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WE have received the report of the Supervising Architect of the Treasury Department for the year 1880, a neat little book, interesting to the general public chiefly on account of the heliotypes which it gives of the designs for a considerable number of the buildings now in process of erection for the government. Considering the vast amount of work which is done in the office of the government architect, and the number of designs which he is compelled to originate each year, the variety and excellence of those illustrated in the report is, we think, quite remarkable. The cold and costly classicism of former years has been most advantageously replaced by a picturesque style, much more troublesome to the architect than the other, but more interesting and satisfactory to the rest of the world. Some of the work indeed, as the front of the new court-house at Pittsburgh, deserves to be called architecture of a very high class, while several smaller buildings are noticeably pretty and refined. Among the tables and statistics which occupy most of the book, that which shows the prices at which the government has contracted for a large variety of materials is perhaps the most interesting, and affords to a certain extent a valuable comparative view of prices in localities ranging from Massachusetts to Texas. We find, for instance, contracts for brick at rates varying from four to ten dollars per thousand, and for dimension-stone from forty cents to a dollar and a half per cubic foot, the latter being the famous Mueller contract for the Chicago Custom-House. Among other things the Supervising Architect calls the attention of his chief, the Secretary of the Treasury, to the fact that the available facilities for locating vaults for the storage of silver dollars are exhausted, and that it will be difficult to provide others. The weight of silver coin is so great that without great expense for supports it will be now impracticable to store it anywhere else than in the basements of the other public buildings, where it will be removed from the supervision of the proper officer.

THE Albany Capitol still continues to be the object of much comment, favorable or unfavorable. Just at present, the latter seems to predominate, and the fears excited by the timid *World* reporter, who thought the building with the hill on which it stood were about to cast themselves into the Hudson River, having been allayed, their place seems to be taken by criticisms on the artistic qualities of the structure. After the ill-judged public attack which was made upon the design for the modifications, before anything more than sketches were offered, had been rendered rather absurd by its want of application to the executed work, the building has received little but praise, and as we think deserved praise; and the action of certain members of the New York Legislature, who, according to the newspaper reports, publicly pronounce it a "monstrosity," is not particularly creditable to their discrimination. Certain rational criticisms are made, as, in regard to the assembly chamber, that it is too large, and of bad acoustic quality; and of the present senate chamber, that the light from the large windows is annoying, and these criticisms are worthy of respectful attention; but no unprejudiced person, whether instructed in architecture or not, can look upon the noble and quiet mass of the Capitol, as it presents itself from the river, or from the eastern shore, without acknowledging that in spite, it may be, of many shortcomings, the design as a whole is that of a consummate master. There is no need of condoning faults in construction or arrangement,— let the present architects bear the blame if they are responsible for them; but it is foolish for those who profess to have at heart the honor of New York State to attempt to deprive her of the credit, which she justly deserves, of possessing what is, although perhaps not quite perfect, one of the greatest buildings of the century.

A VERY rose-colored state of affairs appears to have taken the place of the deep gloom which for a long time pervaded the atmosphere surrounding the new capitol of the State of Indiana. Every one will remember the singular competition, with the recriminations and lawsuits which followed it, and the strange contract with the architect, who bound himself, giving sureties in the sum of one hundred thousand dollars, in consideration of a commission of two per cent on the cost of the building to pay out of his own pocket the cost of any extra labor or materials beyond his estimate, necessary for the completion of the work, unless such extra work should become necessary by reason of some modification of the plans made by the state-house commissioners or the Legislature. We are by no means disposed to condemn altogether this fashion of holding the architect to a rigid pecuniary responsibility, and the effect which it would naturally have of causing him to abandon all thought of refining and perfecting his design as the work went on, in the blind pursuit of one engrossing object — to get his duties and responsibility over by the cheapest, easiest and most expeditious means — has been in this instance counteracted by the good sense and considerateness of the commissioners, who have discussed with him improvements both in design and construction, and have frankly taken upon themselves to order such as they thought desirable. The same qualities of energy and good sense on the part of the commissioners appear to have served them in the selection of contractors for the work, which has, as we learn from their detailed report, progressed in a very satisfactory manner, and there seems to be no reason why the building should not be completed, ready for occupancy, for a sum within the stipulated limit of two million dollars. We wish we could say that we had no misgivings as to the design, but a very ambitious structure in that respect is not intended.

THE Boston Manufacturers' Mutual Insurance Company has introduced the practice, whose benefits, we think, ought not to be confined to its members, of issuing special reports upon the more important fires which occur in buildings upon which they hold risks. The careful description of the circumstances under which fires take place, which these reports contain, offers the highest interest to all who are concerned with the arts of construction. The last report speaks of the conflagration which destroyed the Kearsarge Mills a few weeks ago, causing much comment among those who knew the thorough precautions usually insisted upon by this company, which held a large risk on the mills. It seems that the fire was caused by the action of a spinner, who was cleaning some machinery with cotton-waste, and accidentally brought this in contact with a gas-flame, throwing it from him, as it kindled, among the spinning-mules. Probably the burning waste separated into many fragments, for after the mules which first caught had been extinguished, a second range blazed up so suddenly as to prevent any attempt at controlling the flames. The attic above the room in which the fire began was fitted with apparatus for filling it with steam, which effectually prevented the blaze from extending upward, until it had burned downward through the two floors below. By this time the heat had broken the windows, and the wind being very strong nothing further could be done to resist the conflagration. The mill was fitted with automatic sprinklers only in the concealed spaces above the attic ceiling, and long before the steam-defended attic floor yielded, the pumping engines for supplying the sprinklers were useless. The opinion of the underwriters is that if the tower of the mill had been sufficiently high to contain a tank, so as to furnish hydrostatic pressure, and sprinklers had been placed in each story, the property would have been saved, and they also call attention to the fact that the granite window-caps proved to be a source of danger, flying to pieces when reached by the heat, and letting the brickwork above them fall, thus hastening the destructive effect of the fire.

Besides the Kearsarge Mills, the report of the underwriters describes fires in two other factories. In one of these a flat ceiling of corrugated-iron had been introduced below the roof of the picker-room for the purpose of protecting the timbers. A lock of wool falling into a gas-light carried fire to the bins, and a blaze was started, which, however, was extinguished with hand-hose in a few minutes, but not until the corrugated-iron ceiling had been warmed sufficiently to curl up, twist and separate in every direction. Sprinkler pipes of sheet iron had been placed in the room, but proved totally useless, the heat acting on them in the same way as on the ceiling. The most effectual resistance to the flames was made by the wooden doors covered with tin, which protected the hoist-way, and notwithstanding their exposed situation, they answered their purpose fully. This occurrence affords another illustration of the fact which underwriters, fire-engineers, and some architects have long known, that corrugated-iron, as commonly used in the cheap, tawdry "coliseums" and "tabernacles" of our cities to protect a wooden frame, is worthless in case of fire; while it gives additional evidence of the capacity possessed by tin-covered wood to repel heat. We observe that the writer of the report, alluding to this, recommends the use of roofing or leaded tin for the purpose. As this darkens with age, losing much of its reflecting power, it is commonly thought by architects that "bright tin," containing little or no lead in the coating, is preferable. We should be glad to know if the qualities of the two materials have been compared by actual tests. The last fire spoken of is a singular one, which took place at the Pepperell Mills, probably from spontaneous combustion, in a storehouse containing over two thousand bales of cotton. Immediately after the first alarm the whole mass seemed to be on fire, but in less than an hour the flames were extinguished, although a large portion of the cotton was more or less injured. The underwriters, not being willing to leave it on the premises, removed the whole to South Boston, but so pertinaciously did the fire hold in the compressed cotton that two weeks afterward some of the bales on the wharf burst out into a blaze. Commenting on this, the writer of the report says that the so-called fire-proof cotton storehouses, of brick and iron, are likely to ensure the destruction of the material placed in them, if it should become ignited, by confining it, as in an oven or air-tight stove; the true method is to separate it into small masses, or store it, even with a light covering, but in such a way that the bales can be quickly got at and removed.

Professor Chandler, President of the New York City Board of Health, has been interviewed rather freely by reporters of late, and we hope has been able to call the attention of a large number of persons in that way to matters which everybody does not yet understand. Speaking of the dangerous condition in which the wells of country farm-houses are apt to be found, Mr. Chandler described to an *Evening Post* reporter the case of a house which he had had occasion to examine, where coloring matter thrown into the cesspool found its way to the well within twenty-four hours. As usual under such circumstances, he found it impossible to make the proprietors of the establishment believe that this evidence indicated any bad quality in the water which their boarders, who were seized with typhoid fever, had drunk from the well. Some of the suggestions which Professor Chandler makes as to the best means of guarding against the pollution of well-water are very sensible. He proposes that instead of the ordinary privy vaults, which, even when made water-tight, are offensive and dangerous, movable tubs should be used, sliding on wooden strips, which can be emptied at short intervals. If desired, their contents can be disinfected daily by the addition of dry earth. This device has already been for some time in use among certain intelligent farmers in the Eastern States, and is worthy of being universally adopted. As to cesspools or ordinary vaults, Mr. Chandler thinks they should never be allowed to exist within five hundred feet of any well. Certainly, that is none too far off, but we have some curiosity to know how such regulations, if officially adopted, are to be enforced against the proprietors of city lots, perhaps forty by a hundred and fifty feet, in places where there is no public water-supply. The New York State Board of Health has fixed upon fifty feet as the minimum distance between the two places, but this feeble precaution is resisted.

Gas has long been an expensive luxury in Paris, as compared with other large European cities, particularly with London, where the cost to private consumers is only about half the Paris price. The explanation of this has generally been that the manufacture of gas in the latter city being a monopoly, the stockholders took advantage of their privilege to pocket enormous profits at the expense of their customers. Lately an investigation made by a special commission has put the matter in a very different light. The cost of producing the gas is now ascertained to be fourteen centimes the cubic metre, and the company is authorized to charge thirty centimes for the same amount, but the municipality is entitled to claim half the profits of the business beyond a certain value, as well as an *octroi* of two centimes the cubic metre. In addition to this, it receives gas for its own use, — a very large part of the consumption, — at fifteen centimes, or very nearly at cost. The share which the city will thus receive from the profits of the business in 1881 is estimated at more than fourteen millions of francs, and the residue, which has to furnish not only profit to the stockholders, but interest on the bonds of the company, and a given contribution to the sinking fund which is to redeem the principal of its debt and capital at the expiration of its charter, only twenty-five years hence, is by no means unduly large. Nevertheless, the private consumers of the city demand the lowering of the price, and it is now proposed to extend the charter of the company forty years longer, until 1945, and to limit the share of profits claimed by the city to its present amount, fourteen millions of francs, besides paying a certain sum in cash to the stockholders; the company, in return, to make a gradual reduction of the price of gas from year to year until it reaches a minimum of sixteen and a half centimes per metre. If any improved process shall enable the company to diminish the price of production, half of this saving is also to accrue to the profit of the consumers, one quarter to the city, and the remaining quarter only to the stockholders; but as an equivalent for this concession, the city is to guarantee the stockholders a certain minimum income.

It is almost with veneration that we are disposed to speak of the romantic devotion of Dr. and Mrs. Schliemann to the unfolding of the mystery which for thirty centuries has shrouded the lives of the most unhappy, the most persecuted, and yet the most famous family that history or legend have ever known, — the Atridæ. Not content with their extraordinary discoveries at Ilium and Mycenæ, they have now followed the footsteps of the wretched children of Agamemnon into northern Greece, where Iphigeneia, transported from Aulis in a cloud, was found by her demon-haunted brother Orestes. The legend of the deified pair relates that after their meeting they were received and entertained by Chryses, whose son, Minyas, afterwards founded a great city, Orchomenos in Bœotia, where the ruins of the treasury which he built were still shown in the days of Pausanias. Long before the beginning of authentic history, however, Orchomenos and the Minyæ were but names, preserved, perhaps, principally by their connection with the sacred tales of the Atridæ, of the Argonants, and the Golden Fleece, and few besides Dr. Schliemann would have dreamed of finding at this day any trace of the shadowy existences which they once represented. Nevertheless, he has begun excavation in a place selected apparently with that happy intuition which has served him so well at Ilium and Mycenæ, and already objects have been found similar to those discovered in the city of Agamemnon, while it is thought that indications have been traced of the treasury of Minyas himself.

The Boston Draughtsmen's and Artists' Association, which was formed about two years ago, and now has a large membership of those engaged or interested in design of all kinds, has begun its winter season with a most promising programme. The Association occupies rooms in a pleasant quarter of the city, and holds meetings every Saturday evening, at which lectures are delivered, or papers read. Lectures are already announced from Dr. B. Joy Jeffries on Color Perception; from Mr. A. V. S. Anthony on Wood-Engraving; and from other gentlemen on allied topics; and one Saturday evening in each month is devoted to an informal exhibition of paintings, drawings, and other works executed by members of the Association. The rooms are at all times accessible to members, and the centre-table is furnished with a good selection of magazines and periodicals, while classes in drawing meet at regular intervals. The subscription is very trifling, considering the advantages offered, and, naturally enough, the membership is large.

THE NEW MANUAL OF THE FRENCH BUILDING LAWS.[1]

To the courtesy of the committee charged by the *Société Centrale des Architectes* with the preparation of a revised manual of the French building laws as they now exist, the American Institute of Architects owes the gift of one of the earliest copies issued. This committee was composed of the president and secretary of the society, and thirteen of its most distinguished members; their work was discussed by the council of the society, and revised by a judicial committee, consisting of nine able lawyers, appointed for the purpose, and finally adopted by the society in general assembly. It may well be supposed that a work prepared with such care, and under so distinguished authority, was intended to be of permanent value, and the profession is to be congratulated on the success with which this end has been attained, the four volumes which contain the result of these labors presenting a concise, but complete view of the French law on all subjects relating to building. A much less comprehensive work, in one volume, was issued by the same society in 1863, but the accumulation of judicial decisions, police and municipal regulations, and other important matter, made it desirable that the new edition which had become necessary, since the former one was entirely out of print, should be much enlarged, and the opportunity seemed favorable for a complete remodelling of the book, and the addition of much that had before been wanting.

The foundation of the new manual, as of all others on legal topics in France, is the Code, that imperishable memorial of the Revolution, the Age of Reason, and the First Napoleon. As every one knows, this Code treats of all the duties and relations of men toward each other, and the principles which it lays down with regard to those duties and relations are still the fundamental law of France. These fundamental principles have, however, been interpreted, defined and explained by innumerable judicial decisions, in the same way that our statute law is examined, a precise meaning fixed for every phrase, and obscurities cleared away, by the searching and authoritative analysis of the courts, and a bare repetition of the clauses of the statute is no longer an adequate statement of the law, without the legal precedents of interpretation which have become an integral and necessary part of it.

With regard to the portions of the Code which concern building matters, this is the method adopted in the new manual: the articles are cited one by one, each followed by brief notes of the various judicial rulings upon it, and references to the reports of the cases in which the rulings or decisions were made. Concise as these notes are, they form necessarily a very considerable total, and the first volume is mainly occupied with them. The second volume contains in classified order the decisions of the highest tribunals, the Court of Cassation and the Council of State, on cases relating to building matters, and the third and fourth volumes are occupied by a complete collection of the ancient customs, forming part of what we call the common law; with police regulations, answering nearly to our State building laws; and special legislative acts relating to construction. These ancient usages, as might be expected, vary for every province, and almost for every city of France, and the municipal regulations are nearly as numerous, so that a thousand pages of fine print is barely sufficient to contain them all. With these old customs, historically interesting as some of them are, we can have very little to do, but the preceding volumes offer many suggestions, and give information, of much practical value, among which a few may be noted.

Speaking of the rule which exists in most countries, that any one can require his neighbor to join with him in setting boundaries between their contiguous properties, some useful hints are given, derived from the practice of the Government surveyors. These officials, in setting boundary stones, instead of drilling a hole at the exact intersection of the lines whose angle they indicate, cut two small grooves in the flat top of the stone, coinciding with the lines which form the sides of the angle; thus indicating at a glance the relation of each stone to the others, while the point where they meet is quite as accurately defined as by a drill-hole, and the operation of sinking the grooves is, if anything, easier and shorter than the other process.

These bound-stones, again, instead of being inserted in the ground, to take their chance of being disturbed by accident or design, are set in a rectangular hole, the bottom of which is paved with fragments of slate, tile or brick, so arranged as to form a regular pattern out of the shapeless pieces. The stone is then set upon these, and the earth filled in around it. If subsequently the boundary should be disturbed by accident, these irregular pieces, or "witnesses," will be displaced, spoiling the pattern in which they are laid, and revealing the change in the position of the stone on a careful investigation.

Even if the landmark should be designedly dug up and carried away, one or two of the "witnesses" are likely to be left in the ground, to tell the story of the fraud.

In the matter of party-walls, the French law differs from ours; the rule there being that any proprietor can claim the right to acquire half the wall which separates his neighbor from him, even though his neighbor may have built it entirely on his own land.

Of course, the purchaser is bound to pay the just value of one-half the masonry, and of the land which is occupied by half the wall, but he is not obliged to give any reason for claiming his rights, and it appears that even if he does so for the sake of getting possession and building up windows or doors in such a wall which look out over his land, he cannot be denied his request.

The original builder of a wall upon his own land has however some compensating rights. His next-door neighbor cannot make use of his wall in any way without first buying and paying for half of it. He cannot put trellises against it, nor train plants upon it, nor hang signs upon it, until he has paid half its value; the utmost that the law allows him is to plaster it on his side, or to paint it. Nor is it an equal share of the original cost of the land and masonry which he is compelled to pay, but half the sum which they would be worth at the time he makes the purchase; and he is obliged, if he wishes to build against it, to inform his neighbor before commencing operations, of the nature and extent of his proposed constructions.

With regard to ditches, those most indefinite and perplexing of landmarks, the French rule is, that a ditch shall be presumed to lie half on each side the boundary line, when the earth excavated from it is thrown equally on each side. If all the earth is thrown toward one side, the whole of the ditch is inferred to belong to the proprietor on whose side the earth lies.

A most important portion of the work is that which explains the mutual obligations and privileges of contractors and owners, and the responsibilities of each, and of architects. This chapter is full of useful suggestions, of which a few may be extracted at random. One hint may be derived from the Article 1162 of the Code, which is quoted as saying that "In case of doubt, the agreement is to be interpreted against him who made the stipulations, and in favor of him who has contracted the obligation." The courts, however, lay a very extensive responsibility upon the contractor. If his workmen, or any strangers, meet with accidents in consequence of his operations, and without fault on their part, he is solely accountable for the injury; if materials are damaged by exposure, or if the bank of an excavation falls in, he must pay for making good the loss. So with penalties incurred by neglect or disregard of police regulations; it is his duty to know and to obey such rules. Even after a building is finished, and before it is accepted by the owner, the contractor is responsible for any deterioration, robbery, or other damage to the property.

The relation of architects to proprietors is defined in a way which it is well to remember. Strictly speaking, he is a hired employee of the proprietor. He is not a manufacturer of plans, which he sells to those who wish to build from them, but makes these as part of the duty of his employment, in order to express in intelligible form the conception which he has been hired to make. If, therefore, the proprietor on examination of the plans submitted to him, wishes to reject them, he is bound to show that they have not been made according to his instructions. In distinction from goods, which a purchaser may buy or refuse as it suits his fancy, the drawings of an architect are the result of the labor which he has been hired to perform, and if he can prove that he has done the work in accordance with the instructions given him, he can demand payment, whether his employer likes the design laid before him or not.

The relationship of the architect toward the contractor is described as being that of a special agent of the proprietor, authorized to act for him in a limited sense, but not to compromise him. His powers are chiefly confined to matters relating to his art; for instance, he is justified in ordering works urgently necessary for the protection of the building under his care, at the expense of the owner, if the contractor is not bound to execute them; but he is not at liberty to bind the proprietor by any agreement with the contractor, unless in virtue of an express authorization.

The architect, once appointed, cannot wilfully desert his post to the injury of his employer. If it becomes necessary for him to resign his position, he must give sufficient notice to the proprietor, and endeavor to avert any injury to his interests which might result from the action, and in case of the interruption of the construction by the death of the proprietor, it is his duty to see that the work is protected against the inclemency of the weather, or other accidents.

It is needless to say that the architect is responsible for the good faith, reasonable skill, and due care and attention shown by him in performing his task. He is by the French law in fault, if he neglects to give proper supervision to the building; if he allows the foundations to be built on a bad subsoil; if he tolerates the use of improper materials; if he orders weak or vicious modes of construction; if he neglects to observe the laws and regulations governing such work; and if he fails to comply with the instructions given him by the proprietor.

In return, the proprietor is bound to carry out the engagements which the architect, in conformity with the authority given him, has made in his name; he is obliged to reimburse him for the advances and expenses which he may incur in the execution of the duties entrusted to him; and pay him his fees at the time they are due. He cannot urge any failure of the building to fulfil his anticipations as a reason for refusing to pay the architect, provided the latter has faithfully carried out his instructions; nor can he object to an account of actual expenses, that they might have been smaller. He must pay travelling expenses in full, without deduction for what the architect might have spent if he had stayed at home; and is bound to compensate him for losses or accidents which may befall him, without his fault, while employed on the work. The architect can claim interest on advances made by him for travelling expenses or otherwise, from the day they are made, but not on his own fees until

[1] A paper by T. M. Clark, A. A. I. A., read at the Fourteenth Annual Convention of the American Institute of Architects

he has made a demand for them. If several persons have employed an architect in common, each one is severally bound to him in all the obligations of a single proprietor. If the proprietor, without sufficient reason, dismisses his architect, the latter has a right to damages, and, in the same way, he is liable to his employer for the injury done by a wilful withdrawal on his part; but he is justified in resigning when his continuance in his duty would be an injury to him; or even if the proprietor should require him to act in a manner contrary to his artistic convictions, or to alter his design in a manner calculated to injure his reputation.

All these rules and comments are supported by many decisions, and may be taken as authoritative. It would be interesting to review the text of the decisions themselves, but it is hardly permissible to extend further the limits of the present paper.

SCIENTIFIC FENESTRATION.

Scientific fenestration, that is, the ascertainment of a trustworthy rule to regulate the forms and dimensions of windows, and their number and position, in relation to the light required in the interiors of buildings for various purposes, is a matter of almost insuperable difficulty. The text-books of architecture, indeed, say that nothing seems so much to disallow of general law; and, in default thereof, the architect is usually advised to err on the side of providing an excess of light, because it is always easier afterwards to diminish than to increase it. Although the difficulty is thus got over in a rough-and-ready, practical way, a certain rule would be none the less valuable, if it were only to supply an admitted deficiency in architectural science. But the subject assumes very much higher importance when we are assured by all the eminent physicians of the day that defective eyesight is largely on the increase among the people of this and other countries, and that, among other causes, the most powerful and most clearly ascertained is the commonly injurious arrangement of the window-lights in rooms wherein we live and work. These remarks apply more particularly to school-rooms, and the impetus which the educational movement has lately received has attracted increased attention to the matter. While it is found that short-sightedness (*myopia*), dimness of sight (*amblyopia*) and weakness of sight (*asthenopia*) are increasing generally in Germany, Russia, America, and England, in proportion as the children of those countries are compelled to attend school for a certain number of years (for statistics see a paper on "School Hygiene," by Dr. D. F. Lincoln, of Boston, Mass., in Dr. Buck's recent "Treatise on Hygiene and Public Health," Vol. II, pp. 605, 606), we are assured, at the same time, that the percentage is much greater in schools where defective window arrangements prevail, than in others; and there can be no doubt that the same causes produce similar results, — although in less degrees, from the greater sensitiveness of the eye in childhood, — in buildings for adults. Perfect vision is, in fact, a rarer blessing than those who enjoy it are apt to suppose; and those who have it not fail to realize how much of the defect is due to an imperfect regulation of the light by which they work. Excess or deficiency of light, cross lights, light falling at an improper angle, and light reflecting various colors, are all, in their degree, more or less injurious to the eyes, and it is the business of the architect to get as near an approximation to a certain rule as possible (we confess at the outset that an absolutely certain rule has not, as yet, been devised), to illuminate his building so as to provide against all these. The light admitted into our buildings requires regulation in three main respects, viz.: — (1) Quantity; (2) Angle of incidence; (3) Quality.

(1) *The Quantity of Light.*—The main difficulty in regulating this arises from the variations of natural light itself. Artificial light can be always exactly measured and regulated. It is a well-ascertained law that the illuminating power emanating from any source of artificial light always diminishes in intensity exactly as the square of the distance from the source of light increases; and hence, we can always regulate the quantity which shall fall upon an apartment, or any part of an apartment, from any given number of sources, and by the very simplest means we can also regulate its quantity and its angle of incidence. But not so with natural light. Practically speaking, all points of the earth's surface are at an equal distance from the source of light, the sun. In the open air, the quantity of light is diminished only by shadows, such as those of clouds, trees, or buildings, and by vapors in the atmosphere; and it is seemingly increased by reflection, and by the apparent height of the sun in the sky, according to which it must pass through a greater or less thickness of the atmosphere, which absorbs a part of the light in proportion to itself, and leaves a greater or less quantity to fall upon a given spot. The light falling directly upon every spot is thus a quantity varying with the sun's course in the heavens at every moment of the day: and this fact renders any rule founded upon the direct light of the sun absolutely impossible. But an average law is not equally impossible. The atmosphere is, in itself, a great reservoir (so to speak) of light, absorbing a comparatively small portion as it comes from the sun, and radiating the rest in every direction. Hence a sufficient approximation to a general law may be attained by assuming the sky (that is, strictly speaking, the atmosphere) to be a hemisphere, uniformly illuminated in all its parts, and then calculating how much of its light will enter an aperture of given dimensions, and in a given situation.

The very best light possible has been proved, experimentally, to be that derived from a horizontal skylight, or from a simple aperture in the roof. The reason for this is, that the light is poured into the apartment from every part of the great natural hemisphere of light by which it is surrounded, no appreciable quantity being lost by absorption, reflection, or refraction. A crucial example of the efficiency of this mode of lighting is found in the Pantheon at Rome. This ancient building has a clear internal diameter of 142ft. 6in., with a height of 74ft. to the springing of the semicircular dome, and may, therefore, be taken, in round numbers, to inclose a space of about 1,934,460 cubic feet. But the whole of this vast space is most efficiently lighted by one single aperture in the crown of the dome (commonly called the eye) which is only 27ft. in diameter, and has therefore an area only of a little above 572 ft. whence it follows that each superficial foot of this aperture efficiently illuminates no less than about 3,480 cubic feet of space. Apart from all considerations of climate, this one example clearly shows the wonderful superiority of vertical illumination where it is possible. But this kind of window is possible only to a very limited extent. In most cases, light has to be admitted through windows in vertical walls. In considering the quantity of light such windows will admit, it is, of course, necessary to treat the question in the first instance as if an entirely unobstructed space were in front of the aperture, and to leave the effect of obstructions for after-treatment. Now, it is found that the rays of light which enter such an aperture are very considerably modified by the degree of obliquity with which they strike upon its surface, or, what is the same thing, by the angular distance between the horizon and the zenith from which they proceed. A ray, for example, that strikes horizontally on a window, as in the case of the sun rising or setting exactly opposite to it, will arrive at the far end of the interior with the same degree of intensity with which it leaves the glass, so far as we can appreciate it by our sensations. But, on the other hand, rays that proceed from near the zenith strike the surface of the window very obliquely, and with a very great diminution of illuminating effect. The reason of this is that the breadth of a beam of light entering horizontally is fully equal to that of the aperture, and it therefore loses none of its illuminating effect; but the breadth of an oblique beam, and therefore its illuminating effect, is diminished in proportion *to the sine of the angle at which its rays are inclined to the aperture.* When the angle is small, its sine is small, and the lighting power is therefore insignificant. The angle at which a beam of light falls upon a perpendicular aperture is thus the measure of its illuminating power, and this has been computed with considerable exactness, as shown in the following table:—

RELATIVE ILLUMINATING EFFECTS OF EVERY TEN DEGREES OF SKY MEASURED FROM THE ZENITH.

Arcs of 10° each.	Number of rays out of every 100 which the aperture receives from each arc.
Between 90° and 80°	1.5
" 80 " 70	4.5
" 70 " 60	7.0
" 60 " 50	10.0
" 50 " 40	13.0
" 40 " 30	14.0
" 30 " 20	16.0
" 20 " 10	17.0
" 10 " 0	17.0

In estimating the quantity of light received from a given arc of the sky, according to this table, it must be borne in mind that all those *above* it are to be added to it. Thus the light received at from 70° to 60° = 7 + 4.5 + 1.5 = 13, and that from 10° to 0° = 100. But these principles and computations are more useful in calculating the question of the effect of artificial obscurations of light, than for establishing the rule of which we are in quest.

If we take the average size of windows practically constructed in most London houses, we shall find, as a common enough example, in an ordinary room, say 20 feet by 15 feet, lighted by two windows of ordinary height, 3 feet wide in the glass, with the light received at an angle of 45° all along the front, indefinitely, (for example, a ground-floor window in a street whose width equals the height of the houses), that the amount of light is barely sufficient for ordinary residential purposes, and this, therefore, is, according to the *dictum* of Professor Kerr, an instance of the *standard minimum of necessary lighting.* Proceeding from this point, and taking as standard conditions that the sill of a window is about 2½ feet from the floor, and the head about 1 foot from the ceiling, Professor Kerr suggests the following scale of widths of window-space with corresponding dimensions of rooms at random proportions, heights being immaterial, and the angle of light being in all cases 45°, as a minimum of domestic light:—

Total window-space,	3 feet wide.	Room,	12	feet by	12½	feet.
"	4	"	16	"	12½	"
"	5	"	17	"	14½	"
"	6	"	20	"	15	"
"	8	"	20	"	20	"
"	10	"	25	"	20	"
"	12	"	30	"	20	"

That is to say, in ordinary cases about 1 foot of window-width (of standard height) to 50 superficial feet of floor, with the lighting intercepted at 45° along the front, indefinitely. Professor Kerr adds that it seems of little moment what may be the shape of the room or the position of the windows, and in this we hardly agree with him. Every ray of light that enters an apartment is deflected from its path by entering, and again by leaving the glass of the window, and for this reason a much larger quantity enters the part of the room

nearest the window, than reaches the furthest part of the room, and this quantity is in a great degree in proportion both to the size of the window and the position of the observer. Hence we naturally move our book or paper nearer to the window as daylight diminishes. If the problem be, as it really is, how to illuminate the apartment uniformly, that is, from near the window to the farthest point from it, at the usual height of an observer's eye, seated or standing, say, from 3 feet to 5 feet 6 inches, we find the position and shape of the windows of great importance. Rays cast from below the level of the eye, as from a window near the floor, not only strike upward to the ceiling and fail to light the room perfectly, but are positively injurious to the organs of vision. If any one wish to test this, let him only try to read with a lamp placed on the floor. The eyes of mankind are constructed with brows and eyelids to shade them from above, whence light naturally comes, but none to shade them from below. By all means, therefore, let no windows be made down to the floor, but always from 2½ feet to 3 feet from it at the least. In rooms where it is not desired to look out from the window, even a greater height would be as well. The best light is always that which comes in from near the ceiling. Artists prefer to work by a light from the perpendicular part of a lantern in the roof, and this is also the best light for picture galleries and museums. These two facts, viz., that the worst light is from the bottom of a window, and the best from the top, lead us to a principle as to shape. If we compare two windows, each containing, say, 40 feet superficial of glass, the one 15 feet high by 2 feet 8 inches wide, and the other 10 feet high by 4 feet wide, one might suppose the illuminating effect to be the same. But it is not so. The first window would reach from the floor to the ceiling, the second from the ceiling to within 3 feet or 4 feet of the floor. Now, all the light below this level in the first window is practically wasted, and the second admits more useful light in the proportion of 40 to 28.6.

In the case of an apartment, long as compared with its width, it is found in practice that it is more effectually lighted by windows at either of the narrow ends than if the same area of light were admitted on either of the long sides, and most especially so if it should happen that on such long side there be a pier, instead of a window in the centre of such side. In illustration of this we quote, from Gwilt, the example of the ball-room at Windsor Castle, 90 feet long, 34 feet wide, and 33 feet high. This room is lighted from the northern narrower side by a window nearly occupying the width, and is supplied with an abundance of light. But had the same quantity been admitted from either of the long sides of the room, so many masses of shadow would have been introduced through the interposition of piers, that its effect would have differed most widely from the cheerful and airy aspect it now presents. In default of an absolute ascertained law of proportion between the sizes of windows and the area of apartments, certain rules have been framed from experience. The practice in ordinary London houses we have just mentioned; the practice of Sir Wm. Chambers was to add the depth and width of the rooms, and take one-eighth part of the result for the width of the window; and Gwilt prescribes 1 foot superficial in a vertical wall for 100 cubic feet, if the light be placed centrally in a square room, and the building is free from obstructions. Another rule has also been given in the following words: — "Multiply the length and breadth of the room together, and that product multiply by the height, and the square root of that sum will be the area or superficial content of the light required." These are the nearest approximations to a rule yet made, and though practically useful, we have not been unwilling to point out some of the points and difficulties in the way of attaining more completeness, and to set our readers on the task of investigating, and, perhaps, largely assisting in the solution of, a very interesting problem.

(2) *Angle of Incidence.* — The subject of scientific fenestration, however, includes much more than a mere regulation of the quantity of light. Its angle and direction are of great consequence to the comfort of the worker and the preservation of his eyesight; and this is a matter wherein the architect and physician should work hand in hand, each learning the other's requirements and appreciating each other's difficulties, so as to arrive at the maximum of possible adaptation of our buildings to the delicate organs of human vision. Space, however, fails us to enter fully into all the wide bearings of this subject, and for the present we must confine ourselves to reproducing for the consideration of our readers the latest statement of the requirements of the medical profession in relation to the architecture of windows. Though primarily addressed to the architects of schools, they embody principles adapted to all buildings where men live and work. We compile principally from a valuable paper on "School Hygiene," written by Dr. D. F. Lincoln, of Boston, in the United States. A scholar must have perfect light in whatever part of the room he sits. The requisites to this end are as follows: —

The sill had better be placed 4 feet above the floor. Light entering at the level of the eyes only dazzles, and is almost useless for illuminating the tops of desks. Make the interior of the room pleasant, and the pupils will not want to look out of the window. The top of the window must come as near as possible to the ceiling. By the use of iron girders it can be brought within 8 inches of it, and this should be required. The reason for this requisition is that the most useful light for a scholar's purpose is that which strikes his desk at a right angle or something near it. This is furnished, first, by the upper part of the windows; and second, by the ceiling; hence the propriety of using every means to secure the thorough illumination of the latter — a point which is neglected in most dwelling-houses, churches, and schools. Evidently the heads of the windows must be square, and not rounded or pointed, as is the case in certain picturesque styles of architecture. Neither is a pier of masonry dividing a window desirable. The roof must not project so as to cut off any appreciable light, nor are verandas at all allowable in the quarter whence light is supplied. There must be no wing or projection, no pier or column, in the way of light. These restrictions set a limit to the indulgence of the architect's taste; but they leave room enough within the limit. If projections are forbidden, flat decoration and ornamental brickwork are admitted; and shafts, wide doors, and groups of windows are features which can be seized upon to give a characteristic style to the building, which need be neither ecclesiastical, Hellenic, nor commercial.

The proper position of the windows is tolerably well settled. No window should be placed in front of the scholar, for the light thus entering is worse than wasted, blinding him at his work, and tending directly to produce near sight. Windows on the right are slightly objectionable, as throwing a shadow on the page whenever the hand is used in ciphering, drawing, or writing. Windows at the back throw the pupil's own shadow on his book; but this is not a serious matter, except for those who sit next a window, and they have light enough, at any rate, while for writing they are extremely well-placed, as it is usual to turn partly to the left in this exercise. Windows at the left are entirely free from objection, as far as they can be free. The ideal light should come from over the left shoulder, or the right shoulder if one is sitting up and reading; but if looking over a desk, this is rather inconvenient, and the best is then a very high light from the left, and a little in front. In brief, the rule for placing windows is: *never* in front, *always* on the left; at the back also, if you choose; but not at the right, if you can help it. Light from the left and the back at once does not harm the eye, and practically is quite admissible; the only person to find fault is the teacher, in whose eyes the light will fall directly.

The German authorities agree substantially with these remarks, though they differ among each other in the degree of emphasis with which they forbid the rear and right-hand windows. Dr. Erissmann says emphatically: "The light must be taken from the left side only. A room which cannot be sufficiently lighted from that side is unfit for a school-room." English schools are peculiar; and, from the shape of the rooms and the presence of galleries, are often hard to light.

The size of the windows, taken collectively, should equal, at least, one-sixth of the floor-space. Cohn requires one-fifth, or 30 inches to the foot. Less than this will probably be insufficient in many cases. It is also stated by the highest authorities in school hygiene that 300 or 350 square inches of glass are required for each pupil, and this requirement is nearly coincident with Cohn's in the German school-rooms, which hardly exceed 7 metres in depth. In those of greater depth it would not be nearly enough. — *The Building News.*

ELEVENTH VOLUNTARY EXAMINATION, R. I. B. A.

CLASS OF PROFICIENCY. ARTISTIC SECTION.

PROBATIONARY WORK (done at home and scheduled with the application): A measured sketch of some existing building or portion of a building; a perspective sketch of some existing building or portion of a building; a drawing of some ornament from the round or relief; and a perspective view with plan and elevation of a design for a building by the Candidate.

*** *No marks are awarded for the Probationary Work.*

MONDAY, 10th MAY.

DESIGN: Entrance Lodge and Park Gates in any style of Architecture. The drawings required (which may be finished in pencil) are plan, elevation and section, to a scale of one-eighth of an inch to the foot; and the details of gates and piers to a scale of half an inch to the foot.

Number of Marks: 400. *Minimum to pass:* 300.

WEDNESDAY, 12th MAY.

QUESTIONS IN GEOMETRICAL DRAWING AND PERSPECTIVE.

1. A semi-circular barrel-vault, coved at each end, of 15 feet span, is intersected by two smaller ones of 6 feet span. One of the smaller vaults has its crown level with the crown of large vault; the other has its springing level with the springing of large vault. The pier between cross-vaults is 3 feet wide, and the chamber is 30 feet long. — Draw the development of the under face of large vault to a scale of 4 feet to 1 inch.

2. A semi-elliptic-headed arch has a span of 40 feet, and rises 10 feet at the crown. The depth of voussoirs is 2 feet 6 inches, and the width of each at the extrados is 1 foot 6 inches. Draw the arch, showing the joints, to a scale of 8 feet to 1 inch.

3. The shaft of a cylindrical column is 12 feet high and 3 feet in diameter. A spiral line ascends from base and makes 3¾ revolutions in the heighth.— Draw this to a scale of 2 feet to 1 inch.

4. There are three points, A, B and C. B is 1¾ inch from A, C is 3 inches from A, and the angle A B C is a right angle. — Draw the largest and the smallest ellipses which will pass through the three points.

5. Give all the methods of drawing an ellipse with which you are familiar.

6. A semi-circular-headed window contains two semi-circular-headed lights and a circle of same diameter. The lights are each 1 foot 6 inches broad in the clear, and the tracery and mullion are 4½ inches broad.— Draw the window-head to a scale of 1½ inches to a foot, and show method of finding the centres.

7. The spectator is situated 20 feet from the picture plane, and looking at a rectangular object: one vanishing point is 3 inches to the left (measured on the drawing).— Find the other.

8. With these points draw a pyramid 14 feet square and 11 feet high, with one of its angles touching the picture plane 5 feet to the right of the spectator, *without plan*.

9. Explain the use of measuring or distance points.

Number of Marks: 350. *Minimum to pass:* 1 .

SATURDAY, 15th MAY. Morning: 10 till 2.

HISTORY AND LITERATURE. *Three questions at least to be answered.*

1. Sketch the general plan of one or more forms of Greek Temples, describing their marked differences from the Egyptian.

2. Describe the changes introduced into the Temple forms by the Romans.

3. Sketch the plan of an early Christian Basilica at Rome or Ravenna, *e. g.* St. Peter, St. Paul, St. Clement, St. Apollinare, etc.

4. The same, with a complete Byzantine Church (as St. Sofia at Constantinople), pointing out any marked alteration from the Italian church in the form of the interior, &c.

5. The same with the 13th century French cathedral, showing, particularly, the arrangement of the east end.

6. Sketch to a large scale the ordinary Greek mouldings of the best period (noting the changes which took place in them at different dates).

7. The same with Roman mouldings, showing clearly the differences between them and the Greek.

8. Explain the different modes of carving adopted by the Greeks and Romans.

HISTORY OF A STYLE NAMED BY THE CANDIDATE.

In English Gothic of the 13th Century.

1. Mention any theories known to you as to the origin of Gothic Architecture.

2. Describe one or more examples of Early-English work in England, giving the particulars of dates, name of architect (real or supposed), peculiar mouldings and ornamental work.

3. Contrast these mouldings and ornamental work, together with the statuary, with those of any contemporaneous buildings known to you in France or Italy, of the same date.

4. Describe the changes which took place in window tracery at about the middle of the century, and sketch some examples of tracery of early and late dates of the style.

In the Perpendicular Style.

5. Apply the second and third questions to this style in place of Early-English.

6. Describe some marked peculiarities in the plan of the piers and in the section of mouldings to the bases, capitals and arches, as contrasted with those of Early-English.

In Gothic Generally.

Take any of the above questions and add:

7. A notice of the changes which took place in mouldings, tracery and other details, during the intervals between the Early-English and Perpendicular periods of architecture.

8. Describe the changes which took place by which the form of the fortified Norman Castle was gradually changed into that of the English mansion house of the sixteenth century.

In Renaissance.

9. Explain the circumstances under which this took place in Italy, and the part which Brunelleschi took in it, noting anything known to you as to the general outlines and details which he used.

10. Describe the architectural features of design which especially characterized one or more of the following Architects (giving some particulars also in each case of their principal buildings and dates): Bramante, Michael Angelo and Sansovino.

11. In England give the same particulars of the works attributed to John Thorpe or Smythson, Inigo Jones and Sir C. Wren.

12. Describe one of the large country mansions of the 18th century, and contrast it on plan and elevation with the general outlines of a Tudor mansion.

13. In respect of the several periods named, give the names, dates and books of the principal writers upon the architecture of those periods.

Number of Marks: 250. *Minimum to pass:* 125.

*** *Total number of Marks in the Artistic Section of the Proficiency Class:* 1000. *Minimum to pass:* 600.

SCIENTIFIC SECTION.

Probationary Work (done at home and scheduled with the application): A set of working plans and a complete specification of the works for a building designed by the candidate, together with a specimen detail-drawing, to one-inch scale, of a portion of the work in each trade, and an equal number of full-size drawings to correspond, all showing the structural design minutely.

*** *No Marks are awarded for the Probationary Work.*

TUESDAY, 11th MAY. Morning: 10 till 1.

ARITHMETIC. *Three questions at least to be answered.*

1. Find the value of $\dfrac{\frac{37}{3}-\frac{13}{4}}{\frac{23}{6}+\frac{4}{5}}+3.375$.

2. What fraction of a pound is $3\frac{3}{4}d$?

3. Find the square root of $\frac{65564}{416025}$.

4. Find the greatest common measure of 329, 2213, 1027.

5. What is the difference between Interest and Discount? Find the discount on £600 due nine months hence at 5 per cent interest.

ALGEBRA. *Two questions at least to be answered.*

1. Expand $(3a^2-b)^4$.

2. $\left.\begin{aligned} x+7y&=99\\ y+7x&=51\end{aligned}\right|$ Find x and y.

3. $3x^2-18x-240=23$. Find x.

4. There are three rectangular rooms of unequal size *en suite*. Each room, reckoning from the smallest, contains on plan half as many more square feet than the preceding one. The area of the three together is 1216 feet. What are the dimensions of each room? The length in each case being twice the width; and the height the arithmetical mean of the length and width.

5. In a rectangular box-shaped apartment the total surface of the four walls, the floor and the ceiling (there are no projections) is 4108 square feet. The length exceeds the breadth by 10 feet. The height is 11 feet. Required the other dimensions.

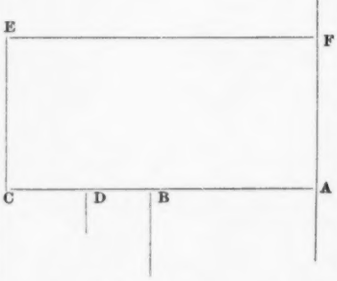
6. Given that the stiffness of a rectangular beam varies in the same material as the cube of the depth and as the breadth directly, and as the cube of the length of bearing inversely; and given that the limiting weight, which can be applied in the centre of a beam of which the length is 9 feet, the depth 8 inches and the breadth 6 inches, is 32 cwt.: what will be the limiting weight which can be used in the case of a beam of the same material where these dimensions are 18 feet, 12 inches and 8 inches respectively?

EUCLID AND GEOMETRY. *Two questions at least to be answered.*

1. Any two sides of a triangle are together greater than the third side.

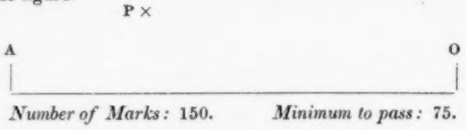
2. In any right angled triangle, the square which is described on the side subtending the right angle is equal to the squares described on the sides which contain the right angle.

3. In obtuse angled triangles, if a perpendicular be drawn from either of the acute angles to the opposite side produced, the square on the side subtending the obtuse angle is greater than the squares on the sides containing the obtuse angle by twice the rectangle contained by the side on which when produced the perpendicular falls and the straight line intercepted without the triangle between the perpendicular and the obtuse angle.



4. It being found that a rectangular cistern, of given fixed length, and limited in position in the direction of AF, would overhang its bearing AB too much if made of the breadth AC as first proposed: it is desired by a geometrical construction to increase the depth EC, so that without altering the capacity, the breadth may be reduced to AD.

5. Let A be the apside or vertex, O the centre and AO the semi-axis major of an ellipse, and P one point in the circumference: complete the figure.



Number of Marks: 150. *Minimum to pass:* 75.

TUESDAY, 11th MAY. Afternoon: 1.30 till 5.

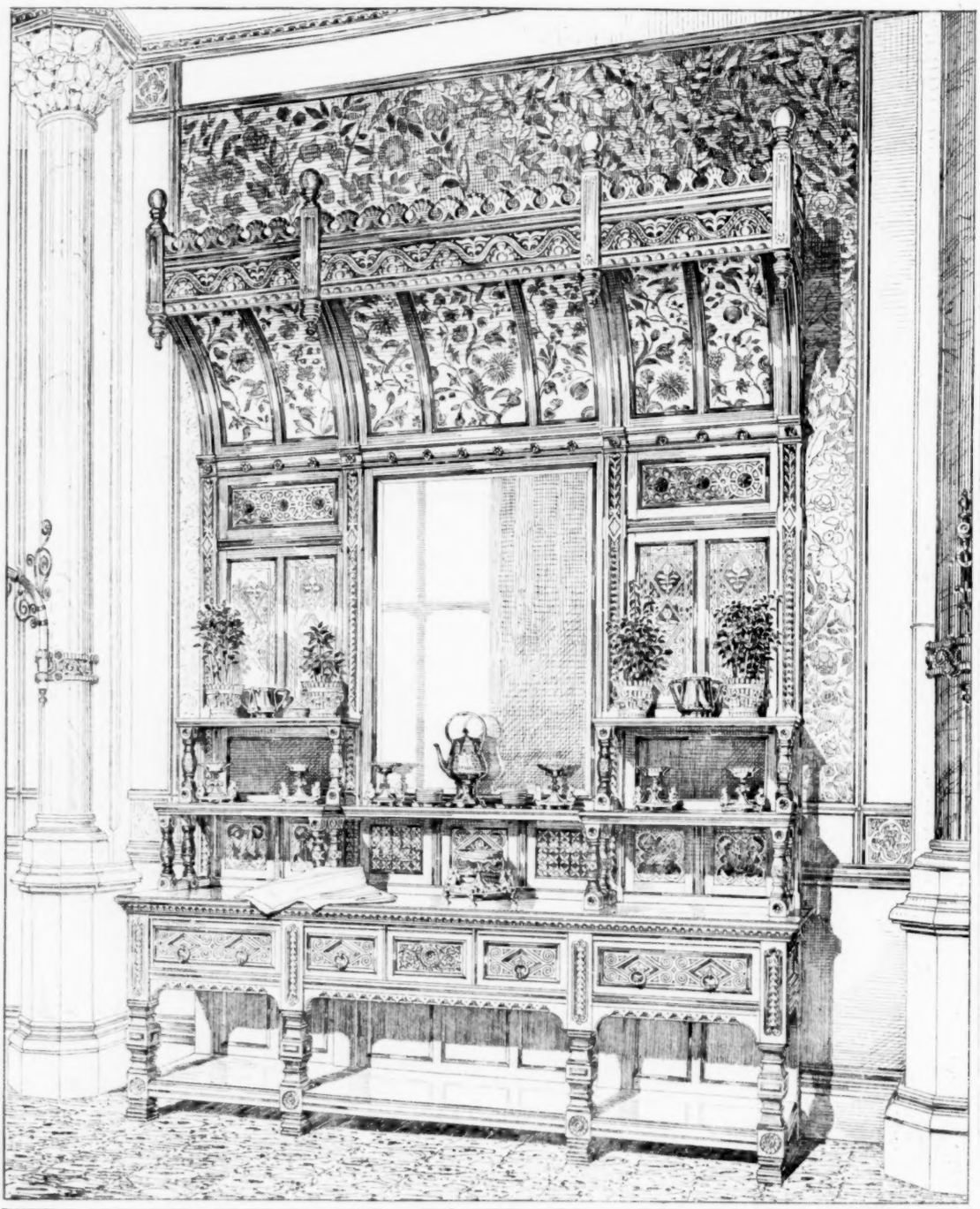
MENSURATION. *Two questions at least to be answered.*

1. Find the cubic contents of a log of timber, 15 inches square at the butt end, and 10 inches square at the other, and 28 feet long. Again, with the same dimensions at the butt end, but 10 inches by 6 inches at the other, what would be the difference?

2. A half-pitch roof of 30 feet span is hipped at the end, but the slope of the return side is quarter-pitch: required the length of the hip rafter.

3. The length of a leaden pipe is 13 feet, its internal diameter is 1½ inch; the thickness of the metal is ¼ inch: find the weight, reckoning 6.6 ounces to the cubic inch.

4. How much water will a true conical bucket hold, which is 12 inches deep, 11 inches diameter at the top, and 7 inches at the bottom?



D.A. Gregg del. from Photo.

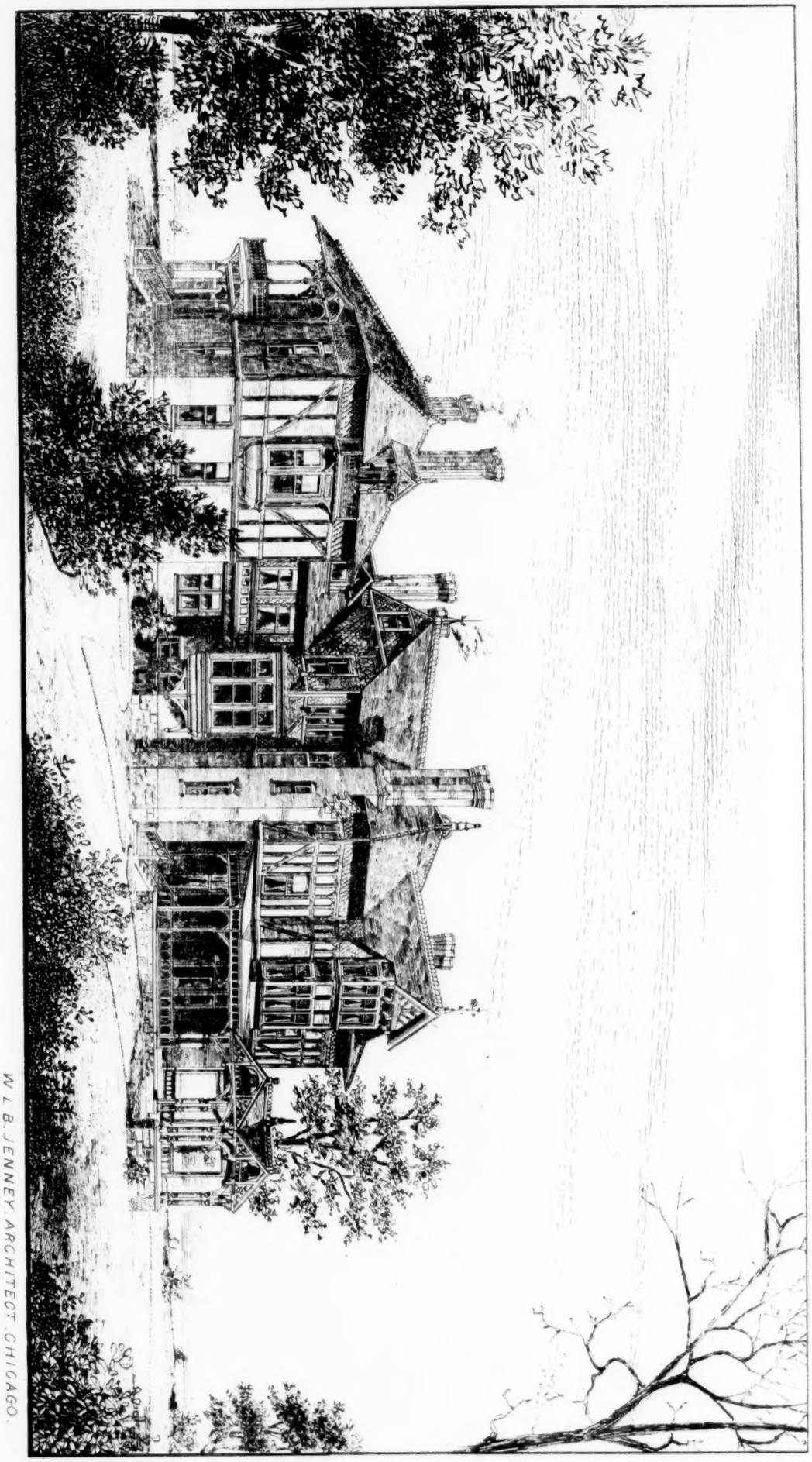
BUFFET, At the MIDLAND GRAND HOTEL, The Late SIR G.G. SCOTT, Archt. LONDON England.

The Heliotype Printing Co. Boston.

W. L. B. JENNEY, ARCHITECT, CHICAGO.

BLAIR LODGE.

LAKE FOREST, ILL.—LAKE FRONT.



BLAIR LODGE.

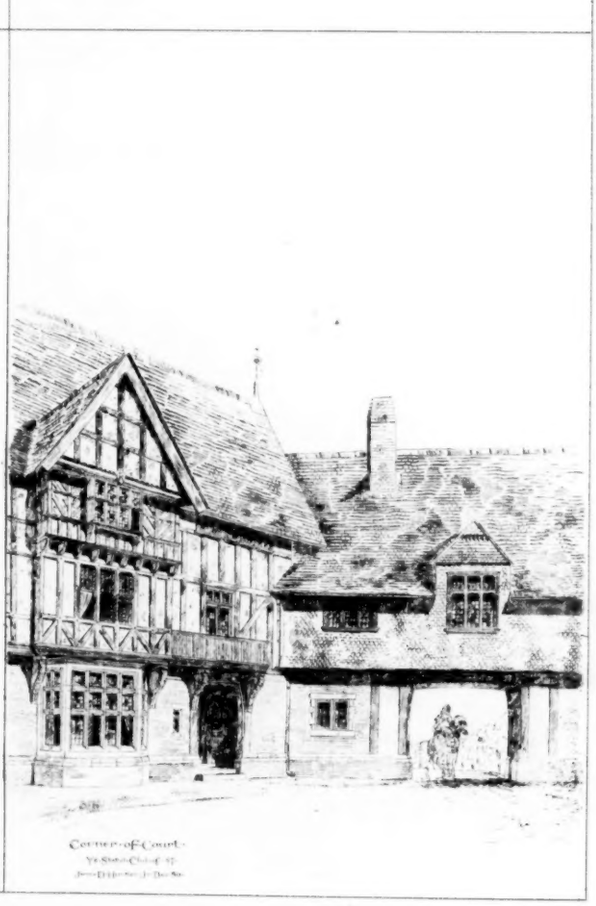
LAKE FOREST, ILL. LAWN FRONT.

W. L. B. JENNEY, ARCHITECT, CHICAGO.

Staircase Tower.
Ye Sketch Club of '17

A Point of Interest.
Ye Sketch Club of '17.
Chas A. Gifford, Sc.

A Hunting Box.
Ye Sketch Club of '17.
Chas D. Wheeler, Sc.



Corner of Court.
Ye Sketch Club of '17.
Jno. D. Harris, Jr. Del. Sc.

5. An arch with a semi-circular intrados, and with its extrados bounded by an equilaterally pointed arch — the radius of the semi-circle being 3 feet and that of the pointed arch being 8 feet — is 14 inches thick: what is the net quantity of material in the voussoirs?

Number of Marks: 100. *Minimum to pass:* 40.

PHYSICS. *Five questions at least to be answered.*

1. Assume the case of a church built of stone, with a high tower also of stone, having four tall pinnacles of equal height; a tall cross over the chancel arch; the roof slated and having leaden ridges and gutters; all the rain-water pipes of terra-cotta; a peal of bells in the tower; and metal and other gas-pipes for lighting the church throughout: explain how you would endeavor to protect the church against lightning.

2. Sketch a section of strata, supposing them to be level or nearly so; then describe by other sketches how the strata might (1) have been disturbed, and portions of them lifted up so as to become mountains; (2) how the latter might have been worn away by the action of water, and their materials deposited on the adjoining rocks; (3) how the new and old stratified rocks might have been pierced and disrupted by trap or other igneous rocks.

3. Explain the construction of an ordinary lift-pump, giving the depth from which the water may be expected to rise, and the cause of the rise; the same with a force-pump, showing the form and position of the valves, etc.

4. Assuming that the diameter of the force-pump barrel is 3 inches, and the diameter of its service-pipe to cistern 1 inch, and the height of service 16 feet: give (approximately) the pressure on the plunger. Would there be any difference in the quantity of water supplied at each stroke if the diameter of the pipe were increased to 1½ inches?

5. Suppose the case of a cistern 1 foot deep in the clear, 1 foot wide, and 2 feet long: give the total pressure on the bottom. Give the total pressure on the long side, describing how it varies with the depth.

6. Give the same calculations in regard of the same cistern, supposing it to be turned on end.

7. What is (approximately) the velocity of sound in air?

8. State Sir C. Wren's opinion as to the utmost dimensions of a church in which all the congregation could hear distinctly.

9. At what angle do the waves of sound cease to be reflected when they impinge against a wall?

10. How is sound reflected otherwise, under ordinary circumstances?

11. Name some kinds of material well adapted for improving the distinctness of sound, and others which have a contrary effect.

12. Name some of the effects, in the acoustic properties of a large hall, of having deep recesses and boldly projecting piers.

Number of Marks: 150. *Minimum to pass:* 75.

THURSDAY, 13th MAY. MORNING: 10 till 1.

PROFESSIONAL PRACTICE. *Five questions at least to be answered.*

1. Give the cost of the floor of a room, 30 feet long and 20 feet wide, of the following description, namely: binding joists 14 inches by 6 inches, and 6 feet apart; bridging joists 6 by 2½, and 12 inches apart from centre to centre; ceiling joists 4 by 2, and 12 inches apart from centre to centre; 1¼ inch yellow batten straight joint floor with splayed headings; doweled and side nailed; and ½ inch sound boarding, and fillets 1 inch by 1¼ inch. The timbers to be of the best Baltic fir, and the deals the best Christiana; the binding joists to have a bearing of 6 inches on the walls at each end; the cost is to be calculated at the present prices of materials and labor in London.

2. Sketch what you consider to be the best form which can be adopted for inverted arches; give your reasons for preferring the kind of arch shown in your sketch; and say why it is desirable that inverted arches should be used under all large openings in a lofty building.

3. Calculate, at the present London prices for materials and labor, the cost of a wall built of the best stock bricks, with mortar made of one part of fresh and well-burnt gray stone lime, and three parts of sharp and clean sand from the river Thames; the length of the wall to be 120 feet, and the height 60 feet; the thickness for the first 20 feet to be 2 bricks, for the next 20 feet to be 1½ bricks, and for the next 20 feet 1 brick; there are to be four courses of footings, the bottom course 4 bricks, the next course 3½ bricks, the next course 3 bricks, and the next course 2½ bricks; in the lower portion of the wall there are to be six openings, covered with a cut and gauged segmental arch, each opening to be 10 feet high and 5 feet wide; and in the 1½ inch brick wall six recesses, covered with similar arches, each 9 inches deep, 10 feet high and 6 feet wide.

4. Explain the means by which you would ascertain quickly, and without taking out the quantities, the approximate cost of a building; and describe the variations which should be made in respect of the different classes of buildings, namely, churches, schools, private dwellings, business premises and warehouses.

5. In what matters and under what circumstances is the architect held to be the agent of the client? and what precautions should the architect take when acting for a client to avoid becoming himself personally responsible?

6. Explain the principle on which dilapidations should be valued under an ordinary covenant to repair; and state what difference (if any) should be made in assessing the amount which should be paid in respect of dilapidations in chancels, rectory houses and parsonages.

7. If after a design for a building has been prepared by the architect and approved of by the client, the client, instead of employing a builder in the usual way, determines on purchasing his own materials and carrying out the works in his own way and with his own people, but still requires the architect to supply all the working and detail drawings, and to superintend the works, what would be the responsibilities of the architect, and what amount of remuneration would he be entitled to?

8. Under what circumstances would an architect be justified in advising his client to enforce penalties for the non-completion of the works within the time specified and agreed upon?

9. Is it desirable that the bills of quantities should in any case form part of the contract?

10. If you think that the bills of quantities should never be allowed to form part of the contract, give your reasons for that opinion.

11. If you think that the bills of quantities may sometimes be allowed to form part of the contract, state under what circumstances and for what reasons such an arrangement would be advantageous and desirable.

12. Write out fully the clauses which should be inserted in general conditions to protect a client from unauthorized claims for extras.

Number of Marks: 100. *Minimum to pass:* 40.

THURSDAY, 13th MAY. AFTERNOON: 1.30 till 5.

MATERIALS. *Five questions at least to be answered.*

1. Describe the constituents, and the mode of manufacturing Portland cement. State the precautions which are necessary in using it as a mortar, as stucco, or for casting blocks or enrichments, in order to avoid the expansion and cracking to which under certain conditions it is liable.

2. What description of timber should be used for the roofs, floors and partitions of a building? and what kind of deal should be provided for the internal fittings? How would you describe this timber and deal in your specification?

3. Which of the timbers forming a king-post truss are in compression, and which of them are in tension?

4. What, in your opinion, is the cause of dry rot in timber? What are the probable causes of its development? What are the best means of guarding against it? What remedies can be applied with any chance of success after the disease has been discovered?

5. Give a description of the various kinds of glass used for buildings, namely, crown glass, sheet glass, plate glass, and patent plate glass. Explain the mode of manufacture and the nature of materials employed therein. State the uses for which each kind of glass is best adapted, and the various modes of glazing.

6. What, in your opinion, is the best material which can be employed to deaden sound and prevent its transmission through floors, walls and partitions? Specify the material which you would recommend, and show by sketches how you propose to apply it.

7. What load may be safely placed upon a pier of the best brown Portland stone, 2 feet square on plan, and 15 feet high?

8. What load may be safely placed on a pier of the best stock brickwork, 2 feet square on plan, and 15 feet high?

9. In laying lead on flats or in gutters, or in using the same metal for the covering of hips and ridges, or for valleys and flushings, what precautions should be taken to avoid the injurious effects of expansion and contraction, and to prevent the rain from being driven through or under the laps and joints?

10. What is the constituent which gives to limes and cements their hydraulic properties? Name some of those which are preëminently hydraulic, and the proportion of sand which may be usefully added to each.

Number of Marks: 200. *Minimum to pass:* 150.

FRIDAY, 14th MAY.

CONSTRUCTION.

DRAINAGE, ETC. *Two questions at least to be answered.*

1. Assuming that a house is to be built on a sub-soil of clay, state what precautions should be taken as to the drainage of the ground beneath and around the house.

2. Sketch the plan of an ordinary town house, and mark upon it the proper system of drainage from soil, rain-water and sink-pipes, showing where the traps should be placed.

3. Describe the precautions to be taken in regard of the wastes from cisterns, the ventilation of the drains, and other works connected therewith.

4. Describe the precautions to be taken for preventing the rise of damp up the walls: 1st, when the level of the lowest floor is above the ground; 2d, when there is a story under the level of the ground.

BRICK AND STONE WORK. *Four questions at least to be answered.*

1. Explain the ordinary methods used at various times of bonding brickwork by wood or iron bond, and of supporting the ends of joists where they enter or abut against walls; also the methods which are now considered to be the best.

2. Explain the reason for the preference in regard of safety; 1st, from fire; 2d, from rot; 3d, from weakening the walls.

3. Assume that a brick wall is 14 inches thick, and that its facing (included in the above thickness) is of expensive bricks with thin rubbed joints, while the rest of the walls is built with ordinary bricks,

not rubbed, and with ordinary joints in mortar; the facing having, also, bold moulded strings and cornices of rubbed jointed brick; explain the proper method of bonding and otherwise tying together the whole.

4. Give the same explanation as to an 18-inch wall, faced with stone in level courses of not less than 12 inches in height.

5. Describe the proper method of uniting stone-work together as regards the upright joints of the facings and the upright joints of such important parts as the cornices and copings.

6. The same with the horizontal joints; and describe, also, how the beds of stone are to be worked where they bear on each other, especially in such cases as columns, where a heavy weight is borne on a small surface.

7. State the methods used by the mediæval masons in such cases as mentioned in the last question.

8. Make a sketch of a voussoired semi-arch, 40 feet span, loaded at top only (as in the case of a groin rib with a heavy central boss), and explain the nature of the strains upon it, and the position and nature of the abutments required.

9. The same with a pointed arch, under the same conditions as to the above.

Woodwork. *Three questions at least to be answered.*

1. What kind of timber would you direct to be used for joists, roofs and such other carpenter's work? and what kind for joiner's work? giving your reasons for such selections, and your objections to any particular kind of timber and deals.

2. Give the ordinary formula for calculating the strength of floor joists, or girders of fir, working out as an illustration the breaking and safe weight on a girder 20 feet long, 12 inches deep, and 6 inches thick; and on the same girder, reversed, namely, 6 inches deep and 12 inches thick. Explain, also, the proper method of laying such timbers in respect of knots, the parts in which they would yield first, and the reason of such yielding.

3. The upper portion of a loaded beam is always in compression, and the lower portion in tension; but there is a line at which there is neither tension or compression: show in a sketch the position of this line, and give its technical name.

4. Sketch a queen-post timber roof of 40 feet span, of ordinary pitch, having a tie-beam, and collar or straining head; show by arrows the stress upon each timber, and explain the stress upon each joint and the proper method of resisting it.

5. The same with a timber roof of similar span, but of steeper pitch, without a tie-beam, with the collar (if any) not less than half way up. Explain the stresses, etc., as in the last question.

6. Sketch a 4-panel door, 2½ inches thick when finished, made in the best manner, indicating the modes of putting together the stiles and rails, inserting a mortice lock, and framing mouldings to panels, marking where pins, wedges or other fastenings (if any) should be used.

7. Explain the various methods of laying deal and wainscot floors, from those of an ordinary warehouse to those of the best rooms of a first-rate mansion.

Ironwork. *Three questions at least to be answered.*

1. Describe the ordinary method of arranging the moulds, cores, etc., of cast-iron hollow columns. Explain how one part of the metal is very often much thinner than other parts. Explain one or more of the modes of detecting this defect, and the method of casting which ought to be specified in order to avoid it.

2. Describe the proper method of constructing a warehouse, the girders whereof are of wood supported by iron columns. [This question relates solely to the connection of the girders with the columns.]

3. In the case of iron columns bearing directly upon each, describe the proper method of forming the joints at the bearings.

4. Give the ordinary formula for the breaking and safe weights on cast-iron, rolled-iron and riveted girders. Draw sections of these several girders, and explain the reason of the differences in such section; work out the calculations of the proper section and elevation of a riveted girder to bear safely a constant weight of 45 tons (distributed), at a bearing of 16 feet, the ends of girder bearing loosely on walls.

5. Describe the general principles for calculating the strength of cast-iron columns, solid and hollow, and of different lengths and diameters.

6. Make a sketch of a lattice girder, without any upright pieces except at the ends, and show on each part of it the nature of the strain upon it, supposing that each piece is fastened at its ends only.

7. Explain, in connection with the above, the principle of stability in the girder, by describing the precise part which each top, bottom and cross-piece, beginning at one end, takes in forming the strength of the girder. [This explanation need extend so far only as the 4 cross-pieces at end.]

Number of Marks: 300. *Minimum to pass:* 220.

*** *Total number of Marks in the Scientific Section of the Proficiency Class:* 1000. *Minimum to pass:* 600.

THE ILLUSTRATIONS.

DESIGNS FOR A HUNTING BOX, BY MESSRS. T. D. WADDLETON, C. A. GIFFORD, M. WRIGLEY, AND J. D. HUNTER, JR., NEW YORK, N. Y.

The accompanying sketches are the work of a sketching club, formed by the young men in one of the New York offices. The subject, "A Shooting Box," was given out Friday noon; all drawings were in Monday evening. Drawings required were an elevation or perspective sketch, finished in water-color, and one or two plans as thought necessary. Criticism and judgment having been given, it was decided to re-sketch, to a larger scale, the most interesting feature of each design.

BLAIR LODGE, RESIDENCE OF MR. AND MRS. W. C. LARNED, LAKE FOREST, ILL. (NEAR CHICAGO). — MR. W. L. B. JENNEY, ARCHITECT, CHICAGO, ILL.

The property consists of about twenty-four acres, very beautifully situated on a bluff some eighty feet above and fronting on Lake Michigan, the lake front being some eleven hundred feet, terminating in a deep ravine at either end. The drive around the property passes by the ravines and along the beach. The building represented has a basement constructed with limestone walls twenty-four inches thick, laid in broken ashlar; a first story with a double wall, each eight inches thick, separated by an air-space of two inches, and bonded by No. 10 galvanized-iron wire cut nineteen inches long and bent at the ends into the shape of a much-elongated S; these ties or anchors are placed two feet apart each way. The second story is half-timber work, the timber construction being filled in with four inches of pressed brick, secured by nails to a backing of matched fencing; behind this again are 2 in. by 4 in. studs to receive the plastering. The walls of the attic story and the gable ends are covered with red roofing tile. The roof is covered with slate, and the valleys and crestings are of galvanized iron. The building will be ready for the occupants during the coming summer.

BUFFET DESIGNED BY SIR G. G. SCOTT.

THE VALUE OF SIGN-BOARDS.

The story of Dick Tinto, who defrays his hotel bills by painting a new sign-board for mine host, has been a commonplace in literature for a sufficient time. But we do not know that it has ever occurred to anybody to supplement it by a legend to the effect that, Dick's works having gone up in the market, a fierce competition for his sign-boards took place. The truth is that the usual characteristics of sign-boards are scarcely calculated to display the powers of St. Luke's followers, and that the works in question are ordinarily subjected to such severe atmospheric trials that whatever merit they possess is not, under ordinary circumstances, likely to last out the period necessary to turn an unknown painter into a hero of Christie's. The curious case of the Bettws-y-Coed sign-board, however, which has now occupied two courts of law — a County Court and the Court of Bankruptcy — shows, among other things, that it is quite possible to entertain artistic angels unawares. It is true that the example in question was not obtained in barter for subsistence, nor was it in any way extorted from the necessities of the painter by the pressure of the *mauvais quart d' heure*. Still there are plenty of ways of obtaining sketches of which a wily landlord, and still more a landlady, could avail him or her self; and, considering the whole matter, it may be laid down that any Boniface of sense who inhabits a picturesque neighborhood will do well to coax sign-boards out of his visitors as frequently as he can.

Law and art do not seem to have much to do with one another; yet they not unfrequently combine to supply interesting incidents, and still more interesting problems, to the observant mind. Putting aside the great and famous doctrine of copyright in ideas, there is the very intricate and pleasing question whether a painter, jealous of his reputation, is justified in impounding and destroying forged works attributed to him; the question whether Berlin-wool work is a sufficiently artful method of imitation to make its patterns an infringement of the rights of authorship; and several others, all of recent mooting. But this sign-board case is perhaps the most dramatic of all, if not the most appetizing in its provision of legal niceties. The board in question was not a Blue Lion or a Pig and Whistle, nor even the well-known "collection of fabulous animals," the latter of which, indeed, offers some temptation to an artist who should treat it in the Byzantine manner. It was a Royal Oak, an obviously suggestive subject, and the painter was no less a person than David Cox. It was painted in 1847, and as the port wine of that year was to other port wine, so apparently were its sign-boards to other sign-boards. Cox appears to have painted the thing merely out of friendship for the then tenant of the hotel. It is needless to say that in 1847 three thousand pounds had not yet been paid for any picture of his, and that he was still a member of what may be called the præ-silver-fork school. The landlord at the time of painting was a certain Edwin Roberts, and the sign-board was undoubtedly painted for him. Nevertheless, he seems, or his heirs seem, to have attached no particular value to it, and it was left, though the tenancy of the hotel changed, to announce the building to which it was attached as one that provided good entertainment for man and beast. Twenty years of outside life in this climate would not as a rule conduce to the beauty of a painting: but it would appear that the sign was not one of the swinging variety, but was fastened against the wall by hold-fasts, and may therefore be presumed to have been sheltered from the weather by the eaves of the house. At any rate, in 1866, certain artists who then lodged in the house, which was being altered, suggested that the thing was too precious to be left in this condition. It was accordingly brought in, framed, and screwed to the wall of the entrance-hall of the hotel. How many tenants entered upon the enjoyment of it during the thirty-and-three years which have passed since its execution we cannot say, but certainly more than one; and no outgoing tenant seems to have thought himself entitled, or considered it

worth his while, to remove it. At last misfortune came upon the "Royal Oak," and its late tenant became bankrupt. The scent of creditors, liquidators, assignees, trustees, and such-like folk after valuable property is proverbial, and the bankrupt's representatives claimed the picture as a chattel divisible (let us hope not in the literal sense) among the creditors. The tenant may be presumed to be indifferent about the matter, but the tenant's landlord (the feminine is in this sense *verbum inusitatum*), Lady Willoughby d' Eresby, did not contemplate the abstraction of the chief ornament of her property with such calmness. The picture could not of course be claimed as a fixture, because the hold-fasts with which it was originally attached to the outer wall, and the screws with which it was subsequently attached to the inner, fall under the head of those fastenings which, in its infinite wisdom and care for small things as well as great, English law decides to be usable without constituting fixtures. The only claim, therefore, that could be set up was that the picture was a sort of heirloom; that it was painted for the hotel; had been assumed and given up with the hotel by successive tenants; and was, in fact, part and parcel of the essence of the "Royal Oak." The county court judge decided in this sense; but Sir J. Bacon, the chief judge in bankruptcy, has reversed the decision, and has decided that David Cox's sign-board was "as much Roberts's property as the coat on his back." If he left an old coat in a cupboard in his room — we presume the judge argued it this way — it would not have become Lady Willoughby d' Eresby's property: neither did the picture.

The mysteries of bankruptcy in all its arrangements and appurtenances are acknowledged to be things which even the legal mind cannot understand, though it loves, and which the layman can neither love nor understand. The latter person in the present case would probably have felt inclined to decide in favor of Lady Willoughby d' Eresby. For, as the tenancy had changed without, as far as was shown, any claim being made by the outgoing tenant for the picture, or any sum being paid by the incoming one for the enjoyment thereof, it certainly would seem as if the sign-board were generally understood to be an appurtenance of the hotel, and, as such, subject to be transferred *en bloc* with it to whomsoever, and from whomsoever, might be the occupier. Sir J. Bacon remarked with great truth that signs were going out. They are, and more's the pity. There are few persons who would not exchange the things of which the signless hotel is significant — the over-decorated coffee-room, and the German waiters, and the electric bells which won't ring, and all the rest of it — for the things which the sign-board used to promise, and very frequently to perform. However, though sign-boards are going out, there are still plenty of them left. It would have been interesting to have had fuller information on the subject of them than appears to have been laid either before Sir J. Bacon, or before the county court judge. What is the usual status of a "Red Lion"? Is he the exclusive property of the tenant or of the landlord? Might an unsuccessful or sated publican take his Lion away with him, unhooking it from its perch, to comfort him on his retirement to private life? According to Sir J. Bacon he might. But, whatever be the abstract rights of the case, it would, we say, be interesting to know the usual practice. Besides, there seems to be a point of great subtlety, which was entirely overlooked. According to the witnesses, David Cox painted his "Royal Oak" on the existing sign-board of the hotel. We ought, therefore, to be informed what the position of that sign-board itself was, whether it was let to Roberts, or was his property, and whether, if he had been inclined to take the same view of his rights as Sir J. Bacon, he would have had to perform the perilous, though possible process of removing the Coxian layer from the substratum that was not Coxian. However, all these things may be, it is quite clear that Sir J. Bacon's decision is a god-send for tenants. All sorts of unconsidered trifles left kicking about in a house should be carefully treasured, inasmuch as it appears they do not become the absolute property of the landlord nor remain that of the outgoing tenant, but belong to the fortunate incomer. This is a doctrine of tenant-right which ought to be put to silence and shame the importunate persons who complain that in England all things are done in the interest of the freeholder. And it may be admitted that the creditors of the late landlord of the "Royal Oak" are very lucky people.

The transformation of a thing so valueless that nobody seems to have cared to determine to whom it belonged into one so valuable that it is worth going through costly processes of law to decide its ownership is only a fresh illustration of an old peculiarity of the painter's lot. Mr. Ruskin has inveighed, after his manner, against those who give thousands of pounds for dead men's work and won't give hundreds or tens for the work of men living. Of course the answer is easy enough. The value of a thing, in money at least, is what it will fetch, and what it will fetch is determined by conditions which neither buyer nor seller can fix arbitrarily, or at his own pleasure. The problem what the "Royal Oak" was worth in 1847 is one which political economy is unable to solve. Nor does the rival science of æsthetics help us much. Æsthetically the value of a picture, or anything else, is to be found in the pleasure it gives the owner. Who will construct a hedonometer for us which shall give the exact values in coin of the realm of a '47 sign-board and a bottle of '47 port? Certainly none such has been hitherto constructed. In default of it, there seems nothing to be done but take things as we find them, which is indeed the general conclusion of the philosopher. This, however, does not prevent the philosopher from wishing that some such stroke of good luck would fall to his lot as that which has befallen in this case nobody in particular, except, as has been said, the creditors of the late landlord of the "Royal Oak." Lady Willoughby d' Eresby is to be pitied; but it cannot be doubted that all sensible solicitors who draw up leases between landlords in one sense of the word and landlords in the other will insert henceforth a special covenant relating to sign-boards. As for the "Royal Oak," it may be suggested that it be called the "Late Royal Oak," or have its name changed altogether, in memory of the catastrophe. Of a sign-board it is probably in no need, and therefore a successor to Cox need not apply. The whole thing, at any rate, will add a chapter to any future "Anecdotes of Painting" that may be compiled, as well as a useful clause to the "Cabinet Lawyer" and other manuals intended for the use of those members of the profession who have fools for their clients. Considering the usual habits and peculiarities of the British tourist, it would be by no means surprising if it also added, at least during next season, to the number of visitors at the "Royal Oak." To go and see the place where this remarkable sign-board is no longer, would be exactly the sort of thing in which such a tourist takes a pious and intelligent pleasure. In this way the incoming tenant, though no doubt disappointed, will be in a way consoled for the loss of David Cox's much disputed work of art. —*The Saturday Review.*

LAYING BRICKS IN COLD WEATHER.

SEVERAL numbers back you spoke of the difficulty of laying brick in cold weather, and you recommended heating the bricks. How heat them? and how hot should they be laid? are questions that occur which we should like to have you answer either in the *American Architect* or by letter. We take it that you mean to heat the bricks in *hot water*, as of course a hot brick, heated by action of fire directly, would absorb the moisture from the mortar so fast as to render it *nil*. Will you enlighten us and oblige R. & W.

[THERE is no need of heating the bricks very hot. All that is necessary is to warm them some degrees above the freezing point, so as to prevent the formation of ice films between them and the mortar. Simply piling them around a stove will do very well, and if left for some days under a gentle heat, so as to get thoroughly warmed through, they will retain their temperature a long time after being laid in the wall. With such treatment, it is unnecessary to soak them in water, unless cement mortar is used. —EDS. AMERICAN ARCHITECT.]

THE NEW ORLEANS COTTON-EXCHANGE COMPETITION.

NEW ORLEANS COTTON EXCHANGE,
NEW ORLEANS, Jan. 12, 1881.

Dear Sir, — The Building Committee have at last determined to reject all plans submitted and re-advertise, giving fully and clearly what is wanted. A reward will be offered, such as will serve as an inducement to renewed efforts. — —, *Secretary.*

NEW YORK, Jan. 19, 1881.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — The recipient of the above is an architect who at the special solicitation of two members of the New Orleans Cotton Exchange sent designs: the award was to be made October 1st, 1880, afterwards extended to October 21st. The gentleman thinks that the profession should be warned against such actions. His plans, and others no doubt, have been open to inspection for three months, so that local architects could get points from better-educated members of the profession. I find there is hardly one New York architect who will now put in plans in competition unless it is a paid one.

A hint from you might be to the benefit of some who do not understand the "*modus operandi*" of some building committees.

Very truly yours, TRAVELLER.

[WE must confess that we have little sympathy for the woes of those who take part in rough-and-tumble competitions, such as this appears to have been, and the insinuation of our correspondent that the plans of the "better-educated" New York architects were utilized by the Committee of the Cotton Exchange to furnish suggestions to the local members of the profession seems quite gratuitous, to say nothing of its bad taste. It is gratifying to learn that the New York architects as a class are abandoning the practice of engaging in general competitions for professional employment, and we believe that every man in New York or elsewhere, who resolves that for the ensuing year he will neither make sketches "on approval," enter into any general competition for professional work, or in other ways interfere with the *clientèle* of his brother architects by giving his services for nothing, or on speculation, will find himself at the end of the year better off in pocket, clearer in conscience, and higher in professional standing, than he has ever been before. —EDS. AMERICAN ARCHITECT.]

DETERMINING COST BY CUBIC CONTENTS.

JANUARY 15, 1881.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Sirs,—I have not had much experience with country houses, and wish some of your readers would give me data for estimating the *cost* of them. For instance, how much per cubic foot do plain, frame, two-story detached houses, in towns, cost? QUARTER-SCALE.

[IT would be impossible to answer Quarter-Scale's question in anything but the vaguest manner. Not only do prices vary greatly in different localities, but in the same locality the estimates submitted by different contractors for the same building frequently vary from fifty to seventy-five per cent. Moreover, in the buildings he speaks of, the mere shell being comparatively inexpensive, a great part of the cost is in the finishings and fittings, which are infinitely diverse. It is, for some reason, usual to estimate frame houses

by the *square* foot of ground covered, although for city buildings the cubic foot is the ordinary measure. Adopting this standard, a two-story detached frame house may cost, in the Eastern or Middle States, from two to five dollars per square foot. Probably about three dollars and a half is the average in suburban towns, but circumstances may greatly modify this. — Eds. American Architect.]

NOTES AND CLIPPINGS.

The publishers respectfully refer subscribers who have not yet paid their subscription for 1881, to the notification printed at the head of their respective bills, and desire to remind them that the time within which subscribers *who pay in advance* can benefit by the discount of $1.50 on the subscription price ($7.50) has nearly elapsed.

House-Building in Cyprus. — If a man wants to build a wall or a house in Cyprus, according to the *St. James's Gazette*, he begins by making a hole in his garden. Shovelling up and sifting the earth, he adds chopped straw; his wife helps and throws water on the mixture, which is worked up until it is thick enough to form into flat slabs. These are moulded with the hands, with or without the help of a rough wooden frame. It is not without significance as to the low value put upon labor, and the perfectly rudimentary state in which some of the crafts of this old island still remain, that the masons may be seen working mortar with the hands, and so carrying it up a ladder, or placing it on the stones, without the aid of hod or trowel. The thick walls, built of the mud slabs, and the flat mud roofs form an admirable sun-fence; but no sooner are they erected than sun, wind and rain, all violent of their kind, commence a rapid course of destruction, and, as repairs are seldom undertaken, most of the small houses and their enclosures have already become, or are, in the perfectly accurate language of Job, ready to become heaps. The "ruinous heaps" and dilapidated walls are washed by the torrents, and encumber the uneven, up-and-down, tortuous lanes and alleys with dirt and dust. In a thunder-storm in November, 1880, five houses together were resolved into their native elements in Limasol. The aspect of such a town or village is of one uniform dead hue of mud, and must be seen in order to fully understand the "beating down" and the "merciless ploughing" of the ancient conqueror, and the sowing of "barren salt" over the ruins of a "fenced city."

The Statue of Athena Victorious. — A Vienna dispatch to the London *Telegraph* of January 8 says: "The ex-editor of the *Neue Freie Presse* having applied through a friend to Dr. Ulrich Kohler, the director of the German Archæological Institute in Athens, for information respecting the pretended discovery of the masterpiece of Phidias, has received the following telegraphic reply: 'The newly-found statue of Athena is a faithful copy of the Parthenon figure by Phidias, and stands about one metre high. The goddess inclines with her left hand on a shield, behind which lies a snake. The right arm is supported by a pillar. The copyist has not put in the lance nor the bas-relief on the shield. The general expression is uncommonly harmonious; the execution of details betrays the period of origin to be the time of the Romans. The physiognomy gives an idea of the spirit of the original. The work produces the same impression as a mediocre translation of some important poem on a reader. The find is of considerable scientific importance, as it brings us for the first time a fac-simile approaching the masterpiece of Phidias, and solves definitively several controversies on the details of its appearance and composition.' From another source the same journal has received the following: 'The alleged resurrection of the Athena by Phidias is daily becoming more clearly a grand piece of Athenian humbug. We know of a telegram received in Berlin from the German Archæological Institute at Athens, describing the figure discovered to be a marble statuette of Athena, some three feet high, a reproduction of the Athena Parthenos, twelve times smaller than the original . . . It is characteristic of the wild proceedings of the Athenian politicians of the day, who are themselves but a duodecimal reduction of their great Periclesian models, that scientific interest such as that in question could be magnified into the importance of a political event.'"

Luminous Paint. — Messrs. Ihlee & Horne, 31 Aldermanbury, E. C., have just coated a ceiling at their offices with Balmain's luminous paint, or, in this case, with water-wash. The effect is that of a subdued light, every object in the room being clearly visible, so that in a room so treated one could enter without a light, and find any desired article. The luminous paint is excited by the ordinary daylight, and its effects continue for about 13 hours, so that it is well adapted for painting bedroom ceilings, passages that are dark at night, and other places where lamps are objectionable or considered unnecessary. For staircases and passages a mere band of the paint will serve as a guide, and costs but a trifle. For out-door purposes the oil paint is used, but for ceilings and walls the luminous paint mixed with water and special size can be used the same as ordinary whitewash, and presents a similar appearance in the daylight. We have previously given a short account of the many applications of which this paint is capable, but the comparatively recent discovery that it can be applied as ordinary whitewash considerably expands the field of its usefulness. Sheets of glass coated with the paint form Aladdin's lamps, which are in use in some of the vessels of the navy, at the Waltham Powder Factory, at Young's Paraffin Works, and in the spirit-vaults of several docks; but now that, by increased production and the use of water as the medium, the cost is reduced by one-half, it will probably be extensively used for painting walls and ceilings. The ordinary form of oil paint has already been applied in many ways to statues and busts, to toys, to clock-faces, to name-plates and numbers on house-doors, and to notice-boards, such as "mind the step," "to let," etc. The paint emits light without combustion, and therefore does not vitiate the atmosphere. Several experimental carriages are now running on different railways, the paint being used instead of lamps, which are necessary all day on account of the line passing through occasional tunnels. — *The Building News.*

The English Channel Tunnel. — An excursion was made a few days ago by M. Léon and M. Varroy, the Minister of Public Works, accompanied by M. Ribot, deputy, and Fernand Raoul-Duval, civil engineer, to Sangatte, near Calais, for the purpose of visiting the soundings which have been undertaken by the Submarine Tunnel Company between England and France. The excavations have been commenced at some distance from the village, at a spot where the cliffs have an altitude of 70 feet above the level of the sea, at high water. A point has been chosen where the rocks of gray chalk which have to be traversed by the tunnel come to show their heads at the surface of the soil. On the opposite shore similar borings have been, as is known, begun, so that the works are proceeding simultaneously. The soundings that have been made during the last few years demonstrate that the base of the Channel consists of a compact mass of chalk, resting on banks of slate. This mass, which is easy enough to pierce, is said at the same time to sufficiently resist infiltration. It would, therefore, present a substance excellently adapted for perforation. But what yet remains to be proved is, whether the succession of these chalk layers will not disclose some irregularities or ruptures which would render the enterprise impossible. That is why, before commencing the definitive works, it was necessary to make an attentive study of the ground by means of trial excavations. It is now five years since the company which had obtained the concession for the tunnel began the first borings at Sangatte. But only since last year have the works been prosecuted with any activity. The chairman of the company was originally M. Michel Chevalier, but since his decease the place of the great economist has been taken by M. Léon Say. The period allotted for the trials was not to have exceeded five years; but as, according to the terms of the concession, the Government was authorized to prolong this term by three years, the Minister of Public Works did not hesitate to accord this extension. However, before making a formal engagement, M. Varroy wished to examine for himself what had been done. The shaft has now reached a depth of nearly 200 feet, or about 130 feet below the level of high water. It has a width of 10 feet, and is lined with oak, so that the water cannot penetrate very freely — not more than 17 gallons a minute. This water is not salt, which is thought to prove that the layers hitherto traversed have their point of contact sufficiently far from the shore to prevent the sea from ascending the shaft. It is intended to sink to a depth of 300 feet, and then a gallery will be excavated in the direction of England. Up to the present the engineers are highly satisfied with the results obtained; as no irregularities have been discovered, which is considered a good augury for the success of the enterprise. Unfortunately, with the greatest exertions on the part of the engineers, it is impossible to proceed at a quicker rate than twenty inches a day. Nevertheless, in eighteen months or two years enough progress will have been made to arrive at a perfect understanding about the possibility of the undertaking. It is stated that the work will not fail through lack of funds.— *Van Nostrand's Engineering Magazine.*

Archæological Odds and Ends. — The famous "Temple of Neptune," or "Temple of Antonine," on the Piazza Pietra, at Rome, and which some authorities regard as the remains of a temple of Mars, is to have its remaining pillars disengaged from the later masonry, so that the capitals can be seen. The immense blocks of marble which formed part of the vault will come in view, and there will be a chance to study the methods used by Roman architects in constructing great edifices. This temple was turned toward the Flaminian Way, had a double front of eight columns, and side rows of fifteen columns each.

The famous Chateau of Blois is undergoing important restorations. The upper portions of the buildings of Francis I, roofs, chimneys, and dormers, which are much decayed, are selected for repair.

The inedited manuscripts by Da Vinci, twelve in number, written in reverse, as was customary with the painter, which have long been among the treasures of the library of the French Institute, are being published in fac-simile, with their accompanying sketches and illustrative drawings and diagrams. The first volume contains notes on painting, drawing, observations on cosmology, geography, the percussion, resistance, and movement of water, light, heat, etc.

A Frenchman has discovered a great catacomb before the S. Pancrazio gate at Rome. It has ten chapels, and extends as far as the foundations of the Villa Doria Pamphily. All the graves have been previously opened, but the discoverer hopes that he may still come upon some which have been left undisturbed. He believes the catacomb to be connected with that of St. Julius, Pope.

Some important relics have been discovered by the German explorers who are now making their final excavations at Olympia. Among the objects found are a portion of the statue of Theseus, from the western front of the temple, and parts of the interior decorations of the Temple of Zeus.

The Adrian, Mich., Grand-Stand Disaster. — It will be remembered that one year ago last October the coroner's jury at Adrian, Mich., (the noted grand-stand disaster) found W. T. Lawrence, owner, W. K. Armstrong, builder, and Chas. Sizer, architect, sufficiently blamable to be held for manslaughter. Last week Mr. Lawrence was on trial, his being the first, and considered the "test case." After the case had been on one week it was given to the jury, who soon brought in a verdict of "not guilty." It is supposed the other cases will not come up. It seemed clear that the owner of the ill-fated stand was entirely blameless and had used every precaution he knew of, and asked what hesupposed to be the most competent advice, after the structure was completed. His greatest confidence seemed vested in his architect, and next in his builder. It does not seem difficult to see where the weight of blame rests.

The Schliemann Antiquities. — An imperial gift in more senses than one has been made by Dr. Schliemann, who has presented his collection of Trojan antiquities to the Emperor of Germany, to be placed in the Museum at Berlin.

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.*]

233,354. SAFETY-STOP FOR ELEVATORS. — John G. Gerding, Collinsville, Ill. The safety-stop most generally used consist of pawls or elbow-levers connected with the spring-bar of the platform, these stops engaging vertical ratchets fixed on the inside face of the uprights. Such safety-stops afford only a precarious safeguard, inasmuch as the platform, in falling a distance equal to the length of a tooth of the ratchets — which frequently occurs in the parting of the rope — acquires sufficient momentum to fracture the parts by the concussion upon the pawls in catching upon the ratchets. The objects are, therefore, to overcome the unreliable counter-check of pawls and ratchets upon the accidental fall of the platform, by providing a more instantaneous and decisive-acting safety-stop device. A A are the uprights between which the platform, B, moves. The platform consists of the best, B′, united by the vertical and inclined brace-rods, *b b′*, to an upper cross-beam, B^2. It is also provided with a bow-spring, C, secured at *c*, between the spring-bar, D, and the upper cross-beam, as shown in Fig. 1. The platform has also a spring-bar to follow up the movements of the spring, C, as is usual in ordinary elevators. The nature of this invention, however, consists in imparting the action of the spring, C, and spring-bar, D, to a novel combination of parts constituting an improved safety stop. *e e′* are two U-shaped plates, each of which are bolted to the spring-bar, D, so that their ends project in line with the outer faces of the uprights, as shown in Fig. 1. E E E′ E′ repre-

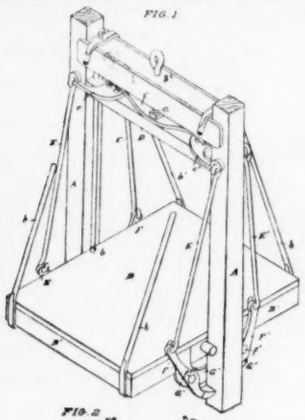


FIG. 1

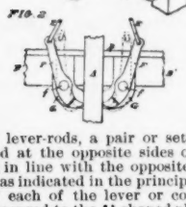
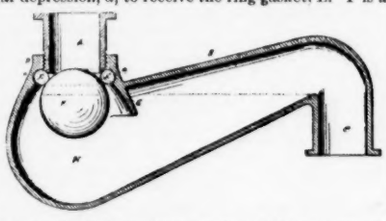


FIG. 2

sent pairs of lever-rods, a pair or set of these rods being provided at the opposite sides of the cage or platform, and in line with the opposite outer faces of the uprights, as indicated in the principal figure. The upper end of each of the lever or connecting rods, E E E′ E′, is secured to the U-shaped plates, *e e′*, while the lower end of each rod connects with the safety pawls or dogs, F F F′ F′. Two sets of these pawls are therefore provided, and each made to be a duplicate of the other. To properly fulcrum each pawl, the side-plates, G G G′ G′, are secured to the same side of the bed of the platform, and cause these to project somewhat below the lower part of the platform, so that the fulcrum for each pawl can be at the respective points or pivots, *f f′ f′ f′*. The arrangement of each pawl is therefore such that each can bite into the outer or contiguous face of the uprights, and each subject to the action of the spring, C. The manner in which the safety-stop operates is this: The tension of the hoisting rope, produced by the weight of the cage while the machinery is in operative condition, causes each pawl to assume the position shown in dotted lines in Fig. 2, and keeps them out of engagement from the faces of the uprights. The pawls in this position permit the free sliding up or down of the platform, and at same time the spring, C, and spring-bar, D, are pressed upward. As soon, however, as the rope breaks, the spring, C, comes into action, pressing downward the bar, D, and lever or connecting rods, the latter causing each pawl at the same time to gripe or bite into the uprights, and as indicated in Fig. 1 and by the full lines in Fig. 2. The downward action of the spring acts, therefore, simultaneously on all the pawls, and these are forced to bite in the most positive manner, making an instantaneous and absolute stop. The locking action to arrest the platform takes place on four points, (being the opposite outer faces of the uprights), and since all the safety-pawls act simultaneously and instantly on the breakage of a rope, a positively self-acting safety-stop for the elevator is achieved.

236,125. SEWER-TRAP. — Electus B. Ward, Detroit, Mich. This invention is especially designed as an improvement upon the construction of the trap described in Patent No. 213,716, issued to the same inventor March 25, 1879. A represents a soil-pipe screwed into the neck of the curved pipe, B, which is formed as shown, and provided with another neck, C, to which the outlet-pipe is attached. The upper end of the neck is upon a lower plane than the lower end of the neck to which the inlet-pipe is attached, so that when the pipe, C, overflows this latter-named neck, with its valve-seat and gasket, will be above the water-line. In the lower end of the neck, D, there is formed an annular depression, *a*, to receive the ring-gasket, E. F is a



valve, spherical in shape, made of sheet-copper, air and watertight. G is a guide and guard flange, to guide the ball-valve to its seat and prevent the ball from passing out of the chamber, H. The ball-valve, F, is inserted through the neck, D. The gasket, E, is then inserted and sprung into the annular recess, *a*. The pipe, A, is then screwed to place, the lower end of the pipe impinging against the gasket-ring and compressing the same into its annular seat. By this construction the ball-valve will be seated by the action of the water, with about one-third its periphery above the water line, and the gasket and seal are entirely above the water-line. The guard, G, also prevents the gas reaching the inlet-pipe when the valve is unseated for discharge through it.

236,674. VALVE FOR WASTE-PIPES. — John C. Daggett and William W. Whitcomb, Boston, Mass.

236,682. SHADE ROLLER. — J. Christopher Lake, Philadelphia, Penn.

236,688. DOOR-SPRING.—Martin C. Mohr, Manchester, Iowa.

236,689. DOOR-SPRING. — John A. Mohr, Manchester, Iowa.

236,690. SAW-TOOTH. — Ewing C. Mulford, Trenton, N. J.

236,692. SCREW-DRIVER. — Samuel B. Peakman, New York, N. Y.

236,695. BOLT-CUTTER. — Henry K. Porter, Boston, Mass.

236,707. PAINT GUARD FOR WINDOW PANES. — Levi L. Jones, Baltimore, Md.

236,715. BURGLAR GUARD FOR DOORS AND WINDOWS. — Jos. P. Neiley, Olney, Ill.

236,626. BRICK-KILN. — Thaddeus S. Smith, St. Louis, Mo.

236,736. MOULDING MACHINE. — John A. Topliff, Elyria, Ohio.

236,737. MACHINE FOR BENDING WOOD. — John A. Topliff, Elyria, Ohio.

236,738. REVERSIBLE SCREW-DRIVER. — William A. Wales, Newton, Mass.

236,740. SEWERING AND DRAINING CITIES. — Geo. E. Waring, Jr., Newport, R. I.

236,752. BLIND. — John J. Angus, Cascade, Wis.

236,754. WINDOW-SCREEN. — David B. Bauder, Menominee, Mich.

236,761. FIRE-PROOF CEILING. — Friedrich Baum, Breslau, Prussia, Germany.

236,773. WINDOW AND DOOR BUTTON. — Roswell S. Brown and Leroy S. Winters, Lincoln, Nebraska.

236,782. STOP-HINGE FOR SCHOOL DESKS.—Thomas H. Costello and A. H. Hall, Chicago, Ill,

236,784. FIRE-ESCAPE LADDER. — John T. Cowles, Chicago, Ill.

236,817. ILLUMINATING GRATING. — Thaddeus Hyatt, New York, N. Y.

236,840. INVERT-BLOCK FOR SEWER BOTTOMS. — Charles A. Perry, New York, N. Y.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS. — Five building permits have been issued since the last report, principally of minor importance, the exception being: —

Jacob Saum, 12 three-st'y brick buildings, on Robert St., near Division St.

Mr. Geo. Bunnecke has been awarded the contract to build the store and dwell. on Lexington St., near Charles St., for Mr. Chas. Bein, at $5,600; Mr. Wm. F. Weber, architect.

WAREHOUSES. — The locality now preferred by the wholesale business men lies south of Baltimore St., and between Charles St. on the east and Eutaw St. on the west. In this district a large number of splendid warehouses have been erected within the past two years, and as an inducement to merchants and others, property-holders in this vicinity offer to erect such buildings as may be desired if the tenants will agree to rent for a short term of years.

Boston.

BUILDING PERMITS. — *Brick.* — *Harwich St.*, near Dartmouth St., for John F. Meade, 2 dwells., 23′ x 35′, three stories; Thomas R. White, builder.

Harwich St., near Dartmouth St., for John F. Meade, 7 dwells., 20′ x 35′, three stories; Thomas R. White, builder.

Columbus Ave., near Berkeley St., for Estate of John Simmons, manufacturing and mercantile building, 44′ x 60′, four stories; Standish & Woodbury, builders.

Wood. — *Thomas Park*, near Pacific St., for Lyman Locke, 2 dwells., 21′ x 32′, two stories; Lyman Locke, builder.

Pacific St., near Thomas Park, for Lyman Locke, dwell., 21′ x 32′, one story and mansard; Lyman Locke, builder.

Beach Glen Ave., 59, for Mrs. S. C. Thwing, dwell., 40′ x 43′, two stories, pitch roof; Samuel Beal, builder.

ELEVATOR. — The work of excavating for the foundations of the large grain-elevator to be built by the Hoosac Tunnel Dock and Elevator Company, at the head of Damon's and Hittinger's wharves, has been commenced. The building will be 170′ long by 80′ wide, and will have a capacity of 600,000 bushels. Two tracks will be laid under it, and the hoppers are to be so arranged that between fifteen and twenty cars can be unloaded at the same time.

OFFICE BUILDING. — The new structure to go up on the site of Joy's Building will, it is said, be of brick and stone, covering the same area as the old, 70′ front, and will be four stories high.

Brooklyn.

CHAPEL. — A sum of money has been given to St. Luke's Protestant Episcopal Church in Clinton Ave. for the erection of a Sunday-school chapel, in Vanderbilt Ave., near the rear of the church.

ALTERATIONS. — *First St., Nos. 53 to 71*, cor. South Ninth St., three and six-st'y brick extension, 60′ and 63′ x 20′, gravel roof, brick cornice; cost, $8,000; owners, Decastro & Donner Sugar Refining Co., South Ninth St.; architect, J. V. V. Booraem.

First St., Nos. 53 to 71, foot South Ninth St., raise to uniform height of 36′, gravel roof; cost, $2,200; owners, Decastro & Donner Sugar Refining Co.; architect, J. V. V. Booraem; builder, Peter Farley.

Hamilton Ave., No. 352, two-st'y brick extension, 24′ and 25′8″ x 35′6″, interior alterations, etc.; cost, about $1,500; owner, Gottlieb Fey, Hamilton Ave. and President St.; builder, C. Dietrich.

Chicago.

BUILDING PERMITS. — J. T. Lyman, three-st'y brick dwell., 25′ x 76′, 232 Chestnut St.; cost, $7,500.

John J. Curran, two-st'y brick dwell., 24′ x 46′, 440 West Fourteenth St.; cost, $2,500.

BRICKLAYERS' WAGES. — The Bricklayers' Union of Chicago, numbering about 5000 men, has decided to advance the wages 50 cents per day and make the day's work nine hours long.

Lynchburg, Va.

THE OUTLOOK. — The indications are that the present year will be one of amazing activity in building operations in this city.

STORE. — W. B. Snead has begun to build a three-st'y brick store on Main St., 21′ x 60′, for Mr. Jacob Shaner; Mr. R. C. Burkholder, architect; cost, $5,000.

HOUSES. — The contract for building Mr. Edmund Schaefer's brick house, three stories high, 36′ x 64′, has been let to W. B. Snead, at a cost of $10,000; Mr. R. C. Burkholder, architect.

Work has just begun on W. C. Southall's house, on Seventh St.; J. P. Pettyjohn, builder, cost $4,800; house of brick, three stories, 33′ x 54′ each; Mr. R. C. Burkholder, architect.

New York.

THEATRE. — Messrs. Kimball & Wisedell, architects, are to build for Harrigan & Hart, at a cost of $125,000, a theatre to seat 1400 persons, on the site of the present Globe Theatre on Broadway, opposite the New York Hotel.

BUILDING PERMITS. — *Third Ave., No. 2387*, three-st'y brick concert-hall, 23′ x 36′ and 69′; cost, $18,000; owner, Wm. Schwab, 762 Third Ave.; architect, J. Kastner.

Pier 21, North River, one-st'y frame shed, 98′ x 571′; cost, $19,000; lessees, New York, Lake Erie & Western R. R.; engineer, A. Chanute; builder, J. M. Schuyler.

Tenth Ave., No. 725, four-st'y brick store and dwell., 20′1″ x 45′; cost, $8,000; owner, Benjamin Weaver, 355 West Forty-Eighth St.; architect, J. M. Forster.

Fourth Ave., s e cor. Ninety-First St., 4 four-st'y brick tenements, three 28′ and one 16′8″ x 80′8″; cost, each $10,000; owner, Joseph E. Redman, Third Ave. and Sixtieth St.; architect, A. B. Ogden.

One Hundred and Sixth St., n s, 100′ w Second Ave., 5 four-st'y brick tenements, 25′ x 60′; cost, each $8,000; owner, Wilhelmina Juch, 341 East One Hundred and Fourth St.; builder, W. A. Juch.

One Hundred and Seventh St., s s, 75′ w Second Ave., 9 four-st'y brick tenements, 25′ x 60′; cost, each $8,000; owner, Wilhelmina Juch, 341 East One Hundred and Fourth St.; builder, Wm. A. Juch.

West Fifty-Ninth St., s s, 225′ w Fifth Ave. Plaza, three-st'y school, mansard, etc.; cost, $10,000; owners, E. A. Gibbons and D. Beach, Jr., 578 Fifth Ave.; architect, E. D. Lindsey; builder, Isaac A. Hopper.

ALTERATIONS. — *Bowery, No. 340*, repair damage by fire; cost, $3,200; owner, J. Hartman; builders, J. T. Rowland & Co. and J. D. Miner.

White St., No. 20, one-st'y brick extension, 25′ x 50′, tin roof; cost, $2,000; owner, Leon Mandel, 20 East Seventieth Street; architect and builder, P. Roberts.

Madison St., No. 35, repair damage by fire; cost, $1,155; owner, Carrie Fgan, on premises; architect, W. H. Holmes; builders, I. & J. Van Riper and Holmes Bros.

Bayard St., Nos. 63, 65 and 67, repair damage by fire; cost, $5,300; owner, Alfred Wagstaff, 120 Broadway; builder, Henry Wallace.

West Tenth St., No. 190, raised one-st'y, interior alterations; cost, $6,100; owner, Frederick Bohde, 298 West Eleventh St.; architect, J. I. Howard; builders, M. Reid and Steele & Costigan.

Bowery, No. 338, repair damage by fire; cost, $1,700; owners, I. Bloom & Bros., 48 West Fourteenth St.; builder, E. Smith.

Fifty-Fifth St., No. 213, e, one-st'y brick extension, 10′ x 20′, also front altered; cost, $2,000; owner, E. Holch, 150 East Forty-Ninth St.; architect, J. Brandt.

BUILDING MATERIALS are quiet. Brick is scarce and very firm at quotations.

METROPOLITAN HOTEL. — The damage from the fire last Sunday is to be repaired immediately.

(*Continued on next page.*)

Publishers' Department.

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E. HOLENSHADE (Chicago), Architectural Wire-Work. Page v.
BATES & JOHNSON (New York), Steam Warming Apparatus. Page i.
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TO SUBSCRIBERS.

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BUILDING INTELLIGENCE.

Tenement Houses. — Several tenement houses are to be erected on Ave. A by speculative builders.

In General. — Reports are numerous as to proposed new buildings, though definite information cannot be obtained. Among the projects are new buildings on the corner of Broadway and Franklin St., and Broadway and Duane St.; for Boston owners a new store is to be erected on Beaver St. The plans for Wallack's new theatre will soon be ready.

St. Louis.

Building Permits. — Ten permits have been issued since our last report, of which five are for frame structures of slight importance. Of the rest, those worth $2,500 or over are as follows:

Shickle, Harrison & Co., three-st'y store, 4 rooms; cost, $30,000.

General Notes.

Allentown, Pa. — The Second National Bank is to build a large block on Centre Square. It will probably be one of the best blocks in the city.

Wm. R. Lawfer & Co. are about building a brick block on Hamilton St., between Sixth and Seventh Sts.

Bedford, Mass. — Messrs. Howe & Dodd, of Boston, are architects of a house for Mr. W. G. Webber; cost, about $5,000; Mr. O. J. Lane, contractor.

Bedford Springs, Va. — The plans and specifications have just been completed for a new and more commodious dining-room and kitchen, with lodging rooms above, for the Bedford Alum Springs; size, 35′ x 136′, of frame: R. C. Burkholder, of Lynchburg, architect, and A. M. Davies & Co., the owners, are the builders; cost, about $4,500.

Concord, Mass. — The State Prison workshop, lately burned, is to be rebuilt at a cost of $1,500.

Deal Beach, N. J. — Messrs. Geo. W. Childs and Anthony J. Drexel, of Philadelphia, intend to build a hotel and a number of cottages here in time for next summer's visitors.

Des Moines, Ia. — Mr. Morgan contemplates improvements in his hotel, to cost $15,000; Blake & Lee, architects.

BUILDING INTELLIGENCE.

Messrs. Polk & Hubbel are building what is known as the "Chinee" Block. The building is on Walnut St., 35′ x 60′, and will cost $750, and is constructed of soft brick exclusively.

Louisville, Ky. — In addition to the usual number of permits granted for the erection of small buildings, a permit was taken out by Messrs. Hoffheimer & Selliger to erect a bonded warehouse, to cost $13,000.

It is predicted by those well informed in building matters that an unusually large amount of building will be done this spring. There will be four or five distilleries and several more heavy buildings erected this spring. The effect of this is already visible by a sharp increase in the price of brick and lumber. The prices of materials in all other branches of the trade are ruling firm.

Medford, Mass. — Mr. Henry Bradlee is building a house, to cost about 9,000; Isaac McLean, contractor; Messrs. Howe & Dodd, of Boston, architects.

Medina, O. — Residence for N. T. Burnham, Esq., two-st'y brick, with Berea-stone finish; carpenter work, R. Gibons; mason work, Thomas Gower; cost, $15,000.

M. E. parsonage, two st'y frame, D. P. Clark, architect; Wm. G. Tilly, builder; cost, $1,700.

Church for the Congregationalists; B. J. Bartlett, of Des Moines, Ia., architect; R. Gibons and T. Gower, contractors; contract price, $9,200.

Residence for Wm. Sipher; size, 35′ x 48′, two-st'y; D. P. Clark, architect; cost, $3,000.

Residence for C. J. Warner; size, 36′ x 72′, two-st'y brick, with Grafton stone and tile finish; D. P. Clark, architect: estimated cost, $6,000.

Middle Bass Island, Lake Erie. — Cottage for Mr. J. D. Sears; cost, about $1,500; N. B. Bacon, architect, Toledo, O.

Millville, N. J. — Plans for a weaving shed, 164′ x 263′, one-st'y and basement, for the Millville Manufacturing Co.; Balderston & Hutton, architects and builders, Philadelphia.

Michigan City, Ind. — Block, 4 stores, brick and stone; also frame dwelling for O. A. Higgins; cost, about $10,000; N. B. Bacon, architect, Toledo, O.

BUILDING INTELLIGENCE.

New Orleans, La. — The Building Committee of the New Orleans Cotton Exchange have at last determined to reject all plans submitted, and readvertise, giving fully and clearly what is wanted. A reward will be offered, such as will serve as an inducement to renewed efforts.

Omaha, Neb. — The contracts for Boyd's Opera House were let out January 17, and the building will be completed September 5. It will be a four-st'y brick building, 60′ x 132′ front, and will be used for stores in the first story, with auditorium on the second. It will be finished with all modern improvements and conveniences, and will cost $100,000; Mr. McElfatrick, of Louisville, is the architect.

Prairie City, Iowa. — Notwithstanding the cold weather, the builders are busy at work on the Citizens' Bank, a brick and stone structure, two stories high; cost, $16,000; Wm. Foster, of Des Moines, Ia., is the architect.

Rushville, Ill. — Court House for Schuyler County, brick and stone; cost, about $40,000; E. O. Fallis, architect, Toledo, O.

Salem, Oregon. — An insane asylum, to accommodate 400 patients, is to be built here this year, at a cost of $150,000. Six plans, all by architects of Portland, have been submitted, but at the time of writing a decision has not been declared. The compensation of the successful architect will be only $1,500.

San Francisco, Cal. — James Phelan is to build a large building on O'Farrell and Market Sts.

Toledo, O. — Brick dwell., for E. Hammon, Toledo; cost, about $4,000; N. B. Bacon, architect.

Building and rumors of building are more frequent as the season progresses; weather yet very cold, and outside work well ice-bound.

West Point, N. Y. — Plans are being prepared for an astronomical observatory for the U. S. Military Academy by Wilson Bros., architects and engineers, Philadelphia.

Industrial.

East Bridgewater, Mass. — K. E. Sheldon thinks of building a new plate mill.