$19,834.

M. A. McGowan, \$21,010.

Rumrill & Rupp, \$25,669.

M. McNamara, \$59,000.

MEMPHIS, TENN.—Synopsis of bids for iron and slate work of stairways for the custom-house:—

Melrose & Lyon, \$6,050 (accepted).

Poulson & Eger, \$6,850.

Snead & Co. Iron Works, \$7,620.

Cheney & Hewlett, \$7,910.

Bartlett, Hayward & Co., \$8,360.

Haugh, Ketchum & Co., \$8,715.24.

Phoenix Iron Works, Trenton, \$9,700.

The Merz Architectural Iron Works, \$10,600.

Mainly & Cooper Manufacturing Company, \$13,995.

Wm. H. Jackson, \$9,300.

PEORIA, ILL.—Peter G. Stroub, of Buffalo, N. Y., has been awarded the contract for furnishing Ohio buff sandstone for the new public building, for \$37,800.

The following is a synopsis of bids for brickwork for the court-house:—

A. J. White, \$16,772 (accepted).

Jacob Viehmyer, \$16,985.

Larkworthy & Menke, \$18,500.

Smith, Sargent & Co., \$18,510.

M. A. McGowan, \$18,532.

Thomas Osborne, \$21,000.

George O. Cook, \$21,000.

Angus & Gmelche, \$21,745.

Valentine Jett, \$21,900.

Peter G. Straub & Co., \$25,000.

WASHINGTON, D. C.—The bids for erecting the new armory-building for the Washington Light Infantry were as follows:—

John Henderson, \$98,500.

F. Pilling, \$103,750.

Langley & Gettling, \$102,705.

McCarthy, \$97,750.

Kendall & Fare, \$94,670.

George Corbett, \$98,500.

Parry, \$91,596.

Thomas, \$99,600.

Bright & Humphrey, \$103,549.

M. M. Magruder, \$102,462.

J. Downing, \$99,480.

Morrison, \$106,474.

Howlett, \$95,050.

Holtzclaw, \$109,926.

Downing Bros., \$103,467.

PROPOSALS.

PLASTERING.

[At Memphis, Tenn.]

OFFICE OF SUPERVISING ARCHITECT,

TREASURY DEPARTMENT,

WASHINGTON, D. C., March 7, 1884.

Sealed proposals will be received at this office until 2 P. M., on the 4th day of April, 1884, for all the plastering required in the custom-house and post-office building at Memphis, Tenn., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

Bids received after the time of opening will not be considered.

M. E. BELL,

430 Supervising Architect.

BRIDGE.

[Near Cleves, O.]

Sealed proposals will be received at the office of the County Commissioners of Hamilton County, Ohio, until Saturday, March 22, 1884, at 12 M., for building a bridge across the Miami River, near Cleves, O.

The superstructure will be of iron, and be composed of three equal spans. Distance from face to face of abutments, 594 feet.

Masonry will consist in building two piers and two abutments.

All work to be done according to plans, specifications and profile now on file in the office of said County Commissioners.

Separate bids will be received on superstructure and masonry.

All bidders will be required to furnish a guaranty that, within ten days after the notification of the award of the contract, the contract shall be entered into.

The right to reject any or all bids is reserved.

429 JOSEPH W. BREWSTER, County Auditor.

SEWERS.

[At New Haven, Conn.]

CITY ENGINEER'S OFFICE, NO. 17 CITY HALL,

NEW HAVEN, CONN., March 4, 1884.

Sealed proposals will be received at this office until 7.30 P. M., Wednesday, March 19, 1884, for constructing sewers as follows:—

110 lin. ft. creosoted pile and timber foundation.

420 " spruce pile and timber foundation.

260 " pile and timber protection.

350 " 4' x 5' brick and stone sewer.

640 " 48" brick sewer.

470 " 42" " "

920 " 36" " "

400 " 24" and 30" brick sewer.

1100 " vitrified pipe sewer and culvert.

23 catch-basins.

27 man-holes.

Blank forms of proposal and any information concerning plans, specifications, bonds, etc., will be furnished upon application.

No proposal will be received after the time specified, and all proposals not on the blanks furnished, or not properly filled out, will be rejected.

The right to reject any or all bids is reserved.

By order of the Board of Public Works.

429 ALBERT B. HILL, City Engineer.

HOSPITALS FOR THE INSANE.

[Near Richmond and Evansville, Ind.]

OFFICE OF THE BOARD OF COMMISSIONERS,

FOR THE ERECTION OF ADDITIONAL

HOSPITALS FOR THE INSANE.

INDIANAPOLIS, March 3, 1884.

Sealed proposals will be received by said Board of Commissioners at the office of the Governor, at Indianapolis, on the 8th day of April, 1884, between the hours of 10 o'clock A. M. and 11 o'clock A. M., for the erection and construction of two additional hospitals for the insane, in conformity with plans and specifications agreed upon by said Board; one of said hospitals to be erected in Wayne County, near Richmond; the other in Vanderburg County, near Evansville.

Bids will be received for the work as a whole or for any classified portion, as shown in the schedule and specifications. All bids will be required to be made upon printed forms prepared by the Board of Commissioners, which will be furnished upon application. All bids must be accompanied by a bond for the faithful performance of the work specified therein, as required by section IV of the Act of the General Assembly of the State of Indiana, passed in 1883, entitled "An act providing for the location and erection of additional hospitals for the insane, and the management thereof," under the authority of which said hospitals are to be erected.

The Board reserves the right to reject any and all bids.

Contractors will not be allowed to sublet any portion of the work without the written approval of said Board.

Payments will be made monthly, as the work progresses, upon estimates made by the Superintendent of Construction, ten per cent of such estimate to be withheld until the final estimate, to be made when the contract is completed, and the work accepted by the Board.

The Board will not be responsible for the payment of any estimate, unless funds have been provided by appropriation by the Legislature.

INSTRUCTIONS TO BIDDERS.

Plans and specifications can be seen on and after the 16th day of March, 1884, at the office of E. H. Ketcham, architect, Indianapolis, Ind.

Proposals must be endorsed "Proposals for new Asylum for the Insane," and addressed to the "Commissioners for the erection of new Hospitals for the Insane, Indianapolis, Ind."

Bidders are invited to be present at the opening of the bids, which will take place at the office of the Governor on the 8th day of April, next.

"Special attention is called to terra-cotta and roof tile."

By order of said Board of Commissioners.

A. G. PORTER,

Governor and President of the Board.

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