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THE Executive Committee of the Archæological Institute of America has just issued its third annual report, from which we are glad to learn that the Institute has enjoyed another year of reasonable prosperity and success. The investigations of Mr. Bandelier among the pueblo Indians of New Mexico were interrupted during the year to enable him to join the Charnay-Lorillard expedition to Southern Mexico. Instead, however, of following M. Charnay to Yucatan, Mr. Bandelier turned his attention to the ruined city of Cholula, some sixty miles from Mexico, where he spent four months in active research, the results of which are to be published in a special report. The most interesting matter touched upon in the abstract of this contained in the report of the Committee is the discussion concerning the original character of the so-called "pyramid of Cholula," an enormous pile of adobe bricks and stone, more than a quarter of a mile on each side, and about two hundred feet high. This structure is known to have been in ruins long before the Spanish Conquest, and the race which possessed the country at that period could say nothing more about it than that it was built by the giants who inhabited the place before them. Mr. Bandelier therefore commenced his investigation without any preconceived theory whatever, and after much careful study, was led to the conclusion that the so-called pyramid consists simply of the ruins of a vast communal village or pueblo, of the same general character as that at Old Pecos, visited and described by him the previous season, but far larger, and appearing, from the circumstance that the bricks vary in different portions in dimensions and character, to have been formed by gradual accretions through many successive generations. The builders of this great dwelling Mr. Bandelier believes to have been the Toltecs, the comparatively civilized race which occupied Mexico from the seventh to the twelfth century of our era, and whom he is disposed, like many other archæologists, to identify with the Mayas, who still inhabit portions of Central America and Yucatan. After completing his investigation of Cholula and its neighborhood, this indefatigable explorer returned to the United States, and is now engaged again among his old friends the pueblo Indians of New Mexico; but the Institute has been so fortunate as to be able to continue investigations among the Southern tribes by a contract with Mr. Louis Aymé, United States Consul at Merida, in Yucatan, who is to make explorations for its benefit among the less known ruins in that interesting country.

Of its achievements on the other side of the world, among the Greek remains of Asia Minor, the Institute is able to give a most gratifying account. The explorations conducted at Assos by Messrs. Clarke and Bacon have met with a success which was hardly anticipated, and the complete restoration of the celebrated temple, even to its minutest details of plan, elevation and ornamentation is, as the Committee say, a work in which all the members of the Institute may take justifiable pride. During the present season the other public structures of the city will be investigated as thoroughly as time and the funds at command will allow, and we may hope that this, the most purely classic town whose remains still exist in intelligible form, will before long be clearly understood in all its parts.

Vestiges of the theatre, the stoa, the gymnasium and the basilica have been already brought to view, and the work of the coming summer will be chiefly devoted to the thorough study of these, as well as of the numerous tombs, and the remarkable stone bridge, the only one known belonging to the classic period, which still exists at the foot of the acropolis. It is much to be hoped that the researches directed by the Institute in classic ground will not terminate with the restoration of the monuments of Assos. It is safe to say that we possess as yet only the beginning of the knowledge to be gained by well-conducted explorations in Greece, Egypt, Asia Minor and the valley of the Euphrates; and all those who care for the most noble of all sciences, the study of mankind, should endeavor to do something toward encouraging and aiding the work. A most judicious step has been taken under the auspices of the Institute, in establishing an American school of classical studies at Athens, which is to be definitely opened in the autumn of the present year, under the charge, for the first season, of Professor W. W. Goodwin, of Cambridge, and will long serve, we hope, as a base of active operations from which to attack at the best advantage the most important and difficult problems connected with the history of the race.

THE Hygienic Exhibition which, as our readers will remember, was to have been held this summer at Berlin, has been forcibly postponed by the unfortunate burning of the exhibition-building with nearly all its contents, amounting in value to something over a million of dollars. The *Sanitary Engineer* learns from Mr. Fabian, the Commissioner for the United States, that few of the exhibits from this country were in place, but the losses of European inventors must have been very heavy, even if their goods were insured, as we hope they were. Much interest has been shown in the affair, and it is thought that another building will be procured and the exhibition held later in the season. Among the objects to be shown will be competitive designs for a model theatre, for which the committee has offered prizes amounting to about two thousand dollars. The auditorium of the building is to seat seventeen hundred persons; the heating-apparatus is to be capable of producing a temperature of sixty-four degrees Fahrenheit in the theatre when the thermometer outside stands at four below zero; and the ventilating appliances must be capable of supplying fifteen cubic feet of fresh air per minute for each person in cold weather, and thirty-five cubic feet in hot weather. Plans showing the modes of exit for the audience must also be shown, with a calculation of the time necessary to clear the auditorium. We are inclined to advise the architects of the Madison Square Theatre in New York to enter a set of tracings of the plans for that building in competition for the prize. It will be remembered that Captain Douglas Galton, one of the best living authorities, spoke of this theatre as far surpassing in scientific thoroughness of heating and ventilation "anything ever dreamed of in England," and its arrangement would probably be quite as novel in Berlin as in London.

WE find another gratifying indication that the members of trades' associations are beginning to employ a little intelligence and common sense in the management of their affairs, in a circular sent by the Brick-Laborers' Union of Chicago to the builders and contractors of that city, the authors of which, after hinting at the determination of the members of the Union to persist in their demand for higher wages, proceed, instead of advertising their own helpless incapacity by allusions to the "dignity of Labor," "the selfishness of Capital," or the other pet formulæ of demagogues, to set forth the advantages which would be derived from the establishment of small private brick-yards by individual builders or building firms, who would then be independent of the combination which is asserted to be now in possession of the business of manufacturing brick. It is common in many places, where the character of the ground is favorable, to make the bricks for a large building on the spot, and as the soil about Chicago is generally clayey, similar experiments might easily be tried there; and if, as the circular of the Union asserts, brick could be made in that way even at the increased rate of wages for eight dollars per thousand, which would cost fifteen dollars if purchased from the dealers, the fashion would certainly spread rapidly, to the advantage of every one except

the monopolists. Whether the assertions of the brick-laborers are true or not in this particular instance we cannot say, and do not much care: the point to which we wish to direct the attention of our readers is the novel and ingenious attempt of the workmen to secure the alliance of the builders in their struggle against the manufacturers who have formerly been their only employers. If the attempt should succeed, as it is very likely to do if the reasoning of the men is well founded, the brick-makers' combination could not hold out long, and the men would have gained easily, by the exercise of a little business tact and sense, a point which under the usual system would be pursued in vain through months of enforced idleness, misery, intimidation, violence and crime.

Two hundred manufacturers of the city and vicinity of Rochester, N. Y., have formed a combination for the purpose of resisting the attempts of labor-unions at interfering with their business, from which many of them have individually suffered. Among the pledges which they give to each other is one by which all the members of the association promise, in case of the interference of a labor-union with the affairs of any one of them, to "make it their particular business to overcome the same, even though it should require the combined action and the suspension of all the subscribers." This agreement is, we fear, of a character too indefinite to be of any great efficacy, but it is followed by a better one to the effect that the association is to use "all honorable means to protect independent labor, either in or out of the workshops of its members, and to prosecute vigorously all offenders against the rights of the same." This intention, we hope, is to be carried into decisive action. The Rochester manufacturers ought to know as well as any that if they undertake faithfully to protect the rights of workmen who do not care to submit to the dictation of trades' unions, they will be kept busy for some time to come, but they may be assured that they could do nothing which would in the end be of more benefit, not only to themselves but to the whole industrial community.

THERE is something characteristically British in the industrious ingenuity with which the very people who are likely to make the most use of the Channel Tunnel, if it should ever be completed, devote themselves to devising means for killing everybody in it, on occasion, with the utmost possible despatch. At a meeting of the Society of Arts, not long ago, in which full expression was given to the lamentations of those who think it "utterly inexcusable" to "throw away that grand salt-water ditch" which "has so aided the progress and stability" of the English nation, much comfort seemed to be given by the assurances of the engineers that "chalk and a little acid afford a very convenient mode of generating a gas in which human life cannot exist;" and that by a touch of a button the shaft might be blown up with dynamite, or the tunnel flooded in a moment; but Dr. Siemens seems to have been the first to reduce the plans for wholesale slaughter to a neatly-scientific form. His proposition, as presented to the Military Committee, is to lay for half a mile or so in the English end of the tunnel a "drift-way or tube," "terminating on the tunnel side in a double arch with numerous perforations," and on the land side in a series of wrought-iron chambers sunk in the ground. These chambers are to be filled with common chalk, and connected with a large cistern of dilute muriatic acid, so that on opening communication between the two, the acid will flow out into the first chalk-chamber, to be thence distributed by perforated pipes over the whole mass. The result will be "a powerful chemical reaction, giving rise to carbonic-acid gas, which will form an impassable barrier to the passage of human beings through the tunnel." It is pleasant to see so much mental activity displayed in promoting so worthy an object, but there might, we should imagine, be some question whether after its completion the popularity of the tunnel among travellers, and with it the dividends of the stockholders, may not be materially lessened by the formidable precautions needed to allay British trepidation. Accidents will sometimes occur with the best of care, and a subaqueous route has dangers enough of its own to justify some nervousness on the part of those passing through it, without the additional terrors on all sides of suspended tanks of muriatic acid, sluices, and dynamite, which an inadvertent "touch upon a button" may set at any moment into operation.

APROPOS of the discussion now going on in France in regard to the official teaching of architecture and the official certification, by diploma, of capacity for entering upon professional practice, *La Semaine des Constructeurs* publishes a letter from an English correspondent, formerly a pupil of the École des Beaux-Arts, who has interested himself in the discussion and believes that the true solution of the problem has been arrived at in England, by the establishment of the compulsory examination for admission into the Royal Institute of British Architects. The writer begins by recounting the slow steps by which the Royal Institute, from a small voluntary association of men of exceptional public spirit and professional zeal, has become in fifty years a body of great and acknowledged authority, intervening decisively in nearly all disputed questions arising between architects, contractors and employers, establishing rules which are recognized as precedents in courts of law; and latterly, conducting the more important architectural competitions, preparing the conditions of the programme, and naming the judges. All these powers and privileges, he informs us, have been gradually conceded to the Institute by the slow growth of public opinion, which has come more and more to see that it is for the general advantage in such matters to be guided by the decision of those who are presumed to understand them best. Presumed to understand them, we say, for it is only within a year that the Institute has felt itself strong enough to make that presumption a certainty, by adding to the requirement of honorable practice, to which it rigidly holds its members, a further obligation of thorough professional training, to be tested by the examination for admission which is now made compulsory. It is easy to see what the effect of this will be. Hitherto the Institute has, so to speak, guaranteed the integrity of its members, but not their capacity, which is with the public a much more serious question. Now it will guarantee both their honesty and skill, and hereafter those who attempt to practise architecture outside of its pale will have to answer the question which will be more and more frequently asked them—why they have not obtained this certificate of competency, which is open to all who show themselves worthy of it, and they will find it continually more difficult, as the Institute gains in numbers and influence, to make a reply which will satisfy their clients.

THE impartiality with which membership in the Institute is opened to all comers of the requisite character and skill is, as the editor of *La Semaine* points out, the most effective means for giving value to such membership. Unlike the diploma of a State school, which although valuable in itself as a certificate of attainment, implies no proof that persons educated under other auspices may not possess an equal amount of knowledge, the catholic character of the great corporation of British architects affords a certainty that no prejudices of locality, clique, or officialism can intervene to lessen the thoroughness of its examination as a true test of technical and artistic capacity; and the consciousness of this will make it impossible to plead with success before the public the excuses for the lack of its certificate which answer so well in the case of professions divided into schools or factions. So much, in fact, does the English plan commend itself to the mind of the editor of *La Semaine*, that he is disposed to urge the Société Centrale, the most important French professional society, to undertake a rôle similar to that of the British Institute; and although the substitution of a private certificate for an official diploma would be something of a novelty in France, it seems very possible that his views may ultimately be carried out.

WE have received a letter from a member of a professional society in regard to what he thinks an injustice done by the society to a local architect, in regard to a matter in which at the time we took some interest. With all possible disposition to do anything in our power for the good of the profession at large as well as of individual members, we can hardly undertake to interfere in family misunderstandings, for which there is very apt to be some reason on both sides, and would only suggest to the aggrieved individual and his friends that after considerable experience of such bodies, we find nothing to be more characteristic of them than a readiness to repair their errors if they can be convinced that they are in the wrong, and that patience and perseverance in well-doing will overcome the most inveterate prejudices.

FIRE RISKS INCIDENTAL TO ELECTRIC-LIGHTING.¹

WHEN the electric current freely circulates through a conductor sufficiently large to allow it to pass easily little or no heat is produced, but if we interpose in its path a moderately-bad conductor, that conductor becomes heated as a consequence. The most intense calorific effects result when thin strips of a fairly-good conductor are interposed in the circuit, as when an enormous resistance is offered to the passage of the current it becomes practically blocked, and but little or no effect is produced, as when the terminal wires of a battery are joined by a bar of ebonite or of glass.

In order that you may take note of the heating effects of the current these battery terminals will be joined by thin strips or wire of various metals, and you will notice how they are instantly heated, burned, and deflagrated.

Here is a kind of lattice or gridiron built up out of thin iron wires, and placed in the circuit of a battery consisting of 60 Bunsen cells. At the present time the wires are only just warm, for, taken together, they do not offer enough resistance to become intensely heated. These wires will now be successively cut by a pair of scissors, so that the wires are placed out of circuit one at a time, and at each cut-out the remaining wires become hotter, so that fusion or deflagration of the last five takes place.

To illustrate this matter further, let me remind you that silver is the king of conductors among metals, while the pretender, German silver, offers about fourteen times as much resistance to the passage of the electric current. Here is a kind of chain built up of alternate links of silver and German silver, and you will notice that when the current is passed through the chain the German-silver links become heated to redness, while the genuine silver shows no signs of heating.

When a powerful current is cross-circuited, or short-circuited, by a thin metallic wire, it often happens that this becomes intensely heated, and many dangerous accidents have happened this way, as is the case of M. Christophe, who had his watch-chain melted, and waistcoat set on fire, by incautiously leaning against some light-leads in the Paris Electrical Exhibition.

Let me demonstrate to you the effect of short-circuiting with various moderately-good, or moderately-bad conductors. You see that a thin iron or German-silver wire is melted instantly, while a thin gold watch-chain is volatilized immediately; and a piece of gold lace is immediately transformed into a charred mass, while a mixture of gunpowder and bronze powder is immediately ignited. A piece of the gold-paper bordering such as is used for decorating rooms is also ignited, and you thus see how dangerous accidents may arise from unprotected light-leads.

The various electric fuses which are used for exploding mines and torpedoes depend on the heating power of the current when it traverses a bad conductor. There are several examples of these in the room: some interesting specimens, together with magneto-electric appliances for igniting them.

It is quite within the limits of possibility for a gilt moulding, or beading, to become ignited, should the metallic surface short-circuit a current, and it may interest you to see that a black lead-pencil-mark may conduct sufficient electricity to set the paper on fire; and I have known a case in which a thin piece of ebonite was set on fire through having had some chloride-of-gold solution spilled on it, the metal having become reduced by the action of light.

When a powerful current is passed through a thin strip of carbon, the carbon becomes intensely heated, and if exposed to the air it naturally burns at once, as you see now. When, however, the carbon strip is enclosed in an exhausted vessel, the case is altered: it merely glows with an extremely-bright light, and if all is satisfactory, it will stand this kind of treatment for a prolonged time, say from one to three thousand hours. Here we have incandescent lamps by Swan and others in which a carbon thread is enclosed in a glass bulb, and as these form the safest kind of electric lamp they will require special consideration at a later stage of the proceedings.

The heat produced by interposing a thin strip of a moderately-good conductor in the circuit, is made available for other purposes than firing torpedoes and incandescent lamps, very convenient and portable gas-lighters being made with a thin strip or wire of platinum, which can be heated to whiteness by a single cell of a bichromate battery contained in the apparatus. You see how convenient this arrangement is in actual use, and as it is easy to prolong the conductors to any extent, such an apparatus may prove very useful in lighting gas in inaccessible positions. Other forms of incandescent lighters are on the table, and you can examine them when the proceedings have terminated.

Not only can the electric current produce heat, but it may also produce cold, as will next be illustrated to you. Here is a compound

bar consisting of a rod of antimony soldered to a similar rod of bismuth, the whole being included in the bulb of an air thermometer, excepting the unconnected ends of the bars which project outside the bulb. When a current is passed from the bismuth bar to the antimony bar cold is produced at the junction, as you may see by the rising of the column of colored spirit, while the reversal of the current causes heat to be produced.

When a current of enormously-high potential suddenly overcomes the resistance of a very bad conductor, what is called a disruptive discharge takes place, the bad conductor being perforated or broken by the discharge. In the case of the ordinary electric spark in air, the air is broken, and the result is a snapping sound, as the result of the disturbance. Here is the Holtz machine in an improved form, as sold by Messrs. Becker & Co., of Maiden Lane; and you see what torrents of disruptive discharges result when the handle is turned. You also see how easily these sparks will ignite coal-gas or alcohol, the very smallest spark serving for this purpose. This is well illustrated by the small inductive gas-lighter now before you, in which a small electrophorus is so mounted that it can be conveniently used as a portable gas-lighter. A further illustration is afforded by the circumstance that the minute disruptive spark obtained from one of the small magneto-electric machines, sold in the toy-shops for 12s. 6d., will instantly ignite coal-gas or other vaporous combustible. You see how immediately the gas is lighted. In order to set fire to a solid body by the disruptive discharge we either require one of enormous force, or a series following each other in rapid succession, as, before a solid body can inflame it generally requires to be more or less completely converted into vapor by the action of heat, or to otherwise receive a notable increment of heat through a considerable portion of its mass. Notice the effect of passing a disruptive discharge among gunpowder: it is merely thrown about, but not ignited, while if the discharge is retarded by placing a piece of wet string in the circuit the case is different: the powder is ignited. Now let us take the case of a rapid succession of disruptive charges on gutta-percha. You see that the covering of this wire is very soon set on fire at the point where the covering is discontinuous, and a thin sheet of gutta-percha takes fire almost immediately.

A most remarkable discovery has recently been made by Mr. G. Stillingfleet Johnson, of King's College, who finds that the silent effluve, which serves to partially ozonize oxygen in the Siemens' ozone tube, will cause the explosive union of oxygen and hydrogen. In this case, you must understand that no conductor comes in contact with the explosive mixture, these being separated by a considerable thickness of glass, and that the action is purely inductive. Mr. Johnson has been kind enough to make arrangements to demonstrate his important and interesting discovery before you, this being the first public demonstration which has been given. It appears to me that further study will show that Mr. Johnson's discovery has an important bearing on the subject of this evening's discourse.

The arc light, in which the current is passed from one carbon pencil to another — these being then slightly separated — is complex in its nature, as we have three actions at work. In the first place, we have something approximating in its nature to a disruptive discharge, as the carbons may be removed to a considerable distance without breaking the circuit; in the next place, there can be little doubt that the partly-formed vapor, or nebulosity of carbon, conducts after the fashion of an incandescent lamp, while ordinary combustion of the carbon takes place simultaneously. These three circumstances together tend to make the arc light that form of the electric-light involving most risk of fire, and consequently requiring the most careful precautions; while the circumstance that it is necessary to work an arc light with a current of higher potential than is required for incandescent lighting, also tends to throw the risk in the direction of arc lights.

One of the most serious dangers incidental to the arc light arises from the falling of pieces of hot carbon; but by using carbon of good quality, and taking reasonable precautions as regards catching the pieces, the danger is reduced to a minimum. Notice how unsteadily and dangerously the light burns when pieces of porous and spongy gas-carbon are used, sparks flying and pieces falling off; but when good carbons are used this kind of thing very seldom occurs. It is a great advantage for the carbons to be either plated with metal, or enamelled, and there are excellent specimens of plated and enamelled carbons on the table, which are exhibited by various manufacturing firms. It sometimes happens that irregularities in the action of the dynamo-machines will cause pieces to fly off the carbons, or that the presence of foreign bodies imbedded in the pencil will determine a fracture. No arc lamp should be used without a satisfactory arrangement for catching any pieces which may fall off, and before you are the arrangements made by the Brush Company for preventing mischief from a breaking up of the carbon pencils.

Here we have asbestos trays, or spark-catchers, as manufactured by the United Asbestos Company, these being placed under the lower opening of the globe.

The incandescent system of lighting is by far safer than the arc method, and, considering that this latter system is likely to come into general use for house illumination, it is gratifying to be able to take this view of the case. In fact, there is every reason to believe that when proper precautions are taken the incandescent system will prove considerably safer than gas for general purposes. You know that a large number of Swan's lamps are in action at the

¹ Portions of a paper read before the Society of Arts, May 3, 1882, by Thomas Bolas, F. C. S., and printed in the *Journal of the Society*.

Savoy theatre, no less than 824 being employed in lighting the stage alone; and it is impossible for any one inspecting the thoughtfully-arranged appliances not to at once appreciate the greater safety of the incandescent lighting over gas under such circumstances. It may be mentioned that all the machinery is in a distinct building. It appears to me that a greater security might be attained in theatres if the gas were entirely dispensed with, and a broad guide-band, painted with the phosphorescent paint, were employed as a reserve force of light in case of anything going wrong with the electric machinery. In connection with this subject may be mentioned a suggestion made by Professor Barrett as regards a similar point. He considers that when the incandescent system is installed in a house there will be less occasion for lucifer matches, and that if the switch handles are enamelled with the phosphorescent material it will be easy to find the switch in the dark and turn on the current. Such a tap will now be handed round.

The first to call attention to the notable fire risks which may result from a careless installation of the electric-light, was Mr. W. H. Preece, your chairman to-night, who wrote a long letter to the *Times* in the autumn of 1880, pointing out some of the principal sources of possible danger. Since then the subject has received a considerable amount of attention, and the insurance companies have been accused of acting harshly as regards the fire-risk question. In the case of the Crystal Palace, an extra premium, at the rate of no less than 42s. per cent per annum, has been demanded; but, of course, this covers numerous risks which cannot fairly be laid on the back of electric-lighting, and in estimating the risk, dangers incidental to gas or steam machinery should be estimated separately, as in many cases the electricity would be sent from a distant station.

Carefully-considered rules for insuring safety as regards electric-lighting, have been drawn up by Professor Morton, the Edison Corporation, Mr. Musgrave Heaphy, Mr. W. A. Anderson, Mr. E. W. Carpenter, and others; but experience has shown that in many cases under-estimates have been made as to the extent of precaution necessary, especially as regards the diameter of leads and their thorough insulation from metal-work.

It was my intention to lay before you a set of rules for the prevention of fire, elaborated by myself, but just before the proceedings commenced this evening Mr. Heaphy handed me a copy of the second edition of his rules, as drawn up by him at the instigation of the Phoenix Fire Office, and as they embody most of the new points which it was my intention to bring before you, it will be better to make Mr. Heaphy's rules a basis, and then discuss a few points in detail.

MR. HEAPHY'S RULES.—REQUIREMENTS.

1. All rods or wires in a building to be so placed as to be thoroughly and easily inspected.
2. All rods and wires to have sufficient sectional area, so as to allow at least 50 per cent more electricity being safely sent through them than will ever possibly be required for the lights they supply.
3. All main rods (or wires) should be thoroughly well insulated with a material rendered as non-inflammable as possible, and further protected by coverings of a substantial and durable character. Wherever practicable the rod (or wires) should be enclosed in iron, brass, lead, terra-cotta, or earthenware pipes, the space between the rod (or wires) and the pipe being completely filled with a high insulating compound. Or the rods (or wires) should be thoroughly well insulated with a material as non-inflammable as possible, and might be placed in slate bedding, or slate boxes, to be approved by the inspector from the fire office.
4. The wires for "arc lights" to be insulated and protected in the same manner as the aforesaid main rods or wires. The wires, unless enclosed in pipes, or slate boxes, etc., as described under requirements No. 3, should be laid at least 8 inches from each other, and 8 inches from all other wires, metal, or conducting substances. Or where this, from the nature of the case, is impossible, then the wires must be kept at least one inch apart, and one inch from all conducting substances by a continuous rigid non-conducting material, to be approved by the inspector from the fire office.
5. The wires for the incandescent lights should be at least 2 1/2 inches from each other, and 2 1/2 inches at least from all other wires, metal, or other conducting substances; they must be thoroughly well insulated with a material rendered as non-inflammable as possible, and protected by coverings of a substantial and durable character; and where external injury is possible, they should be insulated and enclosed in iron, lead, brass, terra-cotta, or earthenware pipes, or in slate bedding or slate boxes, in the manner described under requirements No. 3 for the main rods.
(In non-hazardous risks the wires, having been thoroughly well insulated with a material rendered as non-inflammable as possible, should, where practicable, be enclosed in wood bedding, and the wires kept apart by a continuous fillet of wood at least one inch wide.)
6. All rods or wires passing through floors or partitions must be insulated, and enclosed in iron, brass, terra-cotta, or earthenware pipes, or slate bedding, in the manner described under requirements No. 3.
7. All rods or wires passing through exterior walls of buildings must be insulated and enclosed in pipes, as described under requirements No. 3, and the insulating material must be impervious to moisture.
8. All rods or wires in a building that are exposed to moisture must have a water-proof covering to their insulating material.
9. The fastenings of all rods or wires to be composed of an approved non-conducting material.
10. Any material employed for conducting the electricity, in lieu of rods or wires, must be protected in the same manner as the before-mentioned rods or wires.
11. All lamps, switches, or any bare connections, must be so mounted that leakage of electricity from them is rendered impossible.
12. When two wires are joined together the junction must be soldered, or secured by a thoroughly-clean binding screw, or clamp.
13. Wherever a branch wire is led off the main conductor, to supply current for one or more incandescent lamps, a short length of lead, or other fusible wire, must be inserted between the main conductor and one end of the branch; and the lead wire must be of such section and nature, that if the current passing through it exceeds the normal current by 50 per cent, then it will fuse and disconnect the branch.

14. No naked lights allowed. If "arc lights" are used the globes must be enclosed at the base, and have chimneys so arranged that no sparks or flame can escape. The globes must also be covered round with wire-netting.

15. All "connections," "cut-outs," or "resistance-coils" must be placed in such a secure manner that no danger can arise in the event of their heating.

16. A shut-off must be placed at the point of entrance to each building.

17. No ground circuit allowed.

18. All work is to be of a substantial character, and put up in a thorough, workmanlike manner, and to be accurately tested at the time of erection for insulation.

19. When the "electric-light" is intended to be used, information must be supplied of the particular system of lighting that is to be adopted; how and where the electricity is to be generated; the number and kind of lamps used; the quantity of electricity to be conveyed through the wires; the conductive capacity of the wires; method of insulation; whether there is to be metallic circuit; and, as far as possible, full details of the manner in which it is proposed to equip the building.

MUSGRAVE HEAPHY, C. E.

PHOENIX FIRE OFFICE, February, 1882.
April, 1882.

As regards modifications I would suggest the following:

1. When the electricity is supplied to a building from a distant station, an effective cut-off shall be provided within two feet of the point where each conductor enters or leaves the premises. Such cut-offs to be, when practicable, sufficiently accessible from the public way on the outside of the premises, and to be quickly reached by a man provided with such tools as would serve for breaking open an ordinary door. Each cut-off is to be marked so distinctly as to show at a glance in which direction the handle must be turned for breaking or making the circuit.

2. When the electricity is generated on the premises a similar cut-off accessible from the apartment where the electricity is generated must be provided for each wire or branch entering or leaving the apartment.

3. Each conductor or lead placed inside a building, if of copper, must possess a sectional area equal to four times the sectional area of the thickest wire, or parallel combination of wires, which exists in the dynamo or magneto machines used. If iron is used as a conductor, it must be tinned or galvanized, and its sectional area must not be less than six times as great as if it were copper.

4. No conductor to be allowed to come nearer than one-fourth of an inch to any other metallic body whatever, excepting when these form essential parts of lamps, commutators, resistance-coils, or similar apparatus; and no wire is to be allowed to come within half an inch of any metallic body having direct electrical communication with the earth. Metal tubes should not be used as casings for leads passing through partitions, etc.

5. All connections of conductive wires, branch wires, and rods must not only be thoroughly soldered, but also bound. In the case of iron rods (tinned or galvanized) a short tubular socket, also tinned or galvanized, should slip over the united ends before the solder is applied.

6. Wherever the conductor passes through a wall or partition it shall take as direct a line through as practicable, and the hole through which it passes must be bushed or lined with a non-porous earthenware or glass tube, with sides not less than one-eighth of an inch thick; this tube to form one unbroken length through the partition. After the conductor is in its place the space between it and the tube may be packed with any suitable non-conducting substance.

7. When a conductor is fitted inside a building the most careful precautions must be taken to protect it from rain-drift or other water, either by the use of slate grooving of suitable sections, or by other means. When a wire passes through an external wall the outer end should turn downwards, and be so covered by a cap of earthenware or slate that no water can enter the insulating tube; the tube should also incline slightly downwards, towards the outside of the building.

8. No underground conductor is to be enclosed in a metal tube, but combustible bodies, such as gutta-percha, asphalt, paraffine, or the like, may be used in the insulation of underground conductors.

9. In the case of wires fixed above ground the coating of the wire must be of a non-combustible character, or, at any rate, of such a nature that fire will not run along the wire should the coating become ignited. When the lead is laid in close contact with wood, or other similarly inflammable material, the immediate coating of the wire must be of an absolutely unflammable material, such as asbestos; but in this case especial care must be taken to protect the wires from becoming accidentally wetted.

Mr. Heaphy has very properly kept in view the fact that an insurance office must not, especially during experimental developments, be over rigid in its requirements, as many points will, undoubtedly, require careful consideration by both insurance companies and lighting associations.

Although when suitable precautions are taken there can be no doubt that the dangers incident to electric-lighting are no greater than those incident to gas-lighting, and, in many cases, are considerably less; but one point in favor of electricity is that it is only calculated to effect ignition, and not feed the flames like a gas-pipe laid open by fusion; and this consideration may bear on the fact that many alarms of fires of electric origin have been given, but only a few actually destructive conflagrations are recorded. Almost every fire of electric origin has been the result of the grossest carelessness, and the neglect of precautions which ought to suggest themselves to any one.

Messrs. Crompton & Co. have communicated to me their views in the following words:

"As to conductors, we prefer to use for heavy cables copper strand, insulated with ozokerited rubber for all cases where there is danger of damp, but for indoor purposes we use cables with a copper-strand core, tinned, and insulated with vulcanized rubber. We have given up the use of cables insulated with tarred tape, as we had dangerous short circuits from their use, the action apparently being as follows: At any point where there was any slight drop on the cable an action of an electrolyte nature appeared to take place, and the tar covering heated, and eventually charred, as if it were carbonized by fire, with the result of a short circuit and dangerous contact. Since we have used the cable insulated with ozokerited rubber we have had no contact whatever from this cause. For coal mines, where the danger from a contact would be most disastrous, we have used cables heavily insulated with gutta-percha, and find they are perfectly safe.

"Turning now to the branch conductors used for incandescent lamps, which are the principal source of danger, we have generally arranged our circuits for board-ship work so that no one conductor could have more than thirty amperes passing along it, and we have made all our branch conductors of No. 16 B. W. G. copper wire, heavily insulated with ozokerited rubber, and arranged in the twin form, that is, the insulation of each wire made perfectly complete and then cemented side by side. Although, at first sight, this placing the two wires in juxtaposition may seem courting danger, the reverse is really the case. The principal cause of a short circuit in the branch lead is the crossing of the wires when concealed behind wainscoting or any other ornamental covering: in the act of screwing this down, if the wires by any mischance happen to get across one another, the cores are liable to be squeezed into contact. With the twin wires above described this is impossible to take place, as the two wires must lie true and parallel to one another. Through No. 16 wire we pass 30 amperes of current for a considerable time without dangerous heating, so that even if a short circuit did take place in a branch, and the lead cut-out did fail to act, still it would be improbable that a fire would take place. The lead cut-outs we employ consist of one inch of 20 lead wire always attached to the branch wire; one of its wires joins the main, so that a short circuit on the branch to the lead cut-out is impossible. In the case of chandeliers (or as we call them lustres), we put a second set of lead cut-outs at the place where the main couples are forked into the various branches, so as to give additional security.

"*Danger from Arc Lamps.*—We avoid the danger from the dropping of hot fragments of carbon in a two-fold manner. We place round the base of the lower carbon itself a small mica cup, and, in addition, we fix a closed ash-pan some small distance below the same to avoid the danger, when many lamps are burned in series, that if several lamps happen to be cut out of circuit, the arcs in the remaining lamps become inordinately long, and the flame from them dangerous. Each lamp should be provided with an equivalent resistance attached to the cut-out itself, consisting of four coils of galvanized wire. The cooling surface of this wire is so great that when the lamp is cut out, and the whole current is passed through these alternative resistances, it does not heat up to a serious extent, in fact, never beyond 150 degrees; furthermore, as in our system we never employ more than 400 volts of E.M.F., and if all the arcs were thrown into one lamp, the length of it would not be excessive, certainly not sufficient to give a fire risk."

THE SEWERAGE OF MEMPHIS, TENN., AFTER A TRIAL OF ONE YEAR.



ALTHOUGH we have given a good deal of our space to the discussion of the interesting question of the sewerage system of Memphis, we believe that there are still some points which our readers do not fully understand,—unless they have obtained their information from other sources than our columns: therefore it has seemed to us worth while to reprint a portion of a paper by Mr. W. C. Baldwin, C. E., which was read before the Engineers' Club, of Philadelphia, April 16, 1881.

Much has already been written on the details and methods employed in constructing the sewers of Memphis. Engineers and others

have commented upon and criticised the general features of the system, and have discussed the claims made by its author to originality in its application to towns and cities. We will not attempt to say anything about originality of design, for its author is well known to be fully able to speak for himself on this subject. Nor do we propose to advocate or defend the peculiar system of sewerage adopted in Memphis, but only to bring together such information as is available from observations made thus far, which may help the reader to form an opinion of his own. . . .

Memphis, although built on a bluff, does not overlook the river. One or two principal streets, at an elevation of forty or fifty feet above the water, are occupied by warehouses, and are used for commercial and other business purposes, while the rest of the city slopes rapidly away towards the interior.

Drainage is therefore from the Mississippi River and not towards it. About half a mile back from the bluff a small stream winds along through an alluvial bottom, into which it has cut its way to the underlying stratum of sand and gravel, leaving perpendicular banks from twelve to fifteen feet high on each side. The principal streets are bridged across this stream and rise again quite rapidly to the suburban and rural portion of the city beyond. The flow of this stream, called the Bayou Gayoso, is in a northerly direction, its banks become gradually lower, and the alluvial bed through which it flows spreads out to a greater width, until finally it discharges into the Wolf River, about half a mile above the junction of that stream with the Mississippi. Although the above description is somewhat voluminous the stream itself is quite insignificant at most times, but, as it lies wholly within the city, having the business and thickly-populated part on one side, with the suburban and rural on the other, it will be seen that, though small, it plays an important part in the sanitary condition of the city.

The Mississippi River, once or twice every year, and sometimes oftener, rises to a height of from fifteen to twenty feet above its ordinary level and, at such times, its waters back up into the small stream just described, overflowing its banks for a length of more than a mile within the city, submerging the low grounds in its vicinity and keeping them under water for weeks at a time. This stream serves a very good purpose in carrying off the rain-water from the streets and gutters, but it is evident that, if all the waste and sewage of the city were allowed to flow into it, the districts submerged would, on the subsidence of the water, be covered with slime and filth and, when exposed to the hot sun of that climate, would seriously impair the sanitary condition of the city. . . .

The most serious obstacle [in building the main collecting sewers] met with was the large underground cisterns used to secure the domestic supply of rain-water. The people of the South thoroughly understand and appreciate the art of preserving rain-water for drinking purposes, and when a cistern proves to be a good one, the owner is unwilling to give it up, as the water of a new cistern is sure to be bad for a year or more, and, from some unaccountable reason or other, is very likely to be worthless altogether. The value of good rain-water cisterns is still further enhanced when compared with the muddy water pumped directly from the river for the city supply. One may then very well imagine the disappointment and disgust felt by a party of engineers upon discovering one of these great cisterns directly in the way of a line carefully spied out after days of labor. . . .

Pipe sewers from ten to eighteen inches in diameter have been used for many years in some of our principal cities. More than fifty miles are now in successful operation in New York. These pipe sewers carry a fair-weather flow seldom exceeding five or eight per cent of their capacity, a pipe eighteen inches in diameter usually having not more than half an inch to perhaps two inches of water in it. Dependence has to be placed on the occasional action of storms to wash out any deposit left by this small daily flow, but when storms are long delayed, these deposits lie in the pipes and fester and decay for days and weeks, often being caked so hard and solid as to resist the action of the storm when it does come.

If there could be a storm every day or, in other words, if the pipes could be filled full of water every day, the agent on which we now depend for occasional relief would then be in constant operation. This is precisely the condition of the Memphis sewers: the flow at night is small, but in the middle of the day it amounts to a storm in pipes properly proportioned.

It seems reasonable to expect that whenever a pipe can be supplied with water enough daily to fill it half full, it will be kept clear without artificial means. Certainly it seems more likely than if filled only at the infrequent and irregular occurrence of storms which may be delayed for weeks or months.

In estimating the size of the pipes to be used for the Memphis sewers it was designed that the pipes should be filled half full by the ordinary mid-day flow, leaving the other half for contingencies and for future increased demands. This ratio was maintained by reducing the size of the pipes, toward the head of the system, in proportion to the diminished quantity of water to be carried off. But there is a practical limit beyond which the size of the pipes cannot be reduced: assuming the house drains to be four inches in diameter and providing for an enlargement at their junction with the public sewer, we are limited to a diameter of six inches as the smallest practical size for the public sewer. The usual rates of fall in Memphis are from six to twelve inches per hundred feet, sometimes more. The amount of water which a six-inch pipe will carry away at these rates of fall is known to be from four to six thousand gallons per hour, and the velocity of flow from one hundred to one hundred and fifty feet per minute. It would require a great many dwellings to furnish so large a supply of water as that. . . .

The Field flush-tank used in Memphis discharges 112 gallons of water in a little less than a minute directly into the head of each of the six-inch pipes, and the rush of this water has been distinctly observed for a distance of 1,400 feet or more, according to the rate of descent of the sewer.

It remains for experience to prove if this quantity of water is large enough to effectually wash out the pipes when discharged once or twice a day. The quantity of water required to supply the flush-tanks of the city is almost inappreciable for, while the sewers discharged about 2,000,000 gallons daily, the amount of water furnished by the flush-tanks would be but 30,000 gallons if all were emptied twice a day.

It remains also for experience to show if the tanks will work when let alone or when subjected to only a reasonable amount of attention. In this particular we have the experience of a little more than one year, and the officers in charge of the sewerage department of Memphis assert that their operation has been successful.

Very few tanks have caused any trouble, and these usually from defects in the castings or in setting them. Such defects were soon discovered and remedied. It would be very bold to assert that the flush-tanks used in Memphis are not susceptible of improvement. Some improvements have already been made and doubtless others will be from time to time, but the principle upon which they operate appears to be established and their success demonstrated. Nor is it likely that the size of the tanks has been correctly determined in every instance, but as a flush-tank costs no more than an ordinary inlet-basin or man-hole, and as only one is required for each line of sewer, their re-construction would be but a trifling matter if a different size should be found necessary.

Before leaving the subject of flush-tanks it may be well to allude to the mistaken impression in the minds of some that the whole system of sewers require to be flushed, or that there is any concert of action of the tanks with each other, or that their discharge need be regulated in any way to conform to each other.

A moment's reflection will show that, as they are situated only at the dead ends of the sewers they are necessarily widely apart: each one operates only upon the sewer immediately below it and hence is entirely independent of all the others.

There is nothing above it to be obstructed if it gets out of order, hence it can be taken up and repaired or replaced if need be without any interference with the rest of the system, and finally no part of the sewers needs flushing except the dead ends of the small pipes.

So much has already been written about the details of the construction of the Memphis sewers, the manner of laying the pipes and making house-connections, and many other matters interesting, but now grown familiar, that allusion will only be made incidentally to these things; but there are two considerations of importance which will be briefly noted. First, the ventilation of the sewers, and second, the flow of water in them. Both these subjects have now been tested sufficiently to furnish information of interest and value. The first of these subjects involves the question of sewer-gas. The other may enable us to ascertain how long a time sewage remains in the pipes before it is discharged into the river. The two considerations when taken together will enable us to estimate the possibility of the decomposition and decay of sewage while it remains beneath the streets of the city.

We have already considered the general plan of the sewerage system, and have seen that it consists first of a brick sewer, twenty inches in diameter and about 4,000 feet long, receiving the discharge of two pipe lines, one of fifteen inches diameter, and the other twelve inches.

Memphis is laid out on the rectangular system of streets and alleys. Sewers are laid in the alleys, and usually descend in direct lines and discharge into the mains within a distance of half a mile or less of their source. The whole system then may be said to consist of numerous branches, each of which is independent of all the others, is usually not more than half or three-quarters of a mile in length, and may properly be regarded as a small system of its own.

A description of the ventilation of one of these branches will apply equally well to any other, and hence to the whole sewerage system.

The ventilation is perfectly simple and equally effective. First, a fresh-air inlet is placed in each branch near its junction with the main sewer. Second, every house-drain is required by law to be, and in fact is, left open without any main-trap, and is extended up through the several floors of the house, by means of an iron soil-pipe four inches in diameter, passing through the roof and opening into the open air above. By this means a free circulation of air is secured at all times and no back-pressure or accumulation of foul gases or vapors is possible. There is not much movement of air through the sewers, but where any draught has been observed it has been from the street inward to the sewer, as proved by the fact that a burning piece of paper is drawn into and not blown out of the fresh-air inlets. Every house-drain is a ventilator almost as large as the sewer itself, and, as they all extend above the roofs of the houses, some terminate at a much greater elevation above the ground than others, hence the circulation of air is doubtless upward in some and downward in others. It is perhaps a matter of regret that more extended observations have not been made on this subject, but, on the other hand, the fact that nobody has been led to investigate the subject goes far to prove that the operation of the ventilation system is entirely satisfactory. In fact, the great number of ventilators afforded and their size, as compared to that of the sewer, render the accumulation and stagnation of foul air impossible.

As to the flow of water some observations have been made by passing floats through the sewers and noting the time required for them to go from one man-hole to another. By this means the velocity

in the mains has been ascertained to be about two and one-half feet per second. These have a grade of only two inches per hundred feet, but the branches are much steeper, having a fall usually about six inches in one hundred feet, hence we may conclude that the flow of water in them is more rapid than in the mains. From all available information we may safely estimate the average velocity throughout the city to be not less than two feet per second. On this subject the engineer in charge of the work, Major J. H. Humphreys, in a recent letter says that he should consider an estimate of two feet per second throughout the entire city a very safe estimate as, in his opinion, the flow in most places would be considerably greater. The main sewers are only about two miles in length. Assuming a velocity of two feet per second or one mile in three-quarters of an hour, water would traverse their entire length in an hour and a half. The branches are usually about one-half to three-quarters of a mile in length, and at the same velocity water would run through the longest in half an hour. Few, if any, houses connected with the Memphis sewers are more than two and a half miles distant from the outlet, while the vast majority are within considerably less than two miles, hence we may safely conclude that anything finding its way into any of the sewers would be discharged into the river within two hours or three at the most. This evidently allows but little time for sewage to become foul or offensive, especially as it is kept in constant motion and is exposed to fresh air all along the line, by the complete system of ventilation described above. This rapid flow not only renders the stagnation and putrefaction of water impossible during the short time it is allowed to remain in the sewers, but also prevents the collection of deposits of solid matter to any considerable extent, especially the gradual silting-in of fine matter; but occasionally foreign matter will find its way into a sewer, such as rags, bunches of cotton, pieces of brick or stone, etc., not readily carried along by the current and likely if neglected to form an obstruction. For the detection and removal of such things resort has been made to the now familiar device of passing hollow metallic balls, ["pills,"] through the pipes of a size only a little smaller than the pipes themselves. A single instance of the practical advantage of the device appears in the experiment on the twenty-inch brick sewer, where a ball fifteen inches in diameter went through without difficulty, but one having a diameter of seventeen inches was stopped by a mass of cement carelessly left in the sewer when it was built, and was thus detected. The engineer in charge of the works, Major J. H. Humphreys, in a recent letter says, that nothing more substantial has been found than rags and a sort of gelatinous deposit, which seems a fine silt bonded by what seems pulp, formed by the dissolution of paper. This is easily purged out by the use of the balls described above.

No pipes have ever been stopped by the gradual silting-in of solid matter. There have been a few instances of stoppage in six-inch pipes; these have almost invariably been caused by a bone or a splinter of wood, a little longer than the diameter of the pipe, getting crosswise and forming an obstruction. The entire number of such instances to July last was twenty-one, and the average cost of their removal was \$15 each, or a total of \$300 a year in thirty-two miles of sewers.

During the past winter [1880-1881] the weather in Memphis was exceptionally cold, and much water was allowed to run to waste to prevent freezing in the service-pipes. This caused some inconvenience by turning so large a quantity of water into the main sewers. The twenty-inch brick sewer was equal to the emergency and has never been filled full, but some of the twelve and fifteen inch pipes were surcharged for several weeks. This led to a series of observations and experiments. The pipes were opened in various places throughout the city by uncovering the T-branches left for that purpose, and were found to have a rapid, strong flow of water, and apparently clear from deposits. The six-inch branch sewers were found in every instance fully equal to the extraordinary demand, as none of them were filled more than half to three-fourths full. . . .

The large flow of water during the night when compared to the average and maximum flow may possibly suggest the suspicion that the sewers are carrying a constant flow of subsoil drainage finding an entrance through imperfect joints in the pipes. There are a good many reasons for concluding that the sewers do not carry subsoil drainage. The entire quantity of water discharged is too small for that, being less than one half the quantity pumped by the Water Company; and again the large minimum flow was maintained during the dry season when no subsoil water flowed out through the drainage tiles laid in the same trenches beside the sewer-pipes.

JACK-OF-ALL-TRADES.—We take the following from a Western paper, changing only the name of this universalist: "Crosby House, Q. X. Crosby, proprietor, is a good house for the traveller. Mr. Crosby deals in restaurant goods, is a fair dealer and is doing a good business. He is also an architect and deals in real estate, having some fine farming lands for sale. Is also agent for several good fire-insurance companies, making a specialty of the Phoenix."

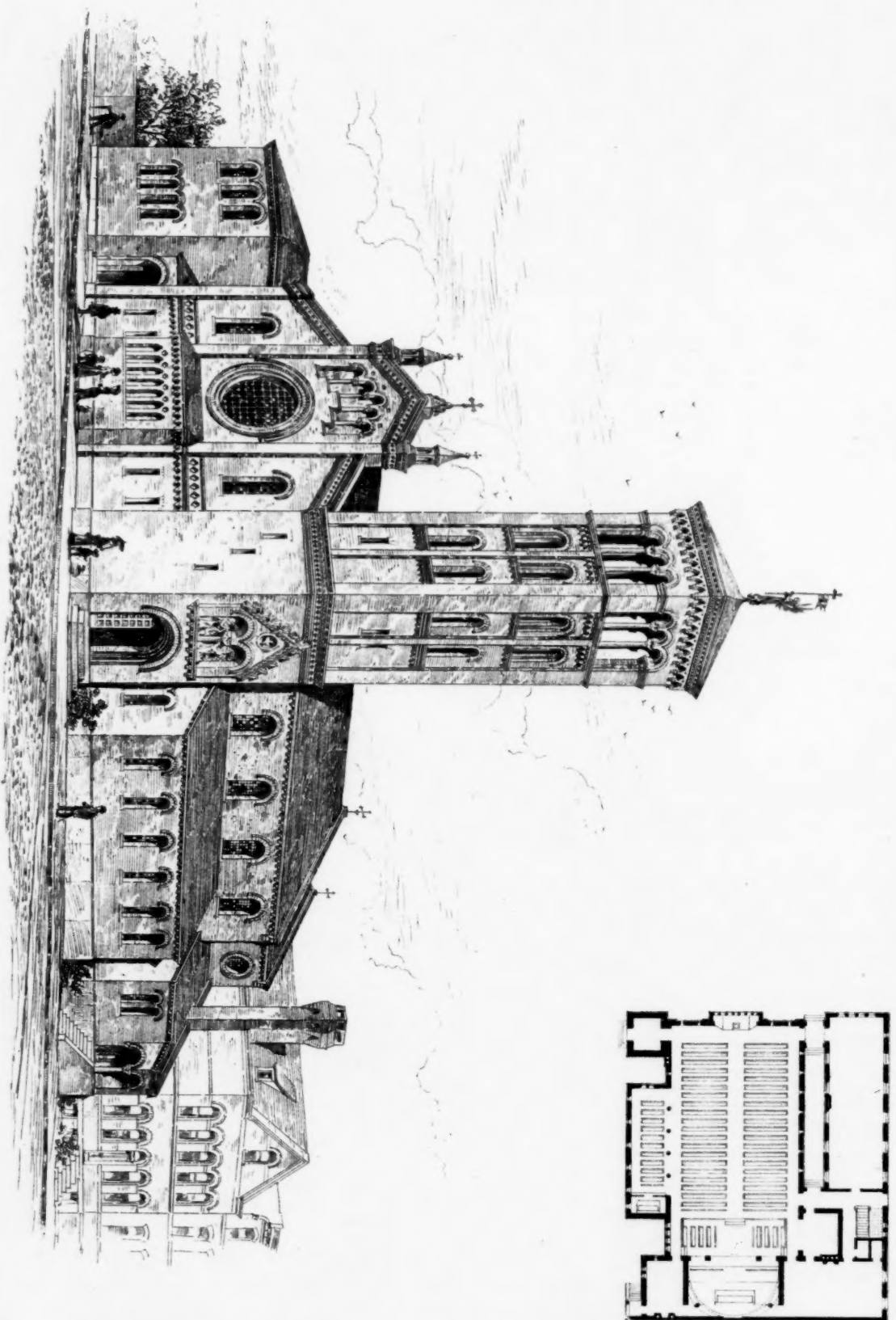
JAPANESE FIRE-LAWS.—A codification of Japanese laws has been lately published in French. The part relating to incendiarianism are rather Draconian, but, perhaps, necessary. Any person setting fire to a dwelling-house or building where persons are living is to be punished with death. Life imprisonment is the penalty for setting fire to other buildings. The death penalty is also provided for the setting on fire of boats, railroad cars, etc., when persons are in them.

CHARLES N. BURNS
ARCHITECT

Free Church of the Annunciation 12th & DIAMOND STS. PHILADELPHIA.

REV. H. G. BATTERSON D.D.
RECTOR

Engraving by J. H. Thompson & Co.



OUR FOREIGN EX- CHANGES No. 5



CLOCHER DE VERDELAIS (GIRONDE). — Architecte : M. H. DUBOIS.
Dessin de M. RIVALLAN.

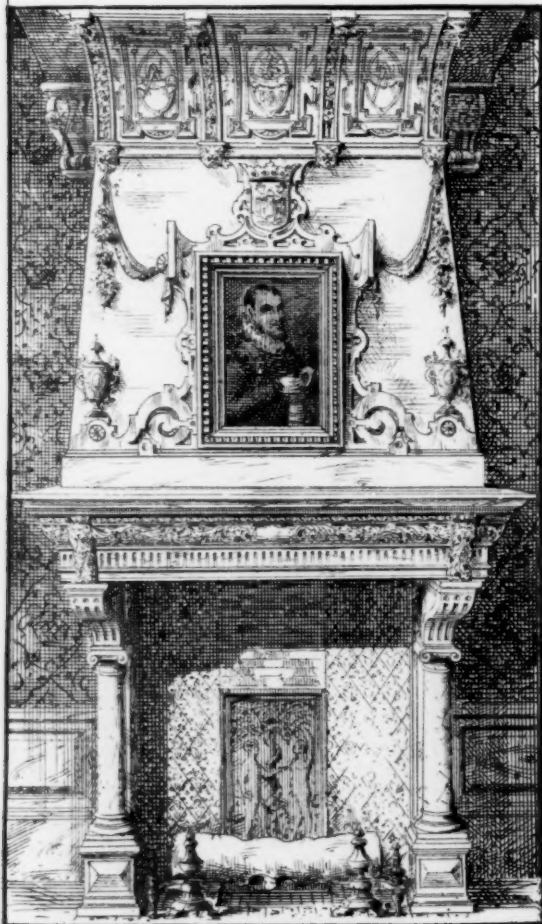
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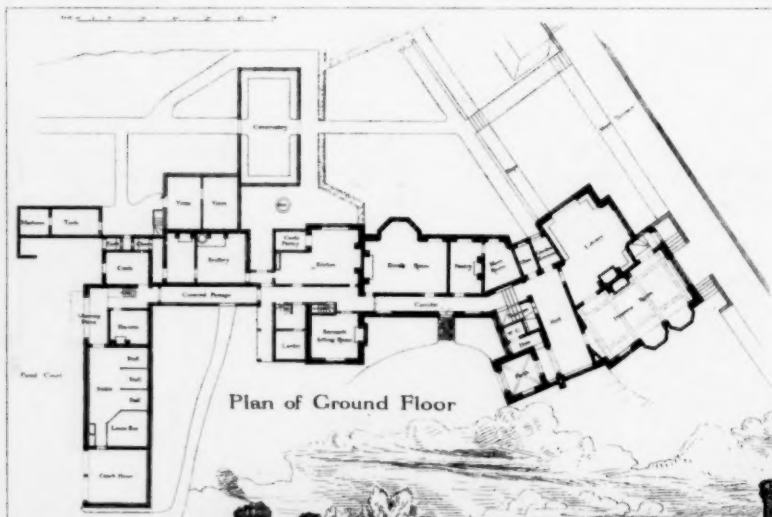
A. O. Watkins & Son
architects
Newport

The British Architect



Old Renaissance Chimney Piece. From the Museum, Palazzo-Mediceo.

THE CABINET MAKER



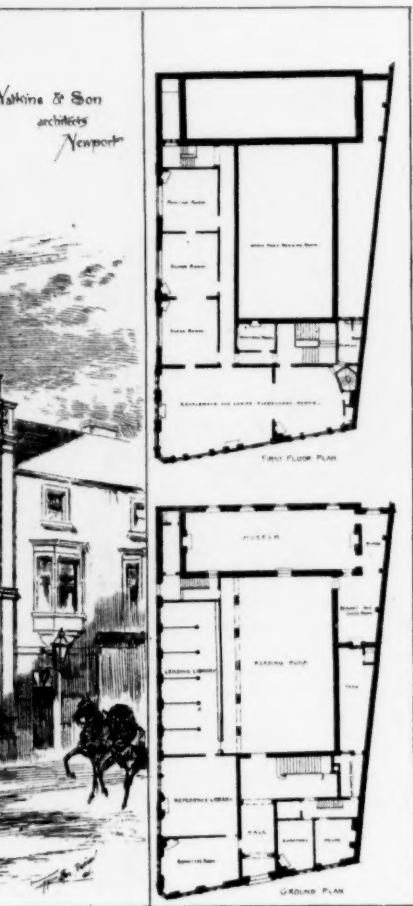
Artists

The Country
late Geo. Edmund
Holmdal



The Helotype Printing Co., 211 Tremont St., Boston.

WOOD & CO



The Builder

OLD CUSTOM-HOUSE AT KITZINGEN.



GESCHÄFTS- UND WOHNSHAUS DER „GERMANIA“
Deutsche Bauzeitung

Artists' Homes, No. 18.

The Country Residence of the
late Geo. Edmund Street, R.A., P.R.I.B.A.
Holmdale, Surrey.



Thomson & Co. Architects

THE BUILDING NEWS.



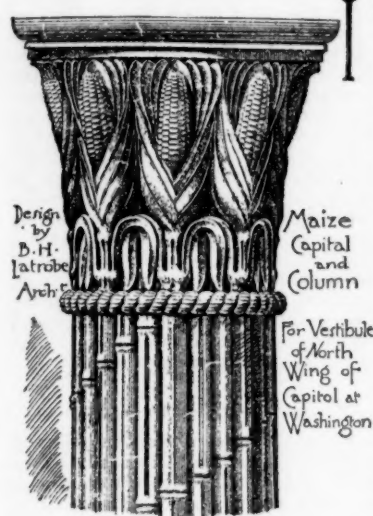
29 James's Branch Offices of the Alliance British & Foreign Life & Fire Assurance Company of Bartholomew Lane
W. Norman & P. H. W. Architects

Edw. Armitage

THE ILLUSTRATIONS.

OLD RENAISSANCE CHIMNEY-PIECE, FROM THE MUSEUM PLANTIN-MORETUS.

[From the Cabinet-Maker and Art Furnisher.]



In all the varied versions of the revival which occurred in Italy during the fifteenth and sixteenth centuries, perhaps the Flemish rendering is most akin to our own Elizabethan and Jacobean. It is somewhat humiliating to find that the peculiar phases of ornament cherished by some as essentially English were imported in the same way as the majority of our art ideas or treasures. The house from which we sketched this mantel presents a unique picture of the dwelling and business establishment of a Flemish patrician. Christopher Plantin, the founder of the house, became celebrated as a printer towards the close of the sixteenth century, and the business was carried on uninterruptedly until 1800 by his successors. The modern improvements in printing eventually rendered such an antiquated establishment out of date, and it was disused and going to decay until 1875, when the Belgian Government wisely purchased and restored it for the benefit of posterity. The dwelling-house portion is a most instructive lesson in Renaissance house-furnishing. Rich tapestry on the walls, fine oak carving and furniture, together with rare pictures, go to make up a residence of rare interest. The chimney-piece forming the subject of our pen-and-ink sketch is a capital type of an old Flemish fireplace. The tapered chimney-breast and strap-work decorations are very characteristic of the style. The carving is laid upon a flat groundwork, tinted sage-green, which throws up the rich brown of the oak. The decorated cove above is modelled in plaster, and contains the mottoes of the Plantin and Moretus families. In the lower portion marble is used for the columns, otherwise the rest of the mantel is in oak. Some quaint old tiles ornament the back of hearth, and they surround a curious cast-iron tablet representing Adam and Eve at the foot of an apple-tree.

ST. JAMES'S BRANCH OFFICES OF THE ALLIANCE ASSURANCE COMPANY, LONDON, ENGLAND. MR. R. NORMAN SHAW, ARCHITECT.

[From the Architect.]

This building is now in course of erection at the corner of Pall Mall and St. James's Streets. It comprises—(1) The branch offices of the Alliance Assurance Company, of Bartholomew Lane, E. C.; (2) two shops, with cellars, etc.; (3) wine vaults over the whole area of the site in a sub-basement, in communication with one of the shops; (4) four floors of residential chambers, with separate entrance on the ground-floor, with passenger and service lifts, each set of chambers consisting of sitting and bed room, pantry, larder, and water-closet; kitchen and servants' accommodation being arranged in the basement and attics. Mr. Shaw's drawing was exhibited at the Royal Academy.

CLOCHER DE VERDELAIS, GIRONDE, FRANCE. M. H. DUPHOT, ARCHITECT.

[From *La Semaine des Constructeurs*.]

The church tower at Verdelaïs is one of the last creations of M. Duphot; the work, however, is always young, for M. Duphot drew his inspiration from that smiling childhood of modern architecture which is styled the French Renaissance. The church at Verdelaïs has undergone more than one restoration, notably in the sixteenth century, when the sanctuary and the transepts were restored. In its turn the nave had to be rebuilt some years since, and the work was intrusted to M. Duphot, who preserved the sixteenth-century façade, but rebuilt the tower. The money procurable for the work was quite insufficient. But what of that: is it not the daily history in architectural undertakings? Two hundred thousand francs were necessary: sixty thousand only could be obtained. Make a beginning at any rate. "God will not abandon his children." The lower part of the tower, in the style of the transept and sanctuary, that is, of the first part of the sixteenth century, was built of stone; the upper portion was temporarily built of wood. The financiers of the enterprise had doubtless counted and recounted the cost, but they had not reckoned in the thunderbolt. But nevertheless this one day presented its claims for consideration by striking the tower and causing the burning of the wooden upper portions. The work had to be done over again. People now distrusted wood, so an appeal was once more made to the faithful, and by the aid of the consequent offerings good was achieved through evil, and the upper parts of the

tower were reconstructed in stone as shown. The crowning statue, however, is of beaten copper, and as one lesson in electric energy was sufficient, this was made the starting-point for a proper system of lightning-conductors.

OLD CUSTOM-HOUSE AT KITZINGEN.

[From the Builder.]

The great custom-house or bonding warehouse at Kitzingen is supposed to be a work of Bishop Julius as it has his arms upon it, and is quite in the usual style which he adopted in all his buildings. Julius was a liberal and magnificent prelate, and everything which he did was done well and thoroughly. The Grand Hospital and University which he founded in his episcopal city are amongst the noblest institutions in Europe. Architects had a lively time of it under this illustrious prince-bishop, who is said to have erected over three hundred churches, to say nothing of secular buildings. All the buildings carried out during his reign are remarkably ornamental, well constructed, and have a very marked character about them. The treatment of the staircase-turret and the gable of the custom-house at Kitzingen deserve attention from their originality. The window-heads, formed of inverted segments of circles, are not uncommon in Germany, though very rarely to be seen in this country. Examples, however, are to be found here and there in England. The windows and doorways of some of the old stone houses in Lancashire, for example, exhibit the same form.

NEW FREE LIBRARY BUILDING, NEWPORT, ENGLAND. MESSRS.

A. O. WATKINS, ARCHITECTS.

[From the *British Architect*.]

The foundation-stone of this building was laid by Mr. Jacob, the mayor, on September 13, 1881. The structure has a frontage of 108 feet to Bream Place, and of 66 feet to Dock Street. The elevations are faced with blue Pennant stone, and have freestone dressings. The ground is devoted to the library proper, which contains room for some 15,000 volumes; the upper floor is set apart for the science and art classes, and so arranged as to provide a continuous gallery for exhibitions. The rather acute angle of the site has been well disguised by the tourelle, which also provides a staircase to the science and art rooms. Mr. Geo. Thomas, of Pembroke and Newport, has contracted for the work, at £3,500.

THE LATE GEORGE EDMUND STREET'S COUNTRY HOUSE AT HOLM-DALE, SURREY.

[From the *Building News*.]

To-day we give a view and plan of the house which the late George Edmund Street, R. A., P. R. I. B. A., erected for himself at Holmdale, in Surrey, near Dorking. The perspective view illustrates the building as at first intended, that portion of the house on the right hand of the entrance-porch not being carried out as the view shows. The plan which we print is more correct, Mr. Street having extended the drawing-room and library beyond the porch and behind the tower, instead of at the side, as originally proposed. The house is half-timbered throughout, the ground-floor being built of a local sandstone with Horsham stone dressings, moulded bricks being used in the chimney-shafts. The oak work is left in its natural state throughout. The house is so disposed as to face S.E. and S., and its two main portions accordingly form an obtuse angle.

THE "GERMANIA," DRESDEN, GERMANY. MESSRS. KAYSER & VON GROSZHEIM, ARCHITECTS.

[From the *Deutsche Bauzeitung*.]

COURT-HOUSE, JAMESTOWN, DAKOTA T. MESSRS. H. C. KOCH & CO., ARCHITECTS, MILWAUKEE, WIS.

FREE CHURCH OF THE ANNUNCIATION, PHILADELPHIA, PA. MR. C. M. BURNS, JR., ARCHITECT, PHILADELPHIA, PA.

DUTCH HOUSE-BUILDING.—Life in Holland is much mitigated by moisture. The land is sand, but it is not for that reason dry as the desert, because, when a foundation of three feet depth is dug for a house, it is filled with water in the course of a few hours, and a solid basis is obtained only by driving in piles very close together. The king's palace, in Amsterdam, though built of marble, rests on 70,000 wooden piles, and it is as square and true as if it stood on a stone bed. This is matter for wonderment, because everywhere, especially in the old cities, the houses are all awry in all sorts of ways; many of them lean over towards the street in the most threatening manner for the foot-passengers; while others, perhaps, lean the other way, with equal threatening to the navigators; for, if there is a carriage-road on one side of a house, there is sure to be a canal on the other, although often the canal, and the drive, and the avenue run together, and the housewife goes to a ship or boat to buy fish or potatoes, instead of going to a shop or having them genteelly delivered from the tradesmen's carts. The land is literally full of water, and, should the useful windmills cease to turn, it would become one vast swamp, and on the polder lands all life would be soon destroyed by consuming inundations. It is, nevertheless, true that the people enjoy good health, and might perhaps enjoy better health if they did with a little less smoking and drinking.—*Gardener's Magazine*.

ITALIAN MORTAR.—The London *Builder* attributes the marvellous durability of mortar in Italy to the fact that the lime remains in a pit covered with water for two years before it is used, whereas in England lime is slaked and used the same day. Most building specifications even require new slaked lime.

LEGAL NOTES AND CASES.

Building Contract. — Acceptance of Work by Architect. — Good Faith of Architect.

Wrought Iron
Knocker
16th Cen:
French.



An action was brought in 1881, *Tetz vs. Butterfield*, in the Milwaukee Circuit Court, by a builder, to recover a balance due upon a contract for building a house, and for extra work thereon. The owner set up as a defence to the demand that the work was not done according to the specifications, but that it was performed unskillfully, and that inferior material was used in the building. The contract required good, substantial and workmanlike service, and that an architect, who was named, should inspect and accept the work before the owner should be bound. It was shown on the trial that this inspection and acceptance were made by the architect named. The owner offered evidence to show that the architect had not acted in good faith in his inspection and acceptance, but the offer was ruled out. The builder had a verdict, and judgment was entered thereon, and the owner appealed to the Supreme Court of Wisconsin, who in February reversed the judgment. Judge Taylor, in the opinion said: The material questions to be determined upon this appeal are — First, whether, under the contract, in the absence of any proof of fraud, mistake, or unfair dealing on the part of the architect, Davelaar, his acceptance of the work as completed in accordance with the terms of the contract would bind the defendant; and, second, whether the answer sets up facts which would entitle the defendant to show that, although there had been an acceptance of the work by the architect, such acceptance could be avoided by showing that it was not so accepted in good faith, but in fraud of the defendant's rights. Upon the first question a majority of the members of this court are of the opinion that if the good faith of the acceptance of the work by the architect is not impeached, it is binding on the defendant as to the kind of workmanship done and materials furnished by the plaintiff; that the last paragraph of the contract, which requires the work to be executed so as to fully carry out the design for said building as set forth, etc., "to the full and complete satisfaction of the architect, Davelaar, who is declared to be superintendent, and to the satisfaction of the owner," has no reference to the quality of the work done or the materials furnished; that this provision was put in the contract only for the purpose of preventing any change of the plan or design of the building without the consent and approval of the defendant; but as to all other matters the work was to be done to the satisfaction and acceptance of Davelaar, the architect, and when so done the plaintiff would have performed his contract, unless it be shown that there was fraud, mistake, or want of good faith on the part of the architect in accepting such work.

Upon the second point we are all of the opinion that the matters set out in the answer were sufficient to authorize the defendant to show there had been either fraud, collusion, or bad faith on the part of the architect in accepting the work; and that if he had been able to establish by his evidence the facts set out in his answer, such evidence would have tended to establish at least bad faith on the part of the architect, and so would have avoided the conclusive effect of his acceptance of the work. If the defendant could have shown by his evidence that the plaintiff put rotten materials in the floors and roof of said building, where the contract required him to put in good, sound timber and materials, or that he had done other things alleged in the answer in direct contravention of the requirements of the contract, and notwithstanding such facts the architect had accepted the work, after being informed of the facts by the defendant, and against his objection, it seems to us that it would be competent evidence to go to the jury on the question of the bad faith of the architect in accepting the same. In the case of *Hudson vs. McCartney*, 33 Wis. 331, the late Chief Justice Dixon says: "Neither do we think the case was one where the jury should have been permitted to go into evidence of the manner in which the work was executed for the purpose of impeaching the decision of the superintendent;" but, he adds, "if fraud in the arbiter can ever be established by proof that he refused to certify the execution of the

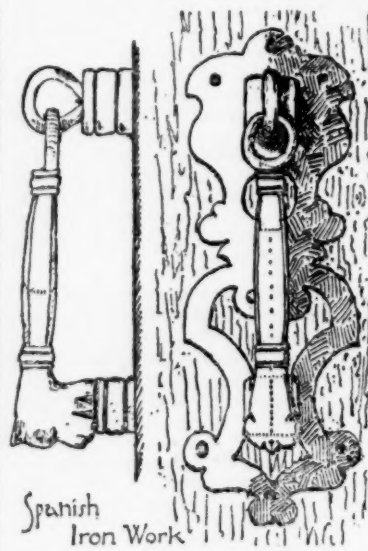
work when the same had been duly and properly performed, it can only be in those cases where the refusal is shown to have been grossly and palpably perverse, oppressive, and unjust; so much so that the inference of bad faith and dishonesty would at once arise when the facts are known." The evidence offered by the defendant in this case, if given, would have tended to prove such a state of facts as would, at least, have justified an inference of bad faith on the part of the architect in accepting the work. Knowingly accepting unsound and rotten materials, where the contract called for sound materials, would certainly tend to prove bad faith; and if the evidence had shown that he had permitted large quantities of such material to be used, when the contract called for sound and perfect materials, it would be almost conclusive evidence of that fact. Proof that a few pieces of imperfect material had been used, or that in some slight matters the workmanship had not been in strict accordance with the terms of the contract and specifications, would not be sufficient to avoid the acceptance of the work by the architect, nor establish bad faith on his part; but it seems to us, if the defendant had proved all the matters set out in his answer to their full extent, it would have shown such a want of faithfulness on the part of the architect as should render his acts ineffectual to bind the defendant. We think the court erred in excluding the evidence offered by the defendant, and for that error the judgment must be reversed."

H. E.

Injunction. — Damages. — Nuisance. — Mill-Dam. — Overflow.

Where the jury find that the rebuilding of a proposed mill and dam would overflow and render useless the plaintiff's land, and injure the health of his family, but that the mill would be a public convenience, pecuniary compensation is all that the plaintiff can claim, and an injunction against such erection will be refused, upon the principle that private advantage must yield to public benefit. 2 Dev. Eq. 38. *Daughy vs. Warren*, Supreme Court of North Carolina, October Term, 1881.

THE DELHI OF THE MOGULS.



Spanish
Iron Work

If Agra be the Rome of Hindustan, Delhi may fairly claim to be its Constantinople, and to share with Grenada the glory of one of the rarest distinctions in the world, that of a civilized Mohammedan empire. In days when Paris was confined to an island in the Seine, and when the future site of New York was a hunting-ground of painted savages, vast armies were pouring from the gates of Delhi and princely embassies bowing before her sovereigns. Neither the long-continued ravages of barbarism nor the organized destructiveness of civilization have sufficed to strip the great Mogul city of all the splendor that she once possessed as the capital

of the ancient empire of India. But her glory has been dearly bought: with the single exception of Jerusalem, no spot on earth has witnessed a greater amount of human misery. War, famine, pestilence, rebellion, murder, treason, massacre, have run riot within her walls again and again. The awful butchery by which Timour exterminated her entire population in 1400 was paralleled by a yet more fatal day three centuries later, when "the streets flowed as though it rained" with the blood of those who fell beneath the destroying sword of Nadir Shah. Both tragedies have been eclipsed in our own time by the multiplied horrors of 1857, and the unsparing havoc wherewith those horrors were avenged, and upon all the beauty and glory and historic magnificence of Delhi

"Lies red and rank the stain
Which all the waters of the sea
Can ne'er wash out again."

At the point where the Jumna makes its great sweep around the city the past and present of Delhi seem to meet. The ancient river is spanned by a smart new railway-bridge, and three trains come rattling and hissing every day between the mighty red battlements of the famous citadel where once the Great Mogul, in the fullness of his pride and power, gave a half-disdainful audience to two envoys "from a remote country called England." The destroying hand of officialism has swept away all the noble buildings that once crowded this part of the town, to leave room for modern barracks; but beyond the wide waste of open ground that encircles the fort rises like a rocky island in the midst of the sea a mountain of dark-red sand stone, above which the three great domes of white marble that

crown it stand out in the last rays of the setting sun like peaks of eternal snow.

This is the far-famed "Jumma Musjid," (Cathedral Mosque) which is to Delhi what the Capitol is to Washington, or St. Peter's to Rome. Around its base clusters of small shops and booths have grown up in obedience to that business-like instinct whereby the Oriental, superstitious though he is, makes trade go hand in hand with religion in a way not wholly unknown in more civilized climes. The wrangling of the bargainers below mingles with the devotions of the worshippers above, and the pious Moslem descends from his prayers and prostrations in front of the inner sanctuary, to enter with renewed zest upon the secular duty of cheating some brother Moslem out of the third or fourth part of a penny. Though possessing neither the delicate beauty of the Pearl Mosque at Agra, nor that matchless union of solid strength with graceful lightness which has made the Taj Mahal one of the wonders of the world, the Jumma Musjid has a full measure of such grandeur as an imposing display of height and vastness can suffice to bestow. Its three great gateways of red sandstone are approached by colossal stairs of the same material, so high that from the uppermost step one looks down upon the city as if from the summit of a hill; but when you look upward you see the massive minarets towering scores of feet above you, blotting the bright summer sky with their gaunt, dark-red outline, — a fit emblem, indeed, of the barren and gloomy fanaticism which produced them.

In the centre of the great quadrangle within, upon which a whole regiment could manoeuvre with ease, stands the inevitable marble tank, and along the west side of the square extends the actual "mosque" itself, surmounted by its three massive white cupolas. Its front is partly faced with white marble, and along the cornice are the compartments, each ten feet long by two and a half broad, which are inlaid with black marble inscriptions in the Niski character, giving an account of the sums spent on the building. The interior is paved throughout with slabs of white marble, three feet long by eighteen inches wide, each decorated with a black border, so as to give the whole work that checkered aspect in which Eastern architects delight. Three sides of the quadrangle are flanked by colonnades of red sandstone, each angle being crowned with an octagonal pavilion of white marble, supported on sandstone columns. Altogether, the mighty mass has a grand and imposing effect, worthy of the great Emperor who might seem to have typified the solid strength of his power by the Jumma Musjid, while embodying its outward splendor in the Taj Mahal.

But picturesque and striking as all the sights of the town itself are to those who have eyes to see them as they should be seen, you have not seen Delhi till you have driven out through the Ajmere Gate and over the great plain beyond to the spot where, eleven miles from the city, towers against the sky the solitary pinnacle of the glorious Kutub Minar. The drive thither is a kind of epitome of Oriental life in all its varied forms. First comes the city life as represented by the maze of narrow, dirty, tortuous lanes, through which you rattle at such a headlong pace, with your swarthy, turbaned driver yelling like a madman, and your bare-limbed *sais* (groom) running just in front of the horses' heads and shouting to every one to get out of the way of the great Sahib. Here, in the nineteenth century, you see all the characteristic features of the ninth — the camel slouching past under his load; the white-robed driver guiding his richly-harnessed elephant; the half-clad pilgrim lying asleep in the dust with his upturned face black with flies; the hideous leper whining for alms with a lipless mouth and extending a fingerless hand to receive it; the native beauty going past, invisible in her curtained litter, borne on the shoulders of four gaunt, dusky, sinewy fellows in cotton drawers and white turbans.

To this succeeds, as you pass through the deep, low-browed archway, whose cool shade contrasts so pleasantly with the blistering glare outside, the quiet, old-world, rustic life which shows to the Londoner or the New Yorker the same unchanging panorama that it showed ages ago to Vasco da Gama and Alphonse d'Albuquerque. Amid tender rice or wavy corn, the dusky half-stripped husbandman may be seen at work with the same rude tools wherewith his forefathers tilled the earth in the days of the Roman Empire. Up and down the inclined path leading to the well, the hump-necked Brahmin oxen toil under their heavy wooden harness, raising or letting down the buckets attached to the clumsy frame-work. The little nest of bamboo and dried grass which has been the Hindu peasant's "model cottage" for 20 centuries still looks out from beneath the shadow of a huge over-arching banyan, amid the pillar-like roots of which half-a-dozen little brown imps, with no clothing but their matted hair, are having a game of play. A cloud of dust, rolling along the high road, overhangs the following march of a herd of curly-horned, fierce-eyed buffaloes, followed by a herdsman as black and wild-looking as themselves. On the bank of the tiny stream over which the huge banner-like leaves of the palms bend lovingly, one villager is scouring his brass *lota*, (water-pot), and another is cooking his scanty meal in the hot ashes of a half-quenched fire. In the gloomy gateway of the ancient tomb, whose vast gray dome rises above the surrounding trees, a dirty *fakir* (begging pilgrim) is mumbling his prayers, and a swarthy wagoner is lying face downward fast asleep upon the sacks that load his tray-like cart, while the two big-patient, heavy-looking bullocks which draw it plod methodically onward, as if from sheer force of habit.

Suddenly there starts up on one side of the broad, white dusty

road a massive wall of dark-gray stone, through the huge archway of which one catches a passing glimpse of one of those vast paved courts, with a marble-edged tank in the centre, whose form so universal a feature of Hindu scenery. Surely this cannot be the Kutub Minar already? No, it is only the tomb of Suftar Jung, a now almost forgotten Asiatic worthy, who would doubtless have been terribly shocked at the idea of his sacred mausoleum being turned into a place for "Western infidels" to change horses. But the horses are brought out and put to so quickly that there is little time for moralizing, and a new turn is soon given to your thoughts by the sight of a slender pillar of vast height, standing boldly up far in the distance. This is your first glimpse of the Kutub itself, and the whole surrounding country now begins to assume an aspect which harmonizes well with the dreary grandeur of this great tombstone of the dead past. Ruins everywhere — the ruins of Mogul sepulchres, Brahmin temples, Pathan cities, Hindu forts and villages. Gaping rifts half choked with rubbish, shattered archways, crumbling towers, domes hacked through and through with countless holes, walls fallen away, all save one solitary turret, which stands out gaunt and grim above the surrounding wreck, like the last survivor of a deadly battle, haunt you mile after mile, as if the whole land were one great sepulchre of buried empires.

But little by little the shadowy outline of the distant monument grows clearer and more real, walls and towers higher and bolder than any hitherto seen begin to assert themselves above the sea of vegetation around, and at length rattling through a gateway huge and massive enough for some giant fortress of the ancient world, you pull up under the shade of a mighty tree in the centre of the court-yard within and leap out in front of the neat little white-fronted refreshment room which has nestled itself at the foot of the Kutub like a mushroom at the root of a palm royal. The first thing you do is to order breakfast, a shockingly unromantic proceeding, no doubt, in the presence of these primeval giants, but in this unesthetic age one may feel hungry even when face to face with the choicest developments of nature or art. But this once over, the next hour is romance in its highest forms — a stride backward across a gulf of nine centuries, among the traditions and monuments of a dynasty which had won a place in history when Tartar chiefs were lordling it over Russia and Greek emperors reigning in Constantinople, and which vanished from the earth just when the first European colonists were beginning to flock over sea to "the newly-discovered land called America."

Foremost among these grand memorials is the Kutub Minar (Kutub's Pillar) itself, which, erected by Altumsh, the second Afghan sovereign of India, to the glory of his great predecessor, Kutub-ul-Din, has likewise perpetuated his own. It is, indeed, a monument well worthy of the two great men who rose from a Tartar-slave market to the mightiest throne of the world. Story beyond story, like a giant telescope set upon end, the fluted sides of the splendid column taper upward to a seemingly-endless height, with the ornamental bands and inscriptions that commemorate the achievements of the two emperors clinging around it like garlands. The slow decay of years has not been its only assailant: the lightning from above, the earthquake from below, the fury of the vindictive Persian, and the bigoted Mogul have all striven to overthrow it, and the marks of repair visible in the fifth or highest story show that their blows have not been dealt wholly in vain. But scarred and maimed as he has been, the grand old veteran still rears his towering height against the sky as proudly as ever, like some giant of the elder world defying the thunderbolt which had laid low his meaner brethren.

All around the Minar, within the gateway beyond which Lamin the Inaam sleeps behind his screens of perforated marble, extends a wide court, surrounded by a spacious colonnade. The almost Egyptian simplicity of the latter, consisting merely of a range of low pillars supporting a massive horizontal layer of flat stones, without vaulting or ornamentation of any kind, is at first sight rather imposing; but you are not long in noticing something unusual in the pillars themselves: some have a complete capital in the centre, as if one column had been set upon another. Not a few show traces of carving which abruptly disappear or give place to an utterly different pattern. Then you begin to observe here and there the images of Hindu gods, a novel feature indeed in a Mussulman mosque. Suddenly there flashes upon you the recollection of the legend that marks this spot as the proposed site of a colossal "Musjid" (mosque) pieced together from the ruins of those ancient Brahmin temples which the conquerors overthrew. "Colossal" indeed must have been the building in which the gigantic Minar itself, the highest pillar in the world, would have formed merely a single minaret. But the mighty plan perished with its originator, and the great structure stands unfinished forevermore.

In the midst of the great court, standing erect above all this patchwork as if in scorn, rises the famous "Iron Pillar," sole relic of that primeval Hindu capital to which the Pathan Delhi of the thirteenth century and the Mogul Delhi of the sixteenth are mere things of yesterday. The old priest who shows you over the ruins will tell you under his breath how Rajah Pithora, the last Hindu ruler of India, planted this pillar by the counsel of the Brahmins to secure the lasting duration of his dynasty, and how, when he impiously uprooted it years later it was found to be covered with blood, in ominous prophecy of the ruin which speedily overwhelmed king and kingdom. Midway up the slender iron shaft is still seen the dint of the cannon-shot wherewith it was vainly assailed in 1737 by

Nadir Shah, the man who rose from the captain of a robber-gang into the lord of all lands from the Tigris to the Ganges. But the insult was speedily and surely avenged. Barely eight years later the mid-day sun looked down on a band of murderers stealing upon the troubled sleep of him "whose footstep shook the world," and as an old Urdu poet has said:

"At noon he sat the lord of Asia's throne,
At eve his corpse lay headless and unknown;
Ere one revolving sun thro' heaven had shone
Both Nadir's self and Nadir's host were gone."

Correspondence of the New York Times.

THE CONGRESSIONAL LIBRARY.

WASHINGTON, D. C., May 21, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Sirs,—I see in your issue for May 20 that in your leading editorial you fall into an uninformed correspondent's error, and give the impression that the designs for the new Congressional Library building were not submitted to public competition, but were prepared in a star chamber way by obscure and perhaps incompetent favorites of those having the matter in charge.

You speak of the "fame" of winning a great architectural competition; but that fame has so short endurance that though but eight years since, in just such a competition, the authors of the present design were victors, the only architectural paper in the United States appears ignorant of the fact, and treats them as obscure and unworthy persons, when such buildings as the Georgetown University stand enduring monuments of their ability.

Messrs. J. L. Smithmeyer and Paul J. Pelz, the authors of the designs in question, have proved themselves the peers of any architect in the United States, and I know them professionally as upright gentlemen whose nature and professional pride alike prevent their doing anything beneath the first architect in the land, or profiting by "star chamber" or secret ways of getting their designs adopted.

The designs in question are the results of eight years of study and development of the plan victorious in competition, and a committee of Congress has had the subject in charge for ten years, and has considered not only this plan, but numbers of others; in fact all that were offered, and if any one is ignorant of these facts, it must be on account of that provincialism that imagines the whole life of the nation is lived in one or two cities.

The rewards of honest effort in the architectural profession are scanty, and dearest of them all to a true architect is his honest fame; and I am sure you will take pleasure in doing justice to those who are ornaments to the profession.

Respectfully yours, CHAUNCEY N. DUTTON, Architect.

[MR. CHAUNCEY N. DUTTON makes most extraordinary inferences from our innocent remarks about the design for the National Library. If Messrs. Smithmeyer & Pelz can possibly find the remotest suggestion on our part that we regard them as "obscure and unworthy persons," or "incompetent favorites" of anybody, we should be glad to know it, that we can disclaim any such sentiments, and assure them that their "honest fame" will be quite safe in our hands. We are sorry to have their names dragged into questions of fact which do not affect their professional reputation in the least, and hope that those who favor us with communications on the subject of public competitions in general, and national libraries in particular, will be good enough to avoid personalities in the discussion. As to Mr. Dutton's assertions about our "apparent provincialism" and "ignorance of facts," perhaps we know more about architectural matters in Washington than he supposes; but we are always glad of all the information to be had on any subject of interest, and would be pleased to have him give us the particulars of that competition of eight years since, in which the author of the present accepted design for the Library was victorious, as well as some account of the numerous rival plans which have been considered by the Congressional Committee within the last few years, with the circumstances of the manner in which they were invited.—EDS. AMERICAN ARCHITECT.]

"THE POCKET VIGNOLA."

NEWPORT, R. I., May 19, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I am desirous of obtaining a copy of "The Architectural Director, or Pocket Vignola," illustrated. This work, which is scarce and seems to be but little known, was written by John Billington, of the Royal Academy of Architecture of Paris, and published by John Richardson and Josiah Taylor, London, 1829.

Perhaps some of the readers of the *American Architect* may be able to assist me in my search. Any information on the subject will be appreciated.

Very truly yours,

GEO. C. MASON, JR.

GREEN-HOUSES.

ALBANY, N. Y., May 11, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Gentlemen,—Have you or do you know of any publications about the construction of green-houses? I wish to purchase any such you may recommend. Also, any publication you may know of about the making of ensilage silos, etc. This last please send the name, etc., before I purchase. Yours truly,

FRANKLIN H. JAMES, Architect.

[HORTICULTURAL Buildings, by F. A. Fawkes, London, B. T. Botsford, 52 High Holborn; Artistic Conservatories, same publisher. H. R. Stevens on Ensilage can probably be obtained of A. Williams & Co., Boston, or any other bookseller who makes a specialty of technical books.—EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS.

ELECTRIC-LIGHT TOWERS FOR NEW YORK HARBOR.—It is said that two skeleton iron towers from 150 to 200 feet high are to be erected at Hell Gate,—one on Negro Head, Ward's Island; the other at Hallett's Point. On each tower will be placed ten electric-lights of 20,000 candle-power. The cost of carbon consumed on each tower will be 20 cents an hour; the work to be done by one 20-horse-power engine. The House Committee on Commerce has decided to report a bill for an appropriation to this end, and as soon as the bill passes the House, work will begin.

THE NAPOLEONIC STABLES AT PARIS.—The appurtenances of the old imperial stables in Paris were announced a fortnight ago for sale at auction. Among them are troughs of marble and stalls of carved oak. An embargo was laid upon these articles after the fall of the empire, and it is only recently that the ex-Empress was given possession of them after an inquiry by the Government. Among the carriages is one that was damaged by a bombshell in the Orsini attempt at assassination, the Emperor and Empress having ridden in it to the Opera-House on that occasion.

AN OLD BELL.—The bell hanging in the belfry of the Episcopal church at Ellicottville, N. Y., one of the oldest in America, has a long history. It was cast in Moscow in 1703, and was one of a chime of bells in a cathedral in that city. The cathedral was burned by Napoleon in 1811. Several years afterwards the bell was sold in a lot of old metal which became ballast for a vessel sailing to New York without cargo. Andrew Meneely, of Troy, discovered it in a scrap pile in New York years afterward. He bought it, and for a long time it was kept by him at his bell foundry in Troy as a curiosity. In 1831 a resident at Ellicottville went to Troy to buy a bell for the Episcopal church, which had just been completed. He induced the foundryman to sell him the old Russian bell. It has been in use there ever since.—*Building World.*

DISCOVERY OF ANCIENT RUINS IN NEW MEXICO.—The Boston *Journal* reports that important discoveries of the largest ancient ruins yet found on this continent, which extend for a distance of fifteen miles up and down the banks of the Las Animas River, about forty miles from Durango, in Rio Grande County, N. M., have recently been made. Post-Office Inspector Cameron, who visited these ruins lately, believes the ancient villages were occupied by the Mogui Indians, and not by the Aztecs, as is generally supposed. He speaks of discovering a stone ruin, 400' x 450', which at one time, evidently, was three stories high. The walls are five feet thick. There were about one hundred and fifty rooms in the building, of ten feet square each. An enterprising Yankee, who has pre-empted as Government land the ground on which the ruins stand, has been doing a fine business selling relics to visitors. A discovery thought important by the gentlemen of the Bureau of Ethnology was lately made there of thirteen human skeletons in a subterranean chamber of the building mentioned. This had evidently been used as a burial-vault. They were wrapped up carefully in a kind of coarse cloth, and bore a close resemblance to Egyptian mummies. This cloth was of cotton, and woven with as much skill as if done at the present day, which is considered not the least interesting part of the discovery. The skeletons were perfectly preserved and clean. They were unmistakably those of Indians. A quantity of pottery of the best make was also found in this tomb.

"THE LONGEST WAY 'ROUND."—"The longest way 'round is the shortest way home," is an old and somewhat obscure saying, often used to justify a long journey to cover a small distance. The following from an Indian paper very well illustrates one of the cases in which the proverb is applicable: "During the repairs of the telegraph cable near Bombay, the steamers *Chiltern* and *Great Northern* were about half a mile apart, the former having hold of a shore-end cable, and so was in telegraphic communication with Bombay, the latter having hold of the sea end, and so was in telegraphic communication with Aden. The *Chiltern* desired the *Great Northern* to splice on to the cable end held by the latter and pay out three-fourths of a mile of cable, and this was communicated by wire from the test-room of the *Chiltern*, passing through all the coils of cable in her hold and on to Bombay, whence it was sent on to Aden, and back from Aden to the *Great Northern*. Thus, as a speedy means of sending a message one half mile, it was forwarded by a route between 3,000 and 4,000 miles long. The following morning, when the vessels were within one-fourth mile of each other, communications passed between them constantly in the same way."

BLACKSMITHING IN GERMANY.—In the interior towns and villages of Germany it has long been the custom for the farmer to purchase the iron for tires and horse-shoes, and in some instances, when having a new wagon built, to purchase all iron entering into the same, the length of every piece being furnished by the smith. One part of the contract is that the smith shall return to the farmer all ends and cuttings from the iron, and it frequently occurs that the farmer remains at the shop until the iron is all cut up, in order that the smith shall not indulge in too much cabbage. Each smith-shop has what is termed the hell, and in cutting off a set of tires, if the farmer is not present, the largest half of the end cut off finds its way to the hell, the duty of putting it there devolving upon the youngest apprentice. From this always plentiful store the smith furnishes his material for the manufacture of bolts, horse-shoes, etc., for transient customers. The horse-shoeing part is also a feature: the farmer will bring with him the end of some piece of iron or tire to make the shoes, or perhaps a dozen or more old horse-shoes to be converted into new ones. The farmer must blow the bellows until the work is forged or the shoes all made, and must then hold up the horse's foot while the shoes are being driven on or taken off, and invariably carries the old shoes home with him, unless he prefers to give the old shoes in payment for the apprentice's service in holding up the feet.—*Apprentice's Journal.*

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.]

257,840. PLASTERED WALL.—August H. Becker, St. Louis, Mo.
257,845. ALARM-LOCK.—Isaac N. Buck, Elgin, Ill.
257,848. AIR-GAS MACHINE.—James P. Clifford, Brooklyn, N. Y.
257,853. AIR VALVE FOR WATER-PIPES.—John L. Dibble, Brooklyn, N. Y.
257,867. FIRE-ESCAPE.—James C. Hendricks, Indianapolis, Ind.
257,870. CAVITY-PLANE.—Frank A. Humphrey, Worcester, Mass.
257,881. ROOFING-PAINT.—Allen McDonnell, Rulo, Neb.
257,889-891. LIGHTNING-ROD COUPLING.—Theodore H. Patee, Greencastle, Ind.
257,906. FEEDING AIR TO FURNACES.—George B. N. Tower, Boston, Mass.
257,906. WASTE-PIPE TRAP.—Edward A. Tuttle, New York, N. Y.
257,910. DOOR-SPRING.—John W. Weddel, Freeport, Ill.
257,920. SAW-HANDLE.—William Clemson, Midletown, N. Y.
257,943. ELEVATOR.—Philip Hinkle, San Francisco, Cal.
257,978. SAW-HANDLE.—Christopher W. Robinson, Saegertown, Pa.
257,981. BENCH-PLANE.—Solon R. Rust, Pine Meadow, Conn.
257,986. DOOR-CHECK.—Henry Skerrett, Sparbrook, near Birmingham, County of Warwick, England.
258,006. EARTH-CLOSET.—Henry J. Behrens, New York, N. Y.
258,007. POCKET DOOR-FASTENING.—Arthur Belding, Chicago, Ill.
258,011. HOISTING APPARATUS FOR ELEVATORS.—Susan A. Bond, Brooklyn, N. Y.
258,017. AIR-HEATING FURNACE.—Volusian Bude, East Saginaw, Mich.
258,026. SASH-FASTENER.—John A. Curtin, New Britain, Conn.
258,028. FIRE-ESCAPE.—Helen M. Decker, New York, N. Y.
258,050.—COMPOSITION FOR STAINING WOOD.—Anton F. Gloger, Jr., and Joseph P. Gloger, Columbus, Tex.
258,066. MEANS FOR UNLOCKING AND OPENING SHUTTERS.—Jacob C. Horton, New York, N. Y.
258,067. BENCH-DOG.—William M. Howland and James E. Howland, Topsham, Me.
258,073.—ELEVATOR AND DUMB-WAITER.—John Johnston, New York, N. Y.
258,078. FOUNDATION-CURB FOR WELLS.—George A. Kingsland, Brooklyn, N. Y.
258,083. COMBINED WEATHER-STRIP AND DOOR-SPRING.—Anderson Lathrop, Van Hornesville, N. Y.
258,127. DOOR-CHECK.—John E. Rosenthal, St. Louis, Mo.
258,137. WRENCH.—Joseph Schwegler, Buffalo, N. Y.
258,144. WATER-CLOSET.—Robert D. O. Smith, Washington, D. C.
10,113 (Reissue). HOT-AIR FURNACE.—John F. Pease, Syracuse, N. Y.

SUMMARY OF THE WEEK.

Austin, Tex.

UNIVERSITY.—One wing of the State University is to be let soon; cost, \$50,000; cost of whole building, about \$150,000; Mr. F. E. Ruffini, architect.
ASYLUMS.—Addition to "State Lunatic Asylum," brick building; cost about \$100,000; John McDonald, contractor; Col. E. E. Meyers and J. N. Preston, architects; Capt. Wilson, superintendent.
Addition to blind asylum; cost, \$2,000.
ENGINE-HOUSE.—For Washington Steam Fire-Engine Co., two-sty brick, 24' x 54'; cost, \$2,500; F. E. Ruffini, architect.
STORES.—On Congress Ave. are being built for Hon. John Hancock, two-sty brick, with cut stone front; cost, \$25,000.
Brick store with stone front, for Mr. Lewis Hancock, two-sty, 55' x 160'; J. N. Preston, architect.
MASOIC TEMPLE.—Mr. F. E. Ruffini is preparing plans; cost about \$15,000.
HOUSES.—Dr. M. Salm is building a residence; cost about \$1,500; F. E. Ruffini, architect.
CAPITOL.—The excavation for the new capitol is not yet completed.

Baltimore.

JOHNS HOPKINS UNIVERSITY.—Biological and Chemical Laboratories; the former, 53' x 84', three stories and basement, and facing Eutaw St.; the latter, an addition to present laboratory, 32' x 53', two stories; the buildings are to be constructed of brick, with Cheat River stone and terra-cotta finish, and will cost \$110,000; Mr. Chas. L. Carson, architect.
BUILDING PERMITS.—Since our last report, thirty-two permits have been granted, of which the more important are as follows:
St. George's Memorial Church, (Episcopal), stone church building, n e cor. Division and Presstman Sts.
Maryland Infirmary, three-sty brick building, in rear of s w cor. Lombard and Green Sts.
L. H. Robinson, three-sty brick building, Mount St., n of Harlem Ave.

D. C. Howell, 7 three-sty brick buildings, stone fronts, John St., bet. Dolphin and Lanvale Sts.
John Kling, 4 two-sty brick buildings, Chappel St., bet. John and Hoffman Sts.
Peter Hagan, three-sty brick building, Ann St., bet. Pratt and Gough Sts.
John Ward, three-sty brick building, s e cor. Chase and Valley Sts.
Sarah T. Foutz, four-sty brick building, in rear of No. 124 Harlem Ave., bet. Calhoun and Stricker Sts.
Lawrence Miller, two-sty brick building, Vine Alley, bet. Schroeder and Carlton Sts.
Fred. Behrens, two-sty brick building, Little Church St.
Thos. Dwyer, two-sty brick building, Poultney St., bet. Light St. and James Alley.
Gottlieb Reimbal, three-sty brick building, Bond St., bet. Pratt and Lombard Sts.
Geo. W. Hopper, 8 three-sty brick buildings, Mount St., n of Lanvale St.
Geo. W. Hopper, 2 three-sty brick buildings, n e cor. Lafayette Ave. and Norris Alley.
Geo. W. Hopper, 8 two-sty and basement brick buildings, Norris Alley, n of Lafayette Ave.
Becker Bros. & Son, two-sty brick shop, Frederick St., bet. Gay St. and Aetna Alley.

Boston.

BUILDING PERMITS.—Brick.—South St., Nos. 42-44, cor. Waverly Pl., Ward 12, for James S. Stone, mercantile, 27' 8" x 74', four-sty; Geo. A. Pope, builder.
N. St., Nos. 145-147, Ward 14, for Henry B. Stratton, 2 dwells., 20' x 48', three-sty; Henry B. Stratton, builder.
Wood.—Ashmont St., rear of, near Carruth St., Ward 24, for Chas. H. Dodge, stable, 24' x 38', two-sty; Beal & Spear, builders.
Warren St., No. 630, Ward 21, for Ada W. Phillips, dwell., 19' 6" x 34' 1" x 29' 6", two-sty; J. Henry Stephenson, builder.
Gilbert St., opp. Hoffmann St., dwell. for Regina Fink, 22' x 31'; ell, 16' x 20', two-sty; Joseph Hammerlee, builder.
Gates St., No. 41, Ward 15, for D. L. Reardon, dwell., 21' 6" x 31', two-sty and mansard; D. L. Reardon, builder.
Chelsea St., nearly opp. Eagle St., Ward 1, for Maverick Oil Works, storage, 40' x 60'.
West Seventh St., No. 69 near C. St., Ward 13, for Patrick Haberin, dwell., 22' x 33' 6", three-sty; Caveney & Hanlon.
Havre St., Nos. 278-279, Ward 1, for James Collins, 2 dwells., 20' x 36', three-sty.
Unnamed St., rear of, near Stark St., Ward 4, Richard S. Barrett, stable, 30' x 40', two-sty; H. M. Hunnewell, builder.
Sargent St., No. 2, rear of, near Spark St., for a stable, 21' x 27', two-sty; his contract is supposed to cover up the blots.

Brooklyn.

BUILDING PERMITS.—Flatbush Ave., Atlantic Ave. junction, one-sty brick baggage-room; cost, \$2,000; owner, Long Island Railroad Co.; builder, J. A. De Camp.
Gates Ave., s s, 250' w Franklin Ave., 3 three-sty brownstone dwells.; cost, each, \$6,000; owner, D. H. Fowler, 14 Verona Pl.; architect, Amzi Hill; builders, Thos. Baker and D. H. Fowler.
Sumpter St., No. 116, s s, three-sty frame tenement; cost, \$4,000; owner, Henry Queal, cor. Elm and Broome Sts., New York; builder, D. Hess.
Willoughby Ave., n e cor. Throop Ave., three-sty brick dwell.; cost, \$23,000; owner, H. O. Pearce, 741 De Kalb Ave.; architect, M. J. Morrill; builder, J. W. Campbell.
Hewes St., s s, abt. 236' 10" e Marcy Ave., 3 three-sty brownstone dwells.; cost, each, \$7,000; owner and carpenter, Jas. Sheridan, 165 Rutledge St.
North Elliott Pl., No. 33, e s, 180' s Park Ave., three-sty brick dwell.; cost, \$5,500; owner, Richard Bracken, 134 North Elliott Pl.; architect, L. W. Seaman, Jr.
Seventeenth St., n s, abt. 160' w Fourth Ave., 3 two-sty brick dwells.; cost, each, \$3,000; owner and architect, Thomas Pitblado, 213 Seventeenth St.; builders, Wm. & Thomas Corrigan.
Schenck St., w s, 130' n Park Ave., four-sty frame factory; cost, \$1,000; owner, M. F. McDermott; architect, J. Platte; builders, Jno. Aur and K. B. Ferguson.
Orange St., n s, 74' 8" w Henry St., four-sty brick apartment-house; cost, \$24,000; owner, L. B. Phelps, 53 Orange St.; architect, M. J. Morrill; builders, H. D. & W. A. Southard.
Herkimer St., n s, 152' 3" e Bedford Ave., 5 three-sty brick dwells.; cost, each, abt. \$7,500; owner, M. C. Stafford, 835 Dean St.; architect and builder, J. Stafford.
Myrtle St., 115' 6" n Broadway, 4 two-sty frame dwells.; cost, each, \$3,000; owner, Frederick Herr, 778 Broadway; carpenter, P. Johnson; mason, G. Cutler.

Chicago.

IN GENERAL.—There is no change in the situation as yet at the brick-yards, and some buildings under way will have to stop, unless the manufacture should commence soon; but there is no present prospect of a start. Neither side seems disposed to yield.
BUILDING PERMITS.—George Tobey, two-sty and cellar brick dwell., 22' x 54', 668 Twenty-first St.; cost, \$2,500.
Charles Ebert, two-sty brick dwell., 21' x 45', 193 Lewis St.; cost, \$2,400.
John Stoneman, one-sty brick flats, 30' x 40', 3008 and 3010 Dearborn St.; cost, \$2,800.
Mrs. C. Ernst, two-sty and basement brick dwell., 22' x 48', 393 Clinton St.; cost, \$3,000.
George Hirschman, two-sty and cellar store and dwell., 25' x 65', 771 Clybourne Ave.; cost, \$2,600.
Chicago, Milwaukee & St. Paul Railroad Company, three-sty and basement brick freight offices, 30' x 170', cor. Union and Fulton Sts.; cost, \$10,000.
H. Fink, three-sty and cellar brick store, 21' x 43', 112 West Washington St.; cost, \$4,000.
James Kucero, four-sty brick store, 24' x 110', 409 South Canal St.; cost, \$8,000.

Thos. Whitfield, two additional stories, 47' x 90', 240 and 242 Wabash Ave.; cost, \$6,000.
George A. Seaverns, 4 one-sty brick cottages, 20' x 32' each, Cuyuga St., near Thirty-fourth; cost, \$4,000.
Jacobson & Tallman, 10 one-sty cottages, 30' x 32' each, Seymour St., near Division; cost, \$8,000.
Bishop Feehan, two-sty basement and attic brick dwell., 53' x 82', 615 North State St.; James R. Willett, architect; Robinson & Miner, builders.
C. H. McCormick, five-sty brick store, 24' x 125', 59 Michigan Ave.; cost, \$10,000.
C. P. Austin, five-sty and basement brick store, 24' x 125', 61 Michigan Ave.; cost, \$10,000.
Thos. H. Shepard, two-sty and basement brick dwell., 20' x 60', 2811 Prairie Ave.; cost, \$4,000; Dixon & Townsend, architect, C. W. Damier, builder.
Max Jank, three-sty brick factory and engine room, 40' x 80', 801-816 Hawthorn Ave.; cost, \$6,500.
E. Morrison, three-sty brick dwell., 50' x 60', 3449 South Park Ave.; cost, \$4,000; W. H. Drake, architect; W. Found, builder.
E. Morrison, three-sty brick dwell., 50' x 60', 3549 Ellis Ave.; cost, \$4,000; W. H. Drake, architect; W. Found, builder.
Geo. A. Seaverns, three-sty and basement brick flats, 40' x 70', s e cor. Clark and Fourteenth Sts.; cost, \$10,000; Palmer & Spinner, architects.
R. D. McFadden, three-sty brick dwell., 21' x 50', Rush St., near Chicago Ave.; cost, \$6,000.

Cincinnati.

STABLE.—The Gambrinus Stock Co. are to build a new stable, cor. of Hunt and Sycamore Sts., to accommodate 100 horses; cost, about \$17,000; Mr. Geo. W. Rapp, architect.
HOUSE.—Mr. F. E. Ratterman is to build a new brick dwell. in Clifton, near Cincinnati; cost, \$10,000; Mr. Geo. W. Rapp, architect.
PRINTING-OFFICES.—Messrs. Henry Leiser & Co. are to build a new printing-house, No. 54 Longworth St., five-sty, 25' x 100'; cost, \$20,000; Mr. A. C. Nash, architect.
Mr. Robert T. Morris is to build a printing-house, No. 72 Vine St., 23' x 75', four-sty; cost, \$15,000; Chas. Crapney, architect.
BUILDING PERMITS.—Since our last report the following permits have been issued:
C. Derniger, three-sty frame dwell., Browne St., near Baymiller; cost, \$6,000.
Jacob Ulsus, repair five-sty brick dwell., Main St., near Canal St.; cost, \$5,000.
C. H. Carle, repair three-sty brick dwell., 343 Main St.; cost, \$4,200.
R. J. Cresap, 4 two-sty frame dwells., s e cor. of Nassau St. and Gilbert Ave.; cost, \$5,000.
E. C. Boyce, repair two-sty brick dwell., 29 Clark St.; cost, \$2,200.
Jos. F. Elliott, four-sty brick dwell., s e cor. Freeman Ave. and I. C. & L. R. R.; cost, \$8,000.
Henry Leiser, six-sty brick dwell., 54 Longworth St.; cost, \$8,000.
Chas. A. Cordesman, three-sty brick dwell., Ninth St., between Baymiller and Freeman Sts.; cost, \$6,700.
J. R. Hoffman, two-sty brick dwell., 321 West Eighth St.; cost, \$2,600.
J. H. Bates, three-sty brick dwell., s s of Eighth St., near Court St.; cost, \$5,300.
Henry Brokamp, three-sty brick dwell., Liberty St., between Central Ave. and John St.; cost, \$2,500.
Seven permits for repairs; cost, \$7,000.

New York.

BUILDING PROSPECTS.—There has been but little new work projected lately, and in public buildings there is nothing contracted out this year. There is a talk of rebuilding the Hall of Records in City Hall Park, but it is not likely to be touched this year. As regards private enterprises the work let out falls very short of what was anticipated, owing to high estimates necessitated by price of labor and material. Should the price of brick continue as low as at present many estimates might be modified and the work go on.

BUILDING MATERIAL EXCHANGE.—There are now over 35 applications for membership in the "Building Material Exchange of the City of N. Y.," above the 300 to which number the organizing rate of subscription was limited. The initiation fee will now be \$100.00.

ALTERATIONS.—Several important alterations are projected. Judge Hilton it is said proposes to alter the "down-town" Stewart store into office-buildings, with probably an addition of two stories to the height. It is also rumored that Mr. Harri is making plans for change to the store bet. Ninth and Tenth Sts.

The St. Cloud Hotel, Broadway and Forty-second St., is to be raised to six stories in height, at an expense of \$15,000.

The American Express Co.'s Building, No. 67 Broadway, will be raised 5'.

The Jewish Synagogue, Nos. 13 and 15 Pike St., is to be altered at an expense of \$8,000.

BUILDING PERMITS.—Park Ave., w s, 84' s Seventy-fifth St., three-sty brick and brownstone dwell.; cost, \$18,000; owner, Hugh Blesson, 60 East Seventy-fifth St.; architect, J. G. Prague.

Fifty-seventh St., n s, 75' e Sixth Ave., seven-sty brownstone apartment-house; cost, \$200,000; owner, Jacob B. Tallman, 113 West Fifty-third St.; architect, H. J. Dudley.

Sixth Ave., s e cor. Fifty-first St., four-sty Connecticut brownstone stores and tenement; cost, \$38,000; owner, William Sporb, 200 West Thirty-eighth St.; architects, Thom & Wilson.

West Forty-fifth St., No. 445, four-sty brick shop; cost, \$10,000; owner, Herman Hoefer, 335 West Fifty-sixth St.; architects, Thom & Wilson.

South William St., Nos. 20 and 22, two-sty and part of rear three-sty granite bank; cost, \$130,000; owners, Farmers' Loan & Trust Co., 26 Exchange Pl.; architect, Thomas Stent; builders, Jas. Webb & Son and John Downey; iron-work, Heuvelman & Co.

Fifty-fourth St., n s, 151' w Sixth Ave., four-sty brick and brownstone school; cost, \$50,000; owner, Felix Adler, 1521 Broadway; architects, H. J.

Schwarzmann & Co.; builders, List & Lennon and J. J. Brown.

Nassau St., Liberty St. and Liberty Pl., nine-sty brick building for stores and offices; cost, \$169,700; owner, Parke Godwin, 19 East Thirty-seventh St.; architect, A. J. Bloor; builder, S. Lowden.

Riverside Ave., s. e. cor. One Hundred and Third St., three-sty brick and brownstone dwell.; cost, \$25,000; owner, James A. Deering, 82 and 84 Nassau St.; architect, R. S. Townsend; builders, I. A. Hopper and R. Townsend.

Grand St., No. 243, four-sty brick, wood and iron building for stores, offices and dwell.; cost, \$20,000; old building to be removed; lessees, K. & R. Lavory, 113 East Thirty-first St.; architect, J. S. Wightman.

Eighth St., Nos. 415 to 421, at East River, four-sty brick factory; cost, \$30,000; owner, John Roach, Ninth St., East River.

Seventy-eighth St., n. s. 169' e First Ave., four-sty brick tenement; cost, \$11,000; owner, Henrietta Seiber, 37 Sullivan St.; architect, John C. Burne.

Seventy-eighth St., n. s. 144' e First Ave., four-sty brick tenement; cost, \$11,000; owner, Henrietta Bauer, 418 East Seventy-eighth St.; architect, John C. Burne.

Third Ave., w. s. from One Hundred and Sixth to One Hundred and Seventh Sts., 8 four-sty brick tenements and stores; cost, each, \$13,500; owner, Samuel H. Bailey, 186 East One Hundred and Fourth St.; architect, F. T. Camp.

One Hundred and Seventh St., s. s. 83' w Third Ave., 9 four-sty brick tenements; cost, each, \$12,500; owner and architect, same as last.

Seventy-seventh St., s. w. cor. Fourth Ave., 4 four-sty brick tenements; cost, each, \$12,500; owner, Michael Duffy, 136 East One Hundred and Second St.; architect, A. J. Spence.

Philadelphia.

BUILDING PERMITS. — Tackawanna St., s. e. cor. Gillingham St., 3 two-sty dwells., 13' x 38'; Isaac Charlton, owner.

Fifth St., s. e. cor. Wharton St., two-sty office-building, 25' x 33'; Thos. C. Nesbit, contractor.

Ridge Ave., No. 1026, three-sty store and one-sty brick building, 25' x 27' and 27' x 52'; Myers & Campbell, contractors.

Fifth St., e. s. n. of Columbia Ave., 3 two-sty dwells.; Thos. L. Kelly, owner.

Girard Ave., s. e. cor. Ash St., one-sty cleaning-room and engine-wall, 75' x 116'; Lybrand & McDowell, owners.

Parker Ave., s. e. s. between Pechin St., 2 three-sty dwells., 15' x 30'; A. Mattis, owner.

Girard Ave., s. s. between Carlisle and Fifteenth Sts., 9 three-sty dwells., 19' x 80'; B. Ketcham & Son, contractors.

Cumberland St., s. s. between Jasper and Emerald Sts., three-sty dwell., 18' x 76'; M. L. Shoemaker, owner.

St. Louis.

BUILDING PERMITS. — Twenty-one permits have been issued since our last report, but five of which are for unimportant frame houses. Of the rest, those worth \$2,500 and over are as follows, viz.:

Eliza Curtis, two-sty dwell.; cost, \$14,000.

Thomas Dunn, two-sty dwell.; cost, \$14,000.

John A. Scudder, wholesale grocery, six-sty; cost, \$50,000.

R. B. Bullock, three-sty store and dwell.; cost, \$10,300.

Thomas McGrade, two-sty dwell.; cost, \$6,000.

General Notes.

ARUNDAL, O. — Proposals for the new school-house will be received until May 27.

BELAIR (Harford County), MD. — Graded school, brick, two-sty, 32' x 50'; cost, about \$3,500; Mr. Geo. Archer, Baltimore, architect.

BERGEN POINT, N. J. — A house is to be built on Elm St., for Councilman Kelley.

It is stated that the Central Railroad, of New Jersey, will build a new brick depot this summer.

CAMBRIDGE, MASS. — The plans for the new Harvard Law School require \$126,000 for building and \$9,000 additional for furnishing. The gift of \$100,000 for this purpose has accordingly been increased by the generous giver to cover the amount required.

CAMBRIDGE, MD. — Grace M. E. Church, (South), stone and terra-cotta building, 55' x 60'; seating capacity, 400; Gothic design; cost, \$12,900; Mr. Chas. L. Carson, Baltimore, architect.

GREENVILLE, TEX. — The excavations for the new court-house have been commenced. The building will be 85' x 87'.

HANOVER, PA. — J. A. Dempwolf, architect, of York, Pa., has in hand residence, store and office for Mr. G. Milton Bair; cost, \$12,000.

HOLYOKE, MASS. — Gilbert Potvin is to build a four-sty block of tenement-houses.

HYDE PARK, ILL. — The plans for a new school-house on Madison Ave., bet. Seventy-fourth and Seventy-fifth Sts., have been accepted. The building is to cost about \$20,000, will contain eight rooms, and accommodate 480 pupils.

KANSAS CITY, MO. — P. E. Emery, Esq., of Flemington, N. J., will erect 2 three-sty brick dwells.; cost, about \$8,000; Willis G. Hale, architect, Phila.

LAMPASAS, TEX. — The Lampasas Hotel, Bath, Water and Gas Company, is to build a hotel at Lampasas Springs.

LONG BRANCH, N. J. — A frame residence to cost about \$6,000 is to be built at Ransom Neck, for Mr. Jno. Harper Bonnell, from designs of Mr. C. W. Romeyn, of N. Y.

The New York Times reports the following: Mr. Presbury, one of the proprietors of the West End Hotel, is remodeling his residence near the hotel.

On Cottage Pl. Mr. Samuel Cohen is building 4 new houses just back of the Howland House.

On Ocean Ave., north of the West End Hotel, Mr. D. S. Brown, of New York, is building a cottage.

Several new houses are being erected on Garfield Pl. The first is a cottage, for Mr. H. Herman; the others are for Mr. Leon Mandel, Mr. David J. King, and Mr. J. Rothschild.

Mr. Alexander Nones is building a cottage at

Ocean and Cedar Aves. On the south side of Cedar Ave. Mr. Sternberger is building 6 moderate-sized houses. Opposite the Sternberger cottages Mr. Walter Green, of the life-saving station, is building a cottage.

On Pavilion Ave. Mr. D. O'Reilly is putting up a new cottage.

Along Ocean Ave. Dr. John Pemberton and Charles Rothschild are building cottages.

Mr. De Peyster is building 4 cottages at Morris and Ocean Aves.

Back from the ocean front Mrs. C. Cronin is building on Second Ave., bet. Morris and Chelsea Aves.

Mr. D. W. Haven, of Trenton, Mr. R. H. Woodward, Mr. J. M. Quimby, Mr. L. H. Crall, and Miss Hannah Gibson are putting up cottages on Chelsea Ave.

LOS ANGELES, CAL. — A brick building for C. J. Fox, on Main, near First St.; cost, \$6,000; Mr. Norton, architect.

The plan for Rivara's one-sty, 90' x 101', building, are nearly ready.

The new winery of J. DeBarth Shord will cost about \$30,000, and J. Bumiller will also erect a winery that will cost \$10,000.

LOUISVILLE, KY. — The following are the building permits issued since last report:

Cooper & Bro., brick store and dwell.; cost, \$8,000.

J. M. Bahr, brick store and dwell.; cost, \$5,500.

H. P. McDonald & Bro., architects.

George Nicholas, brick dwell.; cost, \$5,000; H. P. McDonald & Bro., architects.

Central Passenger R. R. Co., brick car-house; cost, \$2,500.

J. Henry Doerr, brick store and dwell.; cost, \$5,000; H. Struby, architect.

Chas. Hebel, brick dwell.; cost, \$6,000; Chas. D. Meyer, architect.

M. Gettmacher, brick dwell.; cost, \$2,300.

P. Vignin, brick dwell.; cost, \$6,000; Charles D. Meyer, architect.

Mrs. M. Trautwein, brick dwell.; cost, \$4,000; C. D. Meyer, architect.

B. A. Glover, brick store and dwell.; cost, \$3,000.

LYNN, MASS. — As soon as the Lynn hospital corporation secures detailed plans from its architect, Mr. Wentworth, regarding the remodelling of the Hawthorne mansion, work will be immediately commenced.

MANCHESTER, MASS. — C. B. Taylor, R. H. Dana and Mrs. James, of Boston, are building new cottages.

MANAYUNK, PA. — In a few days work will be commenced by the Reading Railroad Company upon a new brick passenger depot.

MAPLEWOOD, MASS. — Mead, Mason & Co., of Boston have signed contracts for a church edifice for the Baptist Society, Maplewood, Mass. Style of architecture is Early English; T. W. Silloway, of Boston, architect; cost, \$10,000.

MARBLEHEAD, MASS. — Ransom B. Fuller, President of the Marine Insurance Company of Boston, is building a \$10,000 house at Marblehead Neck. Thomas Appleton of Marblehead, is building a \$7,000 cottage, and Charles A. Fuller, one worth \$3,000.

MAUCH CHUNG, PA. — H. E. Packer, offices for Lehigh Valley Railroad Co., 30' x 123', of brick and terra-cotta, to be fire-proof.

Addition to the American Hotel, four-sty, for Mr. L. Lentz.

MEDIA, PA. — Summer cottage, for Thos. Elkinton, Esq. METHUEN, MASS. — The wife and sons of the late David Nevins have commenced the erection of a building to his memory. The purpose is to provide a public library, with complete adjuncts, and an audience-hall to seat about six hundred adult persons. The building is to be 56' x 134', and to be built of local stone with sandstone trimmings. The grounds on which the building is located comprise about five acres, the landscape treatment of which will be placed in eminent hands; Mr. S. J. F. Thayer, of Boston, architect.

MILAN, TENN. — E. A. Collins, the banker, is putting up a large brick house from plans furnished by Palliser, Palliser & Co., architects, Bridgeport, Conn.

MONTECAL, CAN. — The foundation-stone of the Wesleyan Theological College was laid May 3.

MORRISTOWN, N. J. — A frame residence, to cost \$6,000, is to be built for Mr. H. O. Marsh, from designs of Messrs. J. C. Cady & Co., of New York.

NEW CANAAN, CONN. — A quaint country house for Mr. O. E. Bright, of New York is building; Palliser, Palliser & Co., architects, Bridgeport, Conn.

NEW HAVEN, CONN. — It has been decided by the managers of the Winchester School of Astronomy, a branch of Yale College, to build one wing of a building which will in time be erected for the purposes of the school, and which is to have two wings, connected with the main building by galleries.

It is proposed to improve the sewerage system by the expenditure of \$100,000 on a new trunk sewer.

NEWPORT, O. — The Congregational Society is to build a new church.

NEWPORT, R. I. — Mr. J. C. Seymour intends to build a cottage at the cor. of Kay St. and Cranston Ave.

Mr. Geo. Henry Warren of N. Y., has ordered alterations to his cottage, to cost, \$10,000.

Several cottages are to be erected on Narragansett Ave. by Mr. Charles Pinard and his brother. They will be almost opposite the villa of ex-Governor Morgan.

Mr. Gordon McKay of Boston, is having improvements made to his cottage on Marine Ave.

Two cottages are being built on Prudence Island by the Prudence Park Company.

Mr. James K. Keene has contracted for a new villa, to be built on the site of the old one, and work on it is to be begun forthwith.

Dr. John Mason is having built a \$40,000 cottage, on Gibbs Ave.

Mr. W. H. Witherbee is having a handsome residence built on Honeymoon Hill.

Mr. Theodore A. Havemeyer's cottage, on Bellevue Avenue, is to be almost entirely rebuilt during the present year.

NEW TACONIA, W. T. — A Congregational church is being built here; cost, \$2,000.

NORFOLK, VA. — Terminal station for the Norfolk &

Western Railroad, 48' x 64', to be of brick and timber, with clock-tower; cost, about \$7,500; Geo. T. Pearson, architect, Philadelphia, Pa.

NORWICH, CONN. — A \$100,000 opera-house is proposed for this town.

NYACK, N. Y. — Extensive alterations and additions are to be made to the residence of Judge Van Vorst, from designs of Mr. Geo. A. Freeman, Jr., of N. Y.

PALATKA, FLA. — Winter cottage for Paschall Hacker, of West Chester, Pa.

PATERSON, N. J. — A rectory is to be built for the Rev. Dr. Smith, from designs of Mr. L. J. O'Connor of N. Y.

PEABODY, MASS. — The committee having in charge the preparation of plans for a new town-house is ready to report in favor of plans prepared by Mr. Rufus Sargent, of Newburyport. The structure recommended will be constructed of brick, with granite finish, the main building to be 90' x 106', with French roof, towers, etc.

PEEKSKILL, N. Y. — Two-sty brick house, 50' x 60', for I. T. Montross, Esq.; cost, \$8,000; Palliser, Palliser & Co., architects, Bridgeport, Conn.

PENSACOLA, FLA. — The Commissioners of Escambia County have adopted the plans of Palliser, Palliser & Co., architects, Bridgeport, Conn., for the county court-house, to be built of brick, stone and terra-cotta, 50' x 80', with tower; cost, \$25,000. Work will be commenced immediately.

PEORIA, ILL. — The new hotel is a fixed fact. The balance of the \$100,000 capital stock has been subscribed. Work will be commenced at once, and the building completed by fall. The site chosen is the former residence of Colonel Ingersoll, at the n. e. cor. of the square.

PETERSBURGH, VA. — H. Noltenius, Esq., has accepted the designs prepared by Palliser, Palliser & Co., architects, Bridgeport, Conn.; house 65' x 82', with other outbuildings for servants.

PLACID LAKE, N. Y. — Summer house for Clarence Noble, Esq., of New York city, is being built here by Mr. Clifford, builder. Plans by Palliser, Palliser & Co., architects, Bridgeport, Conn.

PROVIDENCE, R. I. — A large building, 83' x 110', is to be built by the Waterman estate at the corner of Broad and Union Sts.

PORT WASHINGTON, WIS. — A new Catholic church is being built here; cost, \$40,000.

PULLMAN, ILL. — Bids for building 550 dwelling-houses will be received to-day at the architect's office, cor. Michigan Ave. and Adams St., Chicago.

ROANOKE, VA. — Station and restaurant at junction of Norfolk and Western and Shenandoah Valley Railroads, 26' x 500'; cost, \$17,000; Geo. T. Pearson, architect, of Philadelphia.

ROCHESTER, N. Y. — The plans and specifications for a new central depot are now ready for inspection. The new structure will be 130' x 682', and 53' high, and will be built of brick. Bids will be received at once, and the work is expected to be pushed with the greatest despatch.

ROCKAWAY BEACH, N. J. — It is proposed to build an iron hotel on the point opposite Coney Island, to cost \$80,000; also, 60 cottages, to cost \$4,000 each.

ROCKLAND, MASS. — Ground has been broken for the new Catholic church.

ROME, N. Y. — Proposals for building a new county jail were received May 8; Mr. A. I. Simmons, architect, Utica, N. Y.

ROXBURY, MASS. — A house is being built for Mr. Joseph F. Pray, costing \$6,000; A. J. Bartlett, builder; Lewis & Clark, architects, of Boston.

SALEM, MASS. — The stone arch of the Eastern Depot has been examined and found to be perfectly sound, but it is not settled whether to rebuild or build a new depot. Sketches are being made for both.

SAN FRANCISCO, CAL. — F. Wieland has begun a two-sty and basement house on California, between Octavia and Laguna Sts., to cost \$8,000.

Micah Doane is building a house at the southeast cor. of Market and Twelfth Sts.

Ex-Senator Sharon is building on the southwest corner of Tyler and Polk Sts. six new buildings of eight rooms each.

Six flats of five and six rooms each have been started north side of Fell and Gough Sts; Thomas Sullivan, owner.

The Managers of the Ladies' Protection and Relief Society are building a \$2,500 school-house on the north side of Garey St., between Van Ness and Franklin.

SANTA ANA, CAL. — Kysor & Morgan, architects, are to build a warehouse at Santa Ana, 50' x 150'.

SAUGERTIES, N. Y. — A house is to be built for Mr. Wm. R. Sheffield, from designs of Mr. A. H. Thorpe, of N. Y.

SCRANTON, PA. — M. Arthur Frothingham has just commenced building a house, brick for first story, and timber above; cost, \$4,750.

Mr. K. W. Archbald's house is well under way; contains 11 rooms, and cost \$5,000. Both are built from plans made by Palliser, Palliser & Co., architects, Bridgeport, Conn.

SOMERS, N. Y. — The Manhattan Roman Catholic College of New York propose building a chapel and other buildings in connection with an industrial home, on property lately secured by them.

SOUTH MANCHESTER, CONN. — St. Mary's Episcopal Church, 35' x 85', frame is now well under way; Rev. Beverly E. Warner, pastor; Palliser, Palliser & Co., architects, Bridgeport, Conn.

TITUSVILLE, O. — Senator W. B. Roberts will rebuild the Hotel Brunswick, which was nearly destroyed by the fire of April 14, at an expenditure of \$100,000.

TRENTON, N. J. — Cottage with tower for Mr. James Withington, Trenton Iron Co., size 30' x 50'; cost, \$3,000; Palliser, Palliser & Co., architects, Bridgeport, Conn.

URBANA, O. — The brickwork on the new jail has been commenced by the architect and ordered torn down. The first story was up.

UTICA, N. Y. — Proposals for building a county jail will be received May 8; Mr. A. I. Simmons of this city is the architect.

VIRGINIA BEACH, VA. — Two hotels are now being designed by Mr. W. Scott West, of N. Y., and several others are in contemplation.