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As we have before had the pleasure of announcing, the Sixteenth Annual Convention of the American Institute of Architects is to be held in Cincinnati on Wednesday and Thursday, October 25 and 26 next. The Committee of Arrangements have made provision for the entertainment of delegates and visitors at the Gibson House, on Walnut Street, at the very favorable rate of two dollars per day, the regular prices being three and one-half and four dollars. Lunch is to be provided each day by the Cincinnati Chapter, and in the intervals of business members of the Chapter will conduct their visitors to visit the various objects of architectural and artistic interest in and about the city. The Committee request offers of papers on professional subjects, and we hope that many will be disposed to second in this way the generous efforts of the Cincinnati architects to provide for the pleasure of their guests. A special invitation is given to members of the profession not yet affiliated with the Institute to meet the Fellows and Associates at the Convention, which will, we are sure, meet with unanimous approval. Since the establishment of the Institute a great change has taken place in the condition of the profession in the United States. Technical instruction, instead of being a thing to be either picked up by experience or acquired in European schools, is now systematically and successfully given in five or six different establishments of learning, and around these have grown up groups of educated and earnest men, which, although absolutely identical in sympathies and interests, remain indifferent to each other; and while the general progress of the profession has been very rapid, it has been, and still is, made in a desultory and incoherent manner, which detracts much from its real value as an advance toward a true and great American art. Another element, still more difficult to assimilate, also begins to be conspicuous among us, in the shape of a body of thoroughly trained foreign architects, whose sympathy and co-operation in our professional work would be of quite as much value to us as to them.

ANYTHING which might tend to bring these various groups into a mutual understanding would be of incalculable benefit to the whole profession, and every opportunity should be sought for promoting it. One such opportunity, and a very good one, will be afforded by the Cincinnati Convention, and we are glad to see that the Committee recognize by their invitation the importance of it. At the same time, the local Chapter is small, and although its zeal and good will is unbounded, we take the liberty of reminding our readers that the success of the meeting rests quite as much with the architects outside of Cincinnati as with their brethren there; and that if they will think a little over the ways in

which they can help the work, and follow out the suggestions which will readily occur to them, arranging to attend the meeting if practicable, or if not, to be represented by a paper of interest and value; securing promises from others to attend, or still better, helping to form parties for the occasion; transmitting the invitation of the Committee to those architects who might not otherwise have received it, but whom the Convention would be glad to see, and obtaining their acceptance of it, they will not only gain the gratitude of the hospitable architects of Cincinnati, but will enjoy the satisfaction of having contributed toward the success of the most important professional meeting ever held in the country.

THE first of August was signalized among the wholesale lumber dealers by an advance in the price of white pine of two dollars per thousand feet on shelving stock and superior grades, and of one dollar on inferior grades. This represents an average rise in value of only about four per cent, but the movement acquires additional importance from being in opposition to the general tendency of the market, and is probably the precursor of a large advance when the next building season begins. Meanwhile certain enterprising dealers have taken advantage of the prospect of a scarcity in the supply of pine to introduce cypress lumber from the southern swamps, which is sold at a price rather lower than hard pine, and seems to be well adapted to some purposes. Whether the timber can be readily obtained of sufficient length and straightness to make it generally useful for framing we do not know. Perhaps some of our readers can give us information as to its tensile and transverse strength and other qualities, concerning which we find nothing in the ordinary books of reference.

THE latter days of the Hamilton sale of bric-à-brac were apparently more successful from a financial point of view than the earlier ones. It is customary in such transactions to keep the more valuable objects to the last, and the best of the pictures, as well as the most precious pieces of furniture, porcelain, and glassware, were sold together. So far as we can judge, the prices obtained for the latter justified the policy of the auctioneers in retaining them until they had been well advertised, but something—perhaps the doubt as to their authenticity which is said to have existed—seems to have chilled the enthusiasm of the picture buyers. The greatest treasure in the collection, a picture of the Last Supper, by Masaccio, which if genuine would be perhaps the only easel painting, except a few portraits, known by this great artist, was bought by the National Gallery for six hundred guineas, or a little over three thousand dollars. Two pictures by Correggio brought about fifteen hundred dollars apiece; a portrait by Titian brought three thousand, and a Holy Family, also by Titian, six thousand, the two together selling for less than the amount which the proprietor of a New York bar-room, himself just out of jail, recently invested in the purchase of a single modern French picture to adorn his establishment. A portrait of Mary Queen of Scots, which, coming from the Hamilton Palace, certainly ought to have been authentic, brought eighteen hundred dollars, or probably about one-fourth of what it could be sold for at any time in New York. In contrast with these, a glass pitcher of early Oriental manufacture, gilt and enamelled, sold for nearly fourteen thousand dollars, and a writing-desk, of inlaid work, for thirty-one thousand; a tazza, of Henri-Deux or Oiron ware, four inches high, and with the cover missing, brought six thousand dollars, and a salt-cellar of the same ware four thousand; while another tazza, of Limoges enamel, brought eleven thousand. A chandelier, of rock crystal, sold for twenty-two hundred dollars, and would, at that price, seem cheaper than the four-thousand-dollar salt-cellar, were it not that a similar salt-cellar sold many years ago for just double the price of this.

THE Exhibition of the Salon of 1882 closed after a remarkably successful season. Five hundred and sixty-five thousand persons visited the galleries, of whom more than half were admitted free, but the entrance fees of the remainder produced

the sum of three hundred and forty-nine thousand francs, or about seventy thousand dollars. Twenty-five thousand francs were paid by the publisher of the catalogue for his monopoly, and twelve thousand by the proprietor of the restaurant attached to the galleries. The total outlay is estimated at one hundred and fifty thousand francs, leaving a net profit of two hundred and six thousand francs, or forty-one thousand dollars. The net proceeds of last year's exhibition amounted to twenty-four thousand dollars, so that an administration of two years under the new régime has accumulated a fund of sixty-five thousand dollars for the purposes of the Society of Artists.

THE stockholders of the Keely Motor Company do not, according to the *Philadelphia Times*, get much nearer the revelation of the mighty secret for which they have suffered so much. After the decree of the court, requiring the inventor to disclose his mysterious process to some authorized expert, a meeting of the stockholders was held, and Mr. William Boekel, a mechanic who had made certain portions of the Keely machine, was selected to be the recipient of the secret. He was accordingly admitted to Mr. Keely's workshop, and after two or three months' study informs those stockholders who make inquiries of him that he has learned nothing that he did not know before, but has hopes of better success before long. Meanwhile, loud noises are often heard to proceed from the workshop, which no one is allowed to enter except the inventor and Mr. Boekel, and some of the stockholders are encouraged to think that this denotes renewed activity there. Others, less sanguine, who have listened surreptitiously at the doors, assert that the sounds come from explosions of gunpowder, and that Mr. Keely simply goes to the place in the morning, fires off a little powder in the "hydro-compressor," and then locks the doors and betakes himself to the Park, where he spends the rest of the day in exercising a fine trotting horse, bought, they fear, with their money. Naturally, such thoughts as these fill them with indignation, and they threaten, unless the mystery is disclosed before the end of this week, to commence a criminal prosecution against the inventor for deceiving them.

SOME interesting experiments have been recently made by Professor Renk, in Munich, to determine the conditions affecting the movement of the ground-air under and about dwelling-houses. By tests with the barometer he found that the atmospheric pressure in the ground beneath the bottom of the cellar of the house in which his experiments were carried on was always greater than in the cellar itself, the natural consequence of this difference being a steady movement of the air from the soil into the house, which would be little, if at all, hindered by walls or pavements of masonry. Another experiment showed, however, that the movement was slow, and indicated a mode in which it might perhaps be counteracted in case of need. Beneath the pavement of the cellar in question was a ventilating channel, through which air was drawn from some place at a distance to a large chimney. Although this channel was built of bricks laid in mortar, and covered with stone slabs, its draught was very sensibly felt in the soil six yards away, and within that distance the tendency of the ground-air was toward it, instead of toward the cellar, while a considerable movement of air toward it from the cellar itself was detected. These observations lead Professor Renk to think that an arrangement of permeable tubes buried in the earth under the cellar of a house, and connected with the kitchen flue, might serve to intercept the ground-air on its way into the house, and carry it harmlessly away above the roof. Although we think that a good lining of asphalt would be more effective in preserving the purity of the atmosphere of a cellar than such ventilation, the suggestion is well worth remembering.

A RATHER novel dispute has arisen between the managers of the Berlin Sanitary Exhibition and the parties who had contracted for advertisements in the official catalogue of the exhibition. It seems that at the time of the conflagration which destroyed the exhibition buildings, with a large part of the goods in them, the catalogue, including the advertisements, was printed and nearly ready for distribution. Whether all the copies were burned with the rest of the properties of the affair we do not know, but they could hardly have been more useless if they had been. However, the managers of the exhibi-

tion have sent out bills for advertising according to their contracts, just as if the affair had been carried through with complete success, and one or two hundred thousand persons had perused the inviting announcements designed for them. It is only charitable to consider that the managers are straining every nerve to revive their enterprise after the overwhelming blow which it suffered from the fire, and probably feel bound to take the benefit of any doubt in claiming money which might by any possibility be due them, but it is not surprising that the advertisers resist the claim. Some concession is offered them, in the shape of a promise that those who pay shall have the privilege of advertising at half rates in the new catalogue, when the exhibition really comes to be held, but this does not seem to afford them much consolation, and an instructive case of interpretation of contracts is likely to come before the courts in order to decide the question.

SOME extraordinary experiments have been made during the past year by Mr. Crookes, the celebrated investigator of the properties of matter under the simplest possible conditions. Probably every one has seen whirling in the sunshine in druggists' windows a little wheel enclosed in an exhausted glass bulb. This is the radiometer, the wonderful apparatus whose movement is due to the physical effect of the cannonade of molecules driven against the vanes of the wheel by the power of the sun's rays, and following out the same idea many new and interesting phenomena have been observed. The more recent investigations have been made with vacuum tubes traversed by an electric discharge, like the well-known Geissler's tubes, whose colored flashes serve to give *éclat* to so many amateur lectures on physics. Professor Crookes's vacuum tubes are, however, much more perfect than those ordinarily sold, being exhausted with the Sprengel pump until the tension within them is only one millionth of an atmosphere; or in other words, the number of molecules contained in it is a million times less than would be contained in an equal bulk of air at the ordinary pressure. Under such exhaustion the passage of an electric discharge through the tube reveals a singular phenomenon. Instead of filling the tube with a lambent flame, such as is seen in the ordinary Geissler's tubes when the current is sent through them, the discharge in a medium so highly rarefied does not become visible for some distance from the negative electrode, the intermediate space being completely dark, and the length of the dark interval increasing with the degree of exhaustion.

THIS appearance, hitherto not satisfactorily explained, seems to Mr. Crookes to indicate that in such a tube the molecules exist under a condition which may be likened to that of a moderately frequented street, as compared with the same street occupied by a dense and strongly agitated crowd, which represents the usual state of the molecules in the atmosphere. The disturbing influence of excessive number being removed, such molecules as exist in the tube are repelled by the negative electrode with a violence which throws them for some distance in parallel lines, and it is only after the impulse has been in some degree counteracted by the opposing force of return currents that collisions occur among the molecules, which exhibit themselves by the production of light. That a strong and steady movement of molecules exists through the dark space, away from the negative electrode, is shown by means of a little wheel, which on being introduced into the space is made to revolve with great rapidity by the impact of the molecules against it. By interposing a piece of glass in the current, moreover, a bright phosphorescent spot is formed at the point where the invisible stream strikes it, and an obstacle put between the electrode and this glass will throw a shadow in the middle of the phosphorescent spot. A more remarkable observation, however, is that the path of the molecules is very much deflected by a magnet, tending to assume a spiral form, and even the earth's magnetism affects it sensibly. The impact of the molecules against other bodies produces heat as well as light, as was shown by using a cup-shaped electrode, from which the atoms, being driven directly away from the surface, would converge to a focus. In the focus so obtained platinum was melted, without heat, simply by the violence of the blows inflicted by a stream of invisible molecules, disembarassed of the crowd of opposing atoms which under ordinary circumstances continually hamper and neutralize each other's movements.

BUILDING SUPERINTENDENCE.—XX.

HARDWARE.

Sliding-door Furniture. THE sliding-doors between Parlor and Hall are to be hung in the best manner with Prescott's patent balance hangers complete; to have Russell & Erwin's solid bronze sunk handles, pattern No. 332, dark finish, and bronze astragal-face sliding-door locks and pulls of the same make pattern No. 333.

The front outside double doors are to be hung with 6" x 6" Russell & Erwin's fancy solid bronze dark finish acorn loose-pin butts of pattern No. 15, three to each leaf, with steel bushings and steel washers.

All other doors in first-story Hall, Vestibule, Parlor and Dining-room are to be hung with 5" x 5" bronze acorn steel-washer japanned loose-joint butts, three to each door or leaf of double doors.

All other doors throughout the building are to be hung with 4" x 4" japanned loose-joint acorn butts with steel washers, two butts to each door.

The front door is to have Enoch Robinson's patent front-door **Locks.** mortise lever-lock, with brass or bronze face and striking-plate and night-latch, with one key to the large lock and four to the night-latch.

All other doors throughout the building to have Russell & Erwin's, Corbin's, or Nashua Lock Co.'s 5-inch mortise-locks, with brass face and striking-plate, brass bolts, and German-silver or plated keys; no two keys in the house to be alike. The outside kitchen door is to have in addition a Yale rim night-latch, with two keys.

The front outside door is to have Russell & Erwin's fancy solid bronze dark finish 2½" knobs, pattern No. 923, on both sides of one leaf only. Doors in basement, kitchen and attic to have 2½" best lava knobs with bronze roses and escutcheons. All other doors throughout the building to have Russell & Erwin's 2½" fancy solid bronze dark-finish knobs, pattern No. 933. Double doors to have knobs on one leaf only.

Bell-Pulls. The carpenter is to furnish bell-pulls to front and kitchen outside doors, to correspond with the door-knobs.

The outside front and vestibule doors, and double doors between first-story Hall and Dining-room are to have bronze-metal flush-bolt at top and bottom of the leaf which has no lock, and front outside and vestibule doors will have in addition a strong solid bronze chain bolt. The kitchen outside door, door at head of basement stairs, door of basement water-closet, and doors of bath-room and all chambers in second story, to have Ives's patent mortise-bolts with bronze roses and bronze keys.

Cupboard Doors. All cupboard doors to be hung with brass butts and to have brass slip-latches.

Drawer-Pulls. Drawers of wash-bowl stands to have handsome brass drop-handles. All other drawers to have plain japanned iron pulls.

All double-hung windows to have Morris's patent self-locking sash-fasts, to be of solid bronze in first-story Hall, **Sash-Fasts.** Vestibule, Parlor, and Dining-room; bronzed iron with plated drops elsewhere, and two pulls on lower sash to correspond.

Put heavy triple hooks of japanned cast-iron in closets and other places specified: to be in two rows unless otherwise expressly directed, and to be 8" apart in each row; those in the upper row to be set over the middle of the spaces between those in the lower row.

Hooks. All brass hardware to be put on with brass screws, plated with **Screws.** plated screws, bronze or bronzed with bronze screws, and japanned with blued screws.

STAIRS.

[This is very commonly made a separate contract, and in that case the General Conditions should precede.]

The front stairs from first to second story are to have open string, moulded nosings returned at the ends and carried around well-room, **Front Stairs.** ½-inch risers and treads, housed into the wainscot on the wall side, the treads ploughed into the risers, and risers ploughed into underside of treads; 1½-inch fancy turned balusters, two to a tread and around well-rooms in the same proportion, all dovetailed at the foot and tenoned into underside of rail; 2½" x 3½" double moulded hand-rail; 4" x 4" solid turned, chamfered and fluted posts at angles, with half-post at upper termination of rail, and 5" x 5" fluted and carved boxed posts at foot: all to be strictly in accordance with detail drawings. The posts and rail are to be of best Spanish mahogany, all the rest to be of cherry. Outside string on stairs, and face-board around well-room, to have moulding to cover joint with plaster.

The back stairs from first story to attic are to have open string, rounded nosings returned at the ends and carried around well-rooms; ½-inch risers and treads, the treads ploughed into the risers, and risers ploughed into underside of treads, **Back Stairs.** and both treads and risers to be ploughed for the base on the wall side; 1½-inch plain round balusters, two to a tread and around well-rooms in the same proportion, and mortised at top and bottom; 2" x 2½" plain moulded hand-rail, and 3½" x 3½" solid turned and chamfered post at each angle and at foot, with half post at upper end of rail: all to be according to detail drawings, of hard pine throughout.

The stairs to cellar are to go down under the front stairs; to have ½-inch risers and treads with rounded nosings, ploughed for base; 1½-inch plain round balusters, two to a tread, and mortised into treads and under side of rail, and 2" **Cellar Stairs.** x 2½" plain round hand-rail: all to be of hard pine.

All stairs are to be framed and supported in the best and strongest manner, on 2" x 12" spruce strings 12" on centres: all to be thoroughly wedged, blocked and glued in the best manner, and left clean and perfect. The stair-builder is to put on all the face-boards and nosings around well-rooms, and is to furnish and put on plain square hard-pine base on wall side of back stairs and cellar stairs, ploughed into treads and risers, and is to do all the work of housing the front stairs into the wainscot.

BELLS.

[This is often included in the carpenter's contract. If it is separated the General Conditions should precede the Specification. If electric gas-lighting is introduced (see specification below) the bells may be included in the contract with it.]

Put in electric bells as follows, with annunciator in kitchen, battery, insulated copper wires, push-buttons to match finish of rooms, and bells of five different tones, all put up in the best manner and warranted for three years:

Bell from front door to ring in Kitchen and in Attic hall.

Bell from Kitchen outside door to ring in Kitchen.

Foot-bell from Dining-room to ring in Kitchen.

Bell from Parlor to ring in Kitchen.

Bell from second-story Hall to ring in Kitchen.

Bell from second-story Hall to ring in Attic Hall.

The pulls for the outside front and Kitchen doors only will be furnished by the carpenter.

All wires to be run behind the plastering.

ELECTRIC GAS-LIGHTING.

[The General Conditions should precede the Specification unless this is joined with some other contract.]

Wire all the gas outlets in the building with the best insulated copper wire, all concealed behind the plastering. The drop-light in first-story Hall is to be wired for automatic burner, to light from wall of Hall near door to Vestibule, and also from east wall of chamber over Dining-room, just under the bracket outlet. The bracket at foot of cellar stairs is to be wired for automatic burner, to light from wall at head of stairs. All other outlets are to be wired for pull-burners.

When directed, after the fixtures are in place, put automatic burners on first-story Hall lantern and on bracket at foot of cellar stairs, with buttons as above specified; and put four pull-burners on Dining-room chandelier, six on Parlor chandelier, four on brackets in Parlor, three in each of three principal chambers in second story, of which two will be on the mirror light, and one on bracket as directed; one on second-story Hall bracket, and one on bracket in Bath-room. All to be of the best pattern, perfectly tight against any escape of gas; all fitted up in the best manner, with battery complete, and to be kept in good order free of expense for two years.

PAINTING AND GLAZING.

[If this is made a separate contract the General Conditions should precede the Specification.]

Oil hard-pine piazza and porch floors and treads of steps two coats. **Outside.**

Stain sheathing under piazza and porch roofs with one coat of light oil of creosote. **Stain.**

Paint all roofs one coat of pure Venetian red in oil, finishing with a second coat of pure Indian red. **Paint.**

Paint all other outside wood and metal work two coats, of three tints as directed: the first story to be one shade, the second story another, and the doors and trimmings a third. Paint also the mouldings on belts, etc., where directed, in Venetian red.

Paint the blinds three coats of color as directed.
Paint sashes three coats of color as directed.

Inside. All hard-wood floors and borders, including hard-pine floors in Kitchen and Basement, are to have one light coat of oil, and to be finished with hard wax or Butcher's Boston Polish, put on in the best manner and well rubbed. Other hard-pine wood-work, and all ash and whitewood finish, to be filled with oil filler, and to have two coats of Pellucidite, rubbed down with emery cloth and oil. The maple finish in Parlor is to be filled with oil filler and to have three coats of white shellac, rubbed down with emery cloth and oil. The cherry stairs are to be stained in the best manner to imitate mahogany, filled with oil filler and finished with two coats of Pellucidite, rubbed down with emery cloth and oil. The mahogany posts and rails are to be filled and varnished with two coats of best copal varnish. Oak wood-work in Hall is to be oiled one light coat, and finished with Butcher's Boston Polish, or hard wax, well rubbed. The pine in Attic hall and large room is to be oiled one coat and varnished with two coats of copal varnish. Other wood-work in attic is to be painted three coats of pure zinc white and oil, to finish with a plain oil surface, not flatted.

Sashes. Inside of sashes to be stained cherry color and varnished.

Pipes. Varnish all exposed lead and brass pipes and bands with one coat of white shellac.

All materials are to be of the very best quality. Pure linseed oil only is to be used. The body for inside work is to be pure zinc white, and for outside work to be the best French ochre. No lead to be used for outside work unless expressly directed, and in that case to be pure Jewett's, Union or Salem white lead.

Puttying. Putty-stop thoroughly and smoothly all work inside and outside after the first coat and before the last coat, coloring the putty to match the wood after darkening. Use wax suitably colored instead of ordinary putty, wherever wax finish or Butcher's polish is specified.

Wax. Cover all knots, sap and pitchy places with strong shellac, and kill knots or pitch with lime where necessary. Sand-paper all inside work, rubbing with the grain, and clear out all mouldings before the first coat, and sand-paper after each coat of paint, shellac, Pellucidite or varnish except the last.

GLAZING.

[This is almost invariably included in the contract for painting.]

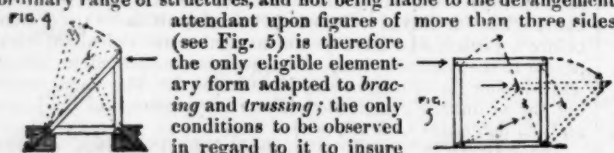
Glaze all inside and outside sashes, except those specified to be furnished ready glazed by the carpenter, in lights as shown on drawings or as directed, with first-quality double-thick French or German glass; all well bedded, puttied, back-puttied, and tacked, and all repaired at the completion of the building, thoroughly cleaned and left whole and perfect.

BUILDERS' SCAFFOLDING. — IV.

THE action of bracing in resisting the overturning of a structure is simply dependent on the principle of gravity that it would involve an effort in the lifting of the weight of the structure, up to a height equal to the excess in length of the diagonal between points of bracing over that of the vertical height of head of brace above its foot, after the manner of a crank or lever turning on the foot of the brace, provided that the brace, its connections, and fixtures held good. (See Fig. 1.)

The action of a tie, on the other hand, must depend for the rigidity and stability it produces upon the eccentricity of the arcs and their increasing divergence, which the effort of countervailing forces would tend to describe by the upper end of tie, and by the vertical turning on its lower point, provided of course that its parts, connections, and fixtures held good, and only its elasticity yielded. (See Fig. 2.)

The triangle is the only geometrical figure which cannot possibly distort its form without breaking its joints and lengthening and compressing its alternate sides, and hence, as it involves no transverse stress in its pieces, except the pins or bolts, etc., which unite its parts together, is absolutely unchangeable so far as any elastic tension or compression is due to the materials as usually adopted in the ordinary range of structures, and not being liable to the derangement attendant upon figures of more than three sides

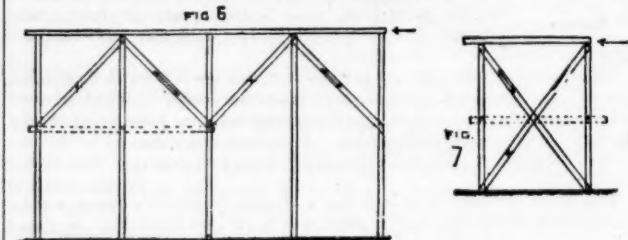


(see Fig. 5) is therefore the only eligible elementary form adapted to bracing and trussing; the only conditions to be observed in regard to it to insure rigidity being that the vertical and horizontal sides in bracing shall be nearly of equal length so that the included angles shall be nearly equal. All the joints and parts must be perfectly rigid to avoid the

first movement which the active forces tend to produce, which will derange a frame combination, since when once a movement begins it creates increasing force in the direction of distortion and danger, until its potency becomes irresistible by the lessened remaining strength and stability residing in the structure. (See Fig. 4.)

The thorough comprehension and observance of the practical application of these principles in mechanical construction would obviate the many useless and delusive methods of bracing we frequently see. I have seen bracing like Figure 6, on 2" x 4" standards to scaffolding 30 feet high, which produces a transverse strain on the standards, if there is any yielding of the joints and swaying of the structure, which is liable. In this case there ought to be horizontal ties, as shown by dotted lines, added to complete the elementary triangular figures in order to make the bracing effective, and as the foot of the brace acts with a thrust against the middle or weakest point in the standard, a lower tie-brace should be added; these, however, in this case (for plastering or such light work) need not be repeated at each standard — one at each extreme standard, if not over forty to fifty feet apart, will usually suffice, provided that the joints or connections, etc., are adequate.

When the braces or ties are very long, and intersect or interbrace with the view of supporting each other (see Fig. 7), there is a



transverse as well as compressive and tensile strain produced by fastening the bracing together at intersecting points, if some of the joints yield more than others, or if there is a difference of elastic action on either side of the intersecting joint owing to knots or intermediate joints in any diagonal piece, which would of course have to be provided against in estimating the scantlings to be used. It would be economy and serve a better purpose in such cases to introduce a horizontal tie, as shown by dotted lines, which will divide each of the large triangles into smaller ones having sides only half as long.

Timber is permanently injured if the elastic limit of its strength or resistance is exceeded, i. e., if its elasticity (or the power to regain its normal straightness when the transverse load or stress is removed) is destroyed, and it gets a permanent "set," when it may be regarded as having begun to break by its overload, that is, some of the innumerable little fibres are ruptured, and hence incapable of further resistance to strain. To be within the safe elastic limit¹ of strength a permanent quiescent load should not exceed one-fifth of the breaking load, or one-tenth of it for a moving load. The factors of so-called safety which were adopted in the foregoing calculations² are graded according to the order in which the forces are primarily received and transmitted: First, the primary stresses of the vertical loads, which are given the higher factors; and second, the transmitted strains on the oblique members produced by movements of the load receive the lower factors. The factors are properly low because materials will sustain a higher strain for a short time without apparent injury than if applied permanently, which would produce increasing weakness with the lapse of time. In any case due allowance must be made for wear and tear, for weakening defects, as knots, shakes, auger-holes, wanes, etc., which are too often disregarded.

The so-called "factor of safety" is a grievous misnomer. "Factor of Doubt" would be a proper term, of more correct significance, and less liable to mislead the unwary.

As the strains on any structure should never exceed the elastic limit of resistance of its materials, and in important permanent designs and construction the strains should always be considerably within the elastic limit, and as we certainly never wish to approach the breaking strains, the co-efficients of elastic limit are the nearest to those which are most generally in demand in practical designing of scantlings, etc., for temporary construction. It would, therefore, facilitate calculations and in some measure avoid the danger of mistakes in making arithmetical subdivisions of breaking strains, which are never used without division, if co-efficients of elastic limit, which are ready at hand for immediate use, were adapted for practical use in tables of strength of materials. There does not appear any good reason for incumbering practical men with tables of breaking load when only an aliquot part of it can be used in any formula, in designing, whereas the co-efficient of elastic limit may be used in the

¹ Some writers, even dignified professors, have been making use of several elastic limits, more especially for iron and steel. There ought to be only one elastic limit. Any other condition should be considered as simply a degree of elastic reaction, and not the limit. Such terms as "scientific elastic limit," "commercial elastic limit," etc., should not be introduced because liable to lead to doubt as to which is meant if any neglect to specify which is intended, and is also very liable to interested abuse and as a shield for dangerous designing. With regard to wood some experimenters have concluded there is no elastic limit, as every elongation produces a permanent set, from which by removal of strain it does not entirely recover. The elastic limit is usually deduced from the extension of small samples of the materials.

² See paper No. III in May number.

majority of temporary cases without any sub-division. In the permanent instances where a greater reserve of strength, as $\frac{1}{2}$ of the breaking strength is desired, $\frac{1}{2}$ of the elastic limit would be its equivalent, and so for any other greater or less proportion of breaking strength can be used the equivalent of the elastic limit. If we wish to use a lower factor of safety, as 4 ($=\frac{1}{4}$ of breaking strain) $=\frac{1}{4}$ or .75, therefore the elastic limit $\times .75$ is the equivalent proportion; or if $\frac{1}{2}$ of breaking strain, then take $\frac{1}{2} = .50$ of the elastic limit. The process may be formulated thus:—

$$\frac{\text{Ratio of Elastic Limit to Breaking Strain—say 3}}{\text{Given Factor of Safety—say 6}} = \text{Equivalent Divisor for Elastic Limit} = \frac{3}{6} \text{ or } \frac{1}{2}.$$

This desirable change would be in harmony with our proverbial progressive ideas in other matters, and when considering the matter from the point of view of those to whom the computation of strains and forces in structures is a great perplexing effort, there should be an endeavor to clear their path of as many useless obstacles—unimportant though they may appear to the expert engineer—by lessening the number of arithmetical operations.

We have here assumed, for the sake of simple, illustrative purposes, that the average elastic limit of timber is $\frac{1}{2}$ of its breaking strength, as is usually done. The actual elastic limit of practical tests necessarily varies with the kind, quality, state of growth, seasoning, and other individual conditions of the timber under consideration.

Authors and experimenters have differed greatly in their results, and hence the absolute necessity of one invariable method of testing and valuation (and preferably on one machine) being generally adopted in the future in order to obtain uniform data.

There is also the further practical consideration that the elastic limit of writers is that of perfect specimens of materials obtained from experiments with small unit test-pieces, and that average good merchantable timber, especially what may be called the degraded grades of western yards, used in buildings will seldom give more than $\frac{3}{4}$ or $\frac{1}{2}$ of these unit strengths.¹ We should therefore be governed by this fact in adopting a sufficiently small part even of the elastic limit. Most of the sudden and otherwise unexplained collapses of floor-joists, called accidents, must be attributed to the presence of weakening (and often disregarded) knots, etc., or an overloading of the elastic limit.

We cannot shut our eyes to the fact that to most untrained minds the adopting a small proportion of a breaking strain looks to them like unnecessary precaution, and hence we find great reluctance on their part to adopt small proportions which shall insure reasonable safety, or rather satisfy reasonable doubt, and hence we should not lose sight of the existing danger of inexperienced men misusing these tables—by not knowing their true practical value in any given conditions of materials, or their purpose—and consequently adopt too high constants, and hence by adopting the elastic limit in lieu of breaking strength, an equivalent diminution of constants does not look so formidable a precaution.

EXPLANATORY NOTES.

Fig. 4. The straight arrow shows direction of force applied to change form of triangle; the dotted eccentric arcs and arrows show the tendency to break upper joint before distortion could take place. The two lower joints or angles are intended to be represented as fixed and immovably anchored.

Fig. 5. Shows by arrows a force applied to change form, in dotted lines, of a four-sided figure, not braced or counterbraced; the dotted diagonals indicate the consequent shortening of the one and lengthening of the other, within the distorted frame.

Fig. 6. Arrows indicate a side force on the scaffolding, and the tendency of the braces to produce transverse strain in the standards; $\times$ indicates compressive strain, and the double-headed arrows indicate tensile strain.

Fig. 7. Same explanation as Figure 6.

THE ILLUSTRATIONS.

PRESBYTERIAN CHURCH, SOUTH ORANGE, N. J., MESSRS. ROSSITER & WRIGHT, ARCHITECTS, NEW YORK, N. Y.

The perspective hardly does justice to the building. The situation is unusually fine, and it shows to fine advantage from the point of view chosen for the sketch.

We think it will be of interest to your readers to learn the exact cost of the building. We quote from our books the following statement:

Mason's Contract	\$8,000
(Contract.) Extra work from changes	1,500
Corner-stone	13
Drain	150
Carpenter's Contract	5,825
Extra work from changes	44
Pews and Fittings, Pulpit, etc.	3,110
Gas Piping	88
Slate Roof, etc.	717
Allowance for Old Foundation	200
Furnace	300
Total, complete	\$19,947

We were absolutely prohibited to spend a cent over \$20,000. The problem was to get the best possible for just \$20,000 and no more.

¹ We do not here allude to special dimension stuff used for bridge-building and other important engineering structures.

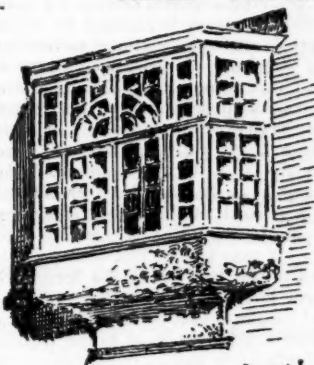
ASSOCIATES' HALL, MILTON, MASS., MESSRS. ROTCH & TILDEN, ARCHITECTS, BOSTON, MASS.

DESIGN FOR A HOUSE AT DES MOINES, IOWA, MR. G. W. BIRD, ARCHITECT.

COTTAGE FOR GEORGE L. BRADLEY, ESQ., POMFRET, CONN., MR. HOWARD HOPPIN, ARCHITECT, PROVIDENCE, R. I.

LEGAL NOTES AND CASES.

Contract.—Work done without Authority.



A wood & rough-cast Oril

IN the case of *Mulligan vs. Kenney*, heard and determined by the Supreme Court of Louisiana, in January, the plaintiff was employed by the defendant to put a bell in a church tower. The plaintiff found, while performing his work, that some of the beams of the tower were rotten and urged the defendant to allow him to make the necessary repairs. He informed Mulligan that he had no authority to make any contract exceeding fifty dollars in amount, without the sanction of higher church officials, and only consented to allow the work to be done upon Mulligan's guaranty that it should not cost more than forty-eight dollars. Mulligan was further advised of defendant's unwillingness, owing to financial difficulties, to incur heavier expenses for repairs, however necessary, defendant saying to him that he would see the tower tumble down before he would do so. While Mulligan was employed in the work contracted for, defendant left the city for Europe, and was absent about two months. Thereafter, Mulligan discovering that the cross-timbers supporting the roof of the church were rotten, exposing the roof to danger of falling, without consulting any person, and without communicating at all with the absent owner, braced and strengthened the timbers with iron ties, plates and bolts, and other reparations, and upon the return of the defendant from Europe presented him with a bill for more than \$1,600, on which the present suit is brought. The evidence is that the repairs were insufficient to render the supports of the roof safe, and left them still in need of new and expensive work to accomplish that purpose, in the execution of which the work and materials of the plaintiff would not be of the slightest use. The defendant appealed.

Judge Fenner, in giving judgment for the defendant on the claim beyond fifty dollars, said: We are clearly of opinion that this is a case where the workman has intruded his services, not only without the consent or approval of the owner, but against his will, as plainly inferable from the prior interviews between them. In such case the equitable maxim, that no one should enrich himself at another's expense, which is the foundation of the right of the *negotiorum gestor*, is without application. 11 *Toullier*, No. 55; 12 *Duranton*, No. 19; 3 *Zacharie*, § 441, note 15; 10 *Dall*, 778. See, also, *Fox vs. Sloo*, 10 A. 11; *McWilliams vs. Hagan*, 4 Rob. 374; *McCaulay vs. Hagan*, 6 Ib. 359. Aside from this, we are doubtful, under the evidence, whether the expenses, reimbursement of which is claimed, were "useful and necessary" within the art. 2299, Civil Code. The work may have afforded some temporary relief, but it is clearly proved that the work necessary to secure the roof permanently was still required, and would cost as much as if plaintiff's work had never been done. We see no merit in plaintiff's case, except to the amount of the work contracted for, and allowed by the judge *a quo*. The defence was established, and the claim should have been absolutely rejected. H. E.

Wooden Buildings in Towns.—Town Ordinance.—Municipal Power.

In the case of *Kneedler vs. The Burgess and Town Council of Norristown*, the Supreme Court of Pennsylvania, on May 29, in reversing the judgment below, decided that the authorities of towns of ordinary size have not the authority to prohibit the erection of wooden buildings therein.

On August 3, 1874, the Town Council of Norristown passed an ordinance rendering it unlawful for any person to erect a wooden building, with certain exceptions, within the borough of Norristown under penalty of fifty dollars, of which one-fourth should be paid to the informer, and in case of non-removal on notice the borough might remove and sell the materials to defray the expense of removal; that the defendant erected a building in violation of such ordinance and which did fall within the exceptions of the ordinance; that one Davis, as informer, brought suit under the ordinance before a justice, who gave judgment against the defendant who appealed to the common pleas. The question submitted to the court was whether the ordinance was constitutional. The court, considering the ordinance constitutional, entered judgment for the plaintiff, and the defendant took this writ.

Judge Green delivered the opinion of the Court and said: The charter of the borough of Norristown contains no authority to the council to enact ordinances prohibiting the erection of wooden

buildings; nor is there anything in the grant of general powers conferred upon the borough from which such an authority can be necessarily inferred, or to which it is indispensable. We find the legislature, assuming jurisdiction over the subject in question by the Act of April 7, 1865, § 8, P. L. 329, expressly prohibited the erection of wooden buildings on certain streets of Norristown. This would have been unnecessary if the council possessed the authority to enact a prohibitory ordinance. Some inference, though not a conclusive one, may be drawn from this legislation, that in the contemplation of the legislature, the authority of that body was necessary to validate the prohibition. See *Respublica vs. Duquet*, 2 Yeates, 493. It is true in this case there is no power to proceed by indictment as there was there, but there is an equally objectionable feature in the ordinance, to wit, the forfeiture of the building erected in violation of its provisions and the power of arbitrary removal upon a mere notice of ten days without proceedings or trial of any kind. The exercise of such powers requires the authority of legislative enactment. 1 Dillon on Mun. Corp. § 279; *Phillips vs. Allen*, 5 Wr. 481; *Baxter vs. Commonwealth*, 3 P. & W. 253; *Cotter vs. Dolby*, 5 Ohio, 394; *Rosenbaugh vs. Saffin*, 10 Ib. 31; *Hart vs. Mayor*, 9 Wend. 571. It is true that as a general rule the power to impose penalties resides in municipal corporations and may be exercised without special legislative authority. It may also be true that an ordinance may be good as to the penalty and void as to the forfeiture. In the present case, the ordinance is subject to another objection which applies to all its parts, and that is that it is unreasonable and oppressive. The case stated does not inform us as to the population of Norristown, nor does it mention any special circumstances as affecting the expediency, convenience, advantage or necessity of the enactment of the ordinance under consideration. We do not know whether the houses are erected compactly or separately, nor whether building materials of wood, or of brick or stone are most accessible to the inhabitants. We must decide upon general principles only applicable to all the boroughs of the commonwealth. In many parts of the State there are towns and boroughs in which nearly all classes of buildings are constructed of wood. The chief cause of this is, of course, the greater abundance and consequent greater cheapness of that material in those localities. It must be conceded that in all boroughs where this condition of things prevails an ordinance which prohibits the erection of wooden buildings would not only be unreasonable but grossly oppressive and unjust.

It is a very familiar rule that municipal ordinances must be reasonable and must not be oppressive. 1 Dillon on Mun. Corp. §§ 319, 320, 321. And see *Commissioners vs. Gas Co.*, 2 Jones, 318; *Fisher vs. Harrisburg*, 2 Grant, 281; *Dayton vs. Quigley*, 29 N. J. Eq. 77, and cases cited in foot-notes to 1 Dillon on Mun. Corp. §§ 319, 320.

It must of course be conceded that an ordinance prohibiting the erection of wooden buildings might be entirely reasonable and not oppressive in a large and densely populated city, where the danger to life and property from fire is greatly enhanced by the presence of such structures. But this consideration is inapplicable in small towns and therefore in them the rule would be different. The question is always for the court and not for the jury. The foregoing considerations and the fact that no special circumstances are disclosed in the case stated, indicating the advantage or necessity of such an ordinance for Norristown, constrain us to treat the question as a general one, affecting all the boroughs of the commonwealth, and therefore to hold the ordinance void upon the principles above stated. The power to enact it is not conferred by the charter of the borough, nor can it be necessarily implied from any of the provisions thereof. "An implied power springs from necessity. That which may be necessary for a large city may not be necessary for a small city or borough. That which is not necessary cannot be implied."

Williamsport vs. Commonwealth, 3 Norris, 494. It is certain that an ordinance such as this would be very unreasonable in a large proportion of the boroughs of the commonwealth, and we know of no reason why this would not be true of the borough of Norristown.

H. E.

Sale of Church Parsonage Devised in Trust. — Title of Purchaser.

In the case of *Littell vs. Wallace*, the Court of Appeals of Kentucky, in April, had under consideration the validity of the sale of a church parsonage, where the property had been devised in trust for the use of a parsonage. The legislature of the state had given the trustees the power to sell the property if the congregation advised the sale and consented to it. The court below decided that the sale was valid, and that the purchaser took a title in fee-simple from the trustees. On the appeal the judgment was affirmed. Judge Hargis, in the opinion, said: It is clear, from the provisions of the will, that the testatrix intended to invest the trustees of the church with a fee-simple to the property, for the uses and purposes expressed by her, and the will creates a valid trust, capable of being executed by the trustees and their successors, whom she designated for that purpose. The trustees and church are still in existence, capable of managing and enjoying the property devised in the mode specified by the testatrix, and certainly no reason can exist for a forfeiture in this case, and no reversion was ever contemplated by her, as she made the devise in fee-simple, subject to no condition or limitation save as to the use of the property, the trustees being in duty bound, keeping in view, in good faith, the object of the testatrix, as expressed in the will, so as to administer the trust as, considering the condition of the property and the circumstances and

interests of the congregation, will best subserve the beneficent purposes of the testatrix. The testatrix did not contemplate that the particular house and lot should be used forever as a parsonage, without regard to decay or inconvenience, her main object being to furnish a parsonage, to be used and enjoyed by the members of the church and their minister. We are of opinion that a sale and reinvestment of the proceeds in other property, to be devoted to similar uses, will carry out her intention and purpose as expressed in the will, and this power of sale, aside from the legislative authority, is essential to the execution of such a trust, as the decay, unfitness or inconvenience of the house as a parsonage, might ultimately defeat the intention of the testatrix, if a sale could not be made. The sale of the property so devised cannot be made, as a matter of course, but in cases of this class, where the legislature has given the authority to trustees to sell and convey, by and with the consent of the beneficiaries, such advice and consent, when regularly given, as in this case, are sufficient to ascertain the propriety of the sale. *Stanly vs. Colt*, 5 Wall. 119; *Old South Society vs. Crocker*, 119, Mass. 1.

H. E.

PORTLAND CEMENT.¹



SINCE my previous notes on this subject considerable progress has been made, — increased tensile value, and greater fineness of powder, producing almost unexpected results, showing that a trifling extra cost in the manufacture creates greater confidence all round. Many of the past bugbears, so fruitful of disaster, and misunderstanding, have happily disappeared, and the builder accepts with less misgiving than formerly the modern and much improved Portland cement. Some manufacturers still proclaim that they are the best judges of what a good cement should be, and disregard the advancing intelligence of the consumer, who alone should be regarded as competent to test and value so important an article, and one now entering so largely into all questions

of general construction. In the absence of any authoritative standard of value, many conflicting and diverse rules and regulations — as to testing the value of Portland cement — embarrass the consumer; and although the difficulties in the way are not so formidable as in past years, they are still calculated to lead to doubt and perplexity in the mind of the ordinary or inexperienced builder.

Portland cement of good and irreproachable character can now be obtained, even under the most simple protective measures of testing, because the modern cement-maker, when he exercises ordinary precautions in his business, can produce cement competent to pass the most onerous tests without materially increasing its cost to the consumer. In the modern desire for high tensile value, many new and more careful details are obligatory on the manufacturer, and any neglect of their accurate performance prevents the desired results from being attained. It is useless to produce a highly "limed" cement if the indispensable process of fine grinding is disregarded, for although the proportions may be designed to secure high breakings, their best value cannot be reached if the powder is so coarse as to interfere with or hinder its capacity or diffusiveness. English Portland cement would still have maintained its original high character if our makers had given more heed to the important question of fine grinding; we are indebted to the modern German cement-makers for the advance made in this direction, who were in great measure forced into their present satisfactory position by being compelled to meet the requirements of a universally recognized test — not a fluctuating and uncertain one, but one fast and rigid in its specifications, any departure from or neglect of which was impossible. It will be fortunate for English makers and consumers of cement, when reasonable and common-sense rules for testing supersede the existing chaotic system, or rather systems, so clamorously upheld by their various designers and supporters. Each novice who enters upon the scene fancies that he has discovered some new infallible means of challenging a faulty cement, or insuring the acceptance of a good one. Manufacturers complain, and with a considerable amount of reason, that they are unable to keep pace with the constantly changing requirements of engineers and architects; and although they are entitled under the circumstances to our sympathy, they must not forget that it was in consequence of their supineness that engineers and others were led to impose what may be termed discordant tests. If the Portland cement, of say five-and-twenty years ago, had been at all reliable, and if the manufacturers had kept changing their lines of production in unison with advancing mechanical and chemical knowledge, they would have been able to retain the confidence of consumers, which it is evident they do not now generally possess. So much for the perplexing question of testing, which we trust will at an early date assume some more sensible and defined shape.

The question of limes has now, we may say, at last entered upon reasonable lines of discussion, for it has suddenly dawned upon the intelligences of pseudo-leaders of the constructive trades, that limes

¹ Henry Rold in the *British Architect*.

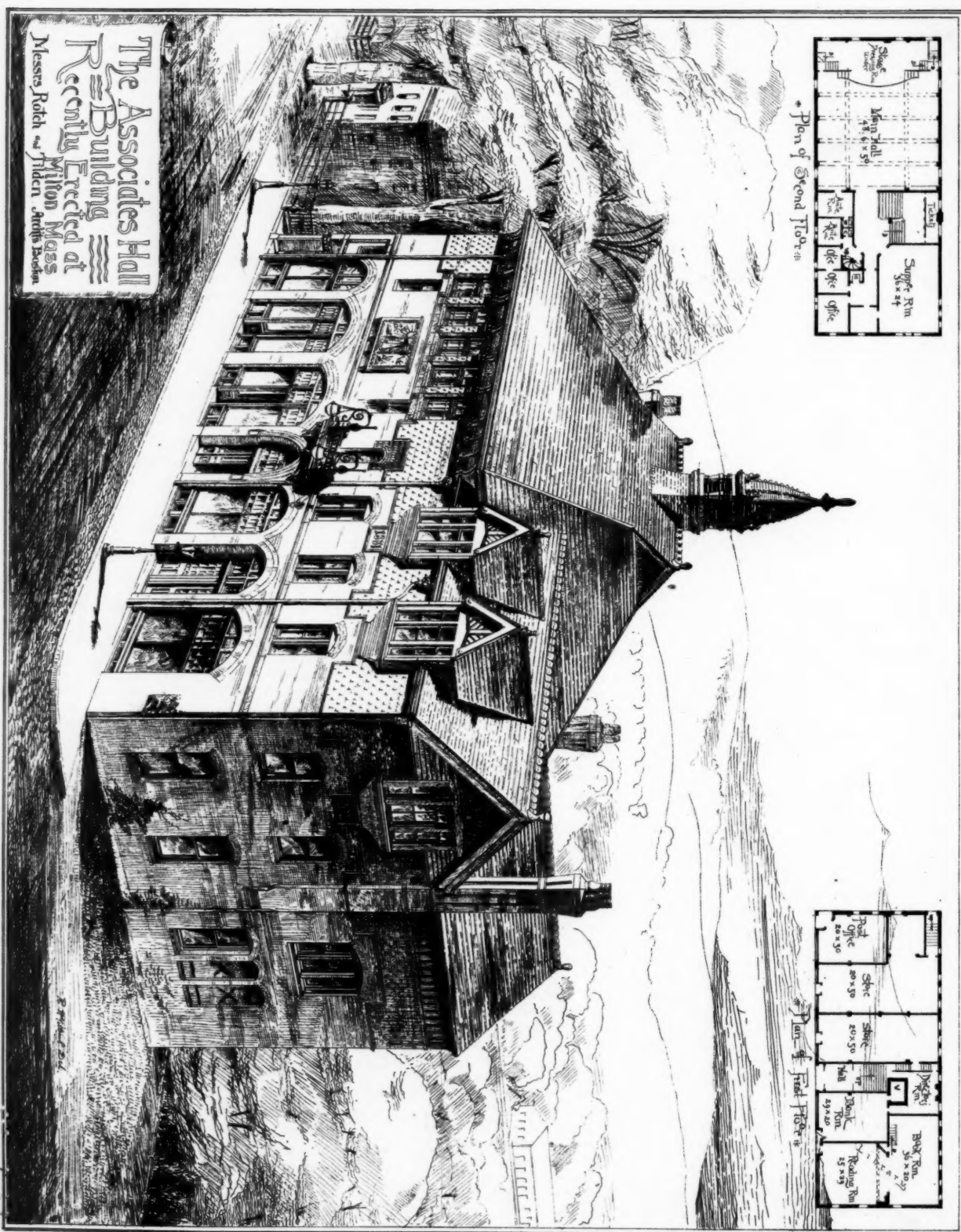
12

The following table shows the results of the experiments conducted on the 12th of the month. The data is presented in a clear and concise manner, allowing for easy comparison of the different groups. The results are as follows:

Group	Mean	Standard Deviation	Significance
Group 1	1.2	0.5	0.05
Group 2	1.5	0.6	0.01
Group 3	1.8	0.7	0.001
Group 4	2.1	0.8	0.0001

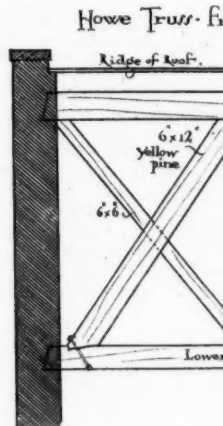
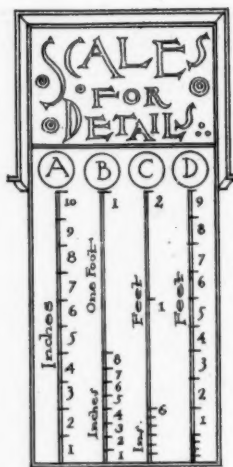
The results indicate that there is a significant difference between the groups, with Group 4 showing the highest mean value. The standard deviation for each group is also relatively low, suggesting that the data is consistent within each group. The significance levels are all below 0.05, indicating that the differences are statistically significant.

12



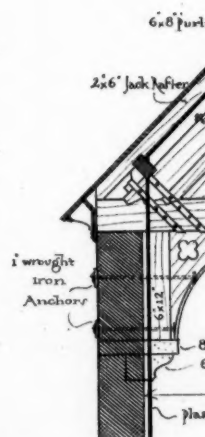
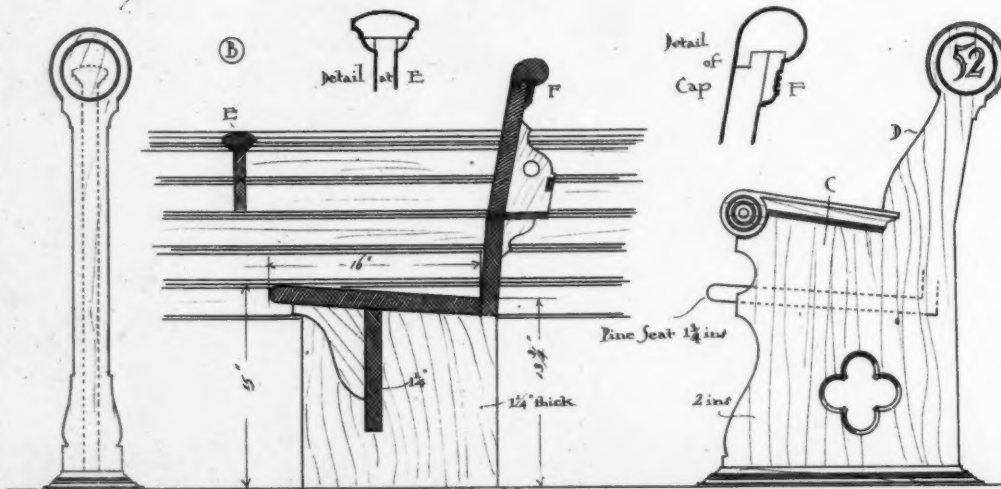
South Elevation ::

Scale of 40 30 20 10 Feet
For Plan and Elevation.

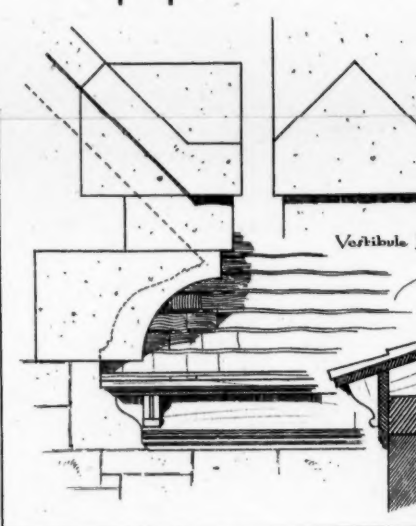
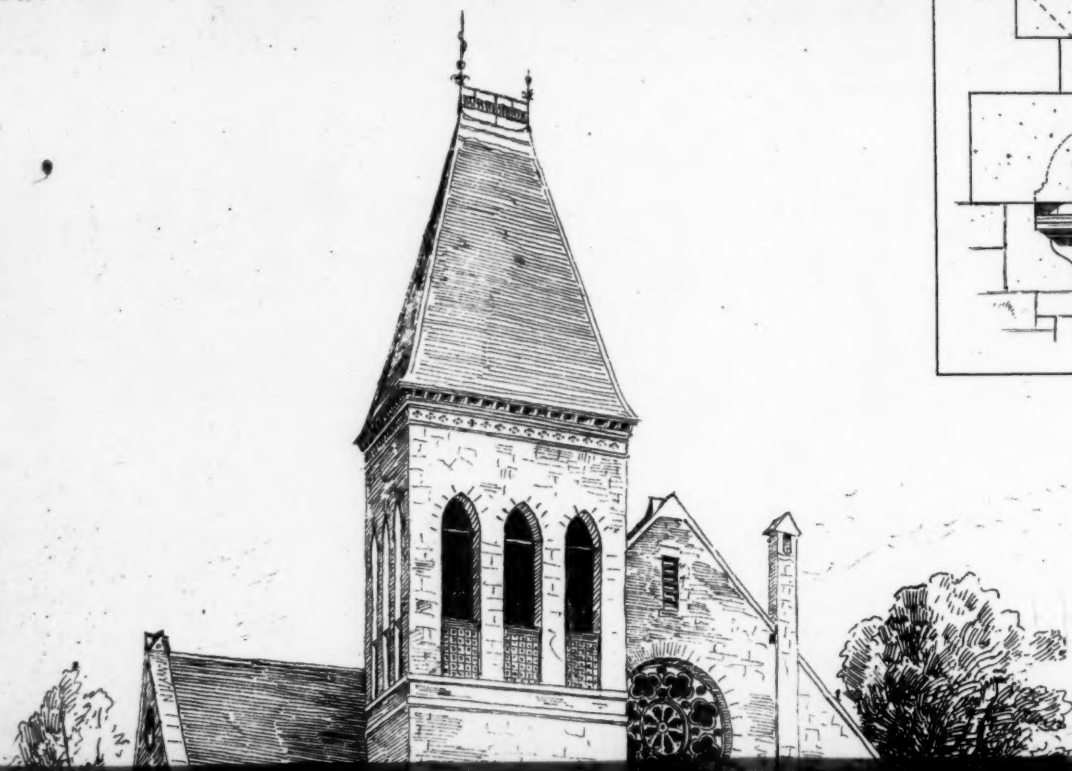


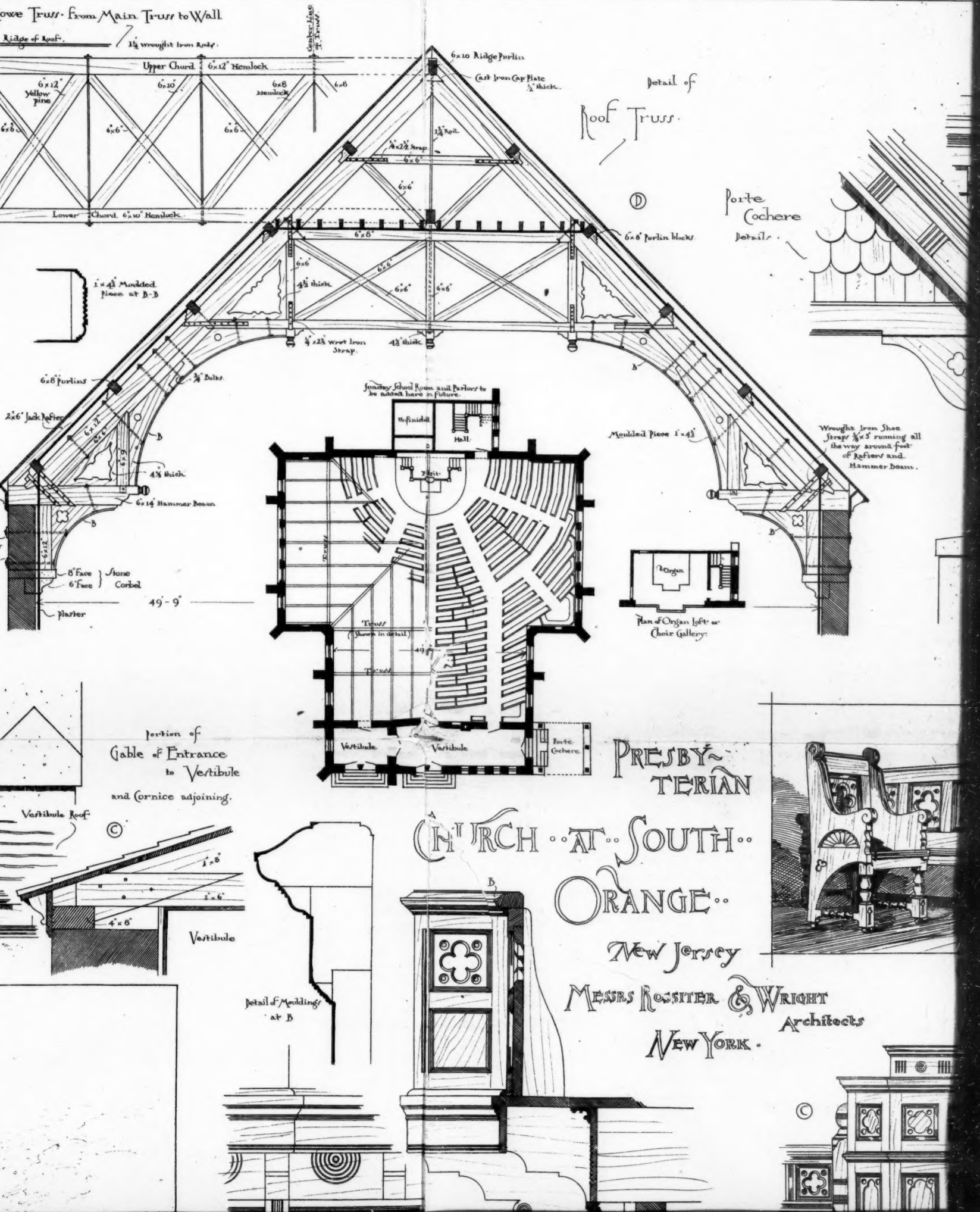
Partition End

Pews



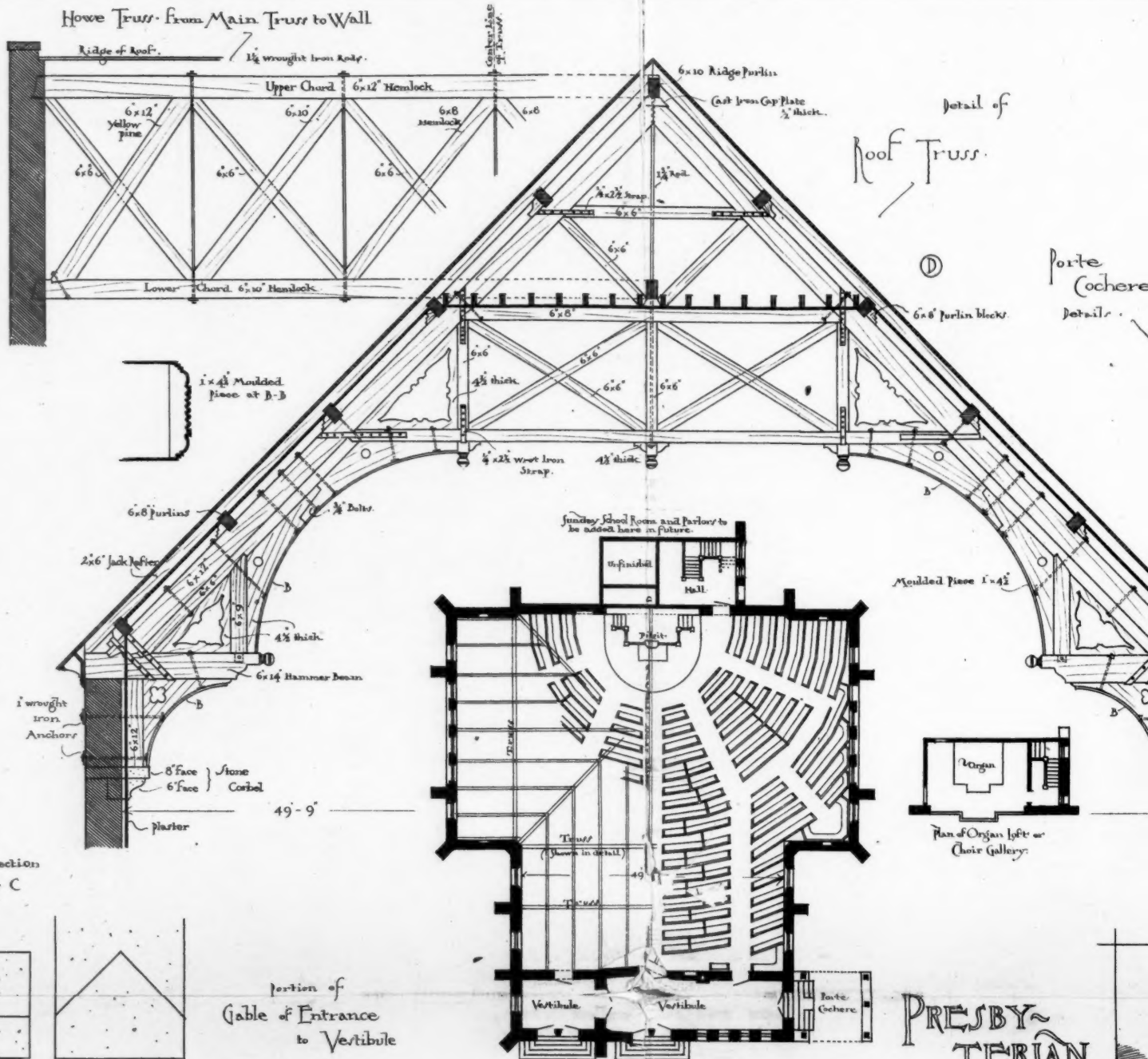
View.





SCALES FOR DETAILS.

	B	C	D
One Foot	1	2	3
Feet	1	2	3
Inches	1	2	3
Feet	1	2	3
Inches	1	2	3
Feet	1	2	3
Inches	1	2	3
Feet	1	2	3
Inches	1	2	3



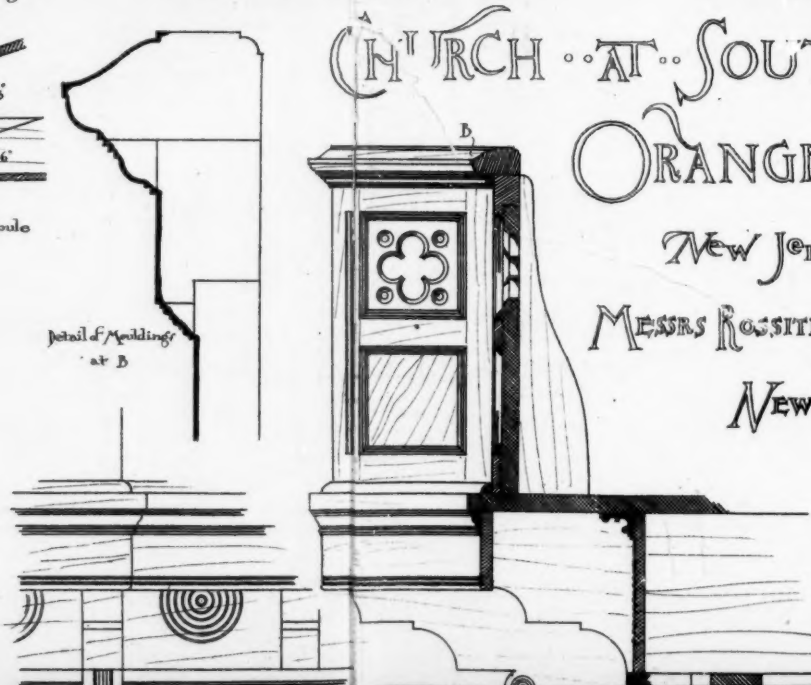
PRESBY-
TERIAN

CHURCH AT SOUTH
ORANGE.

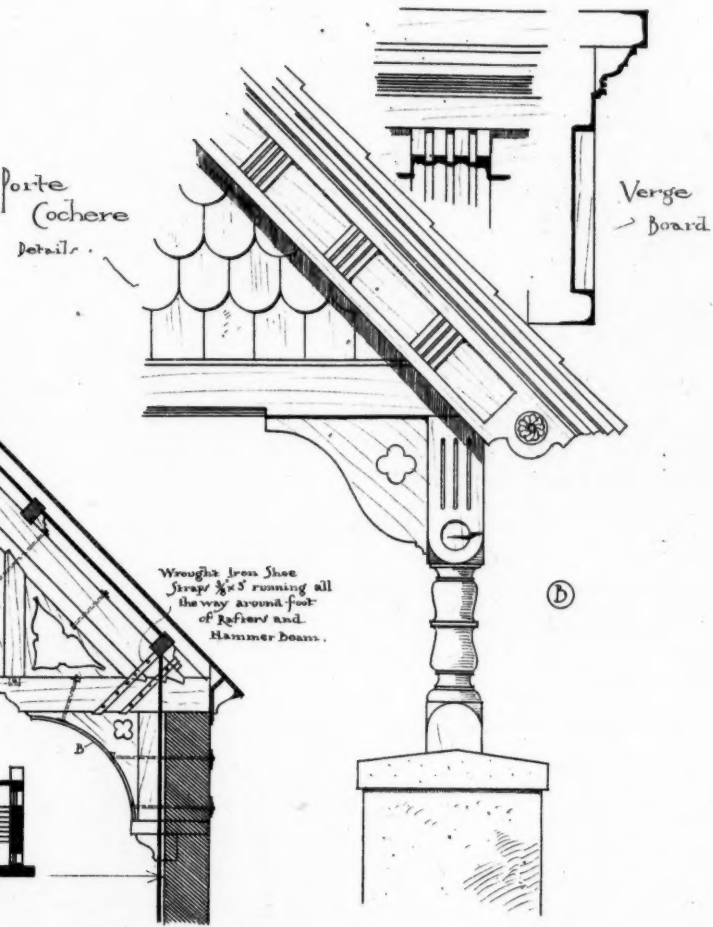
New Jersey

MESSRS ROSSITER & WRIGHT

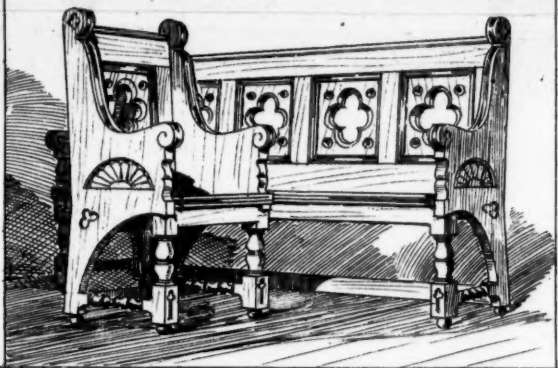
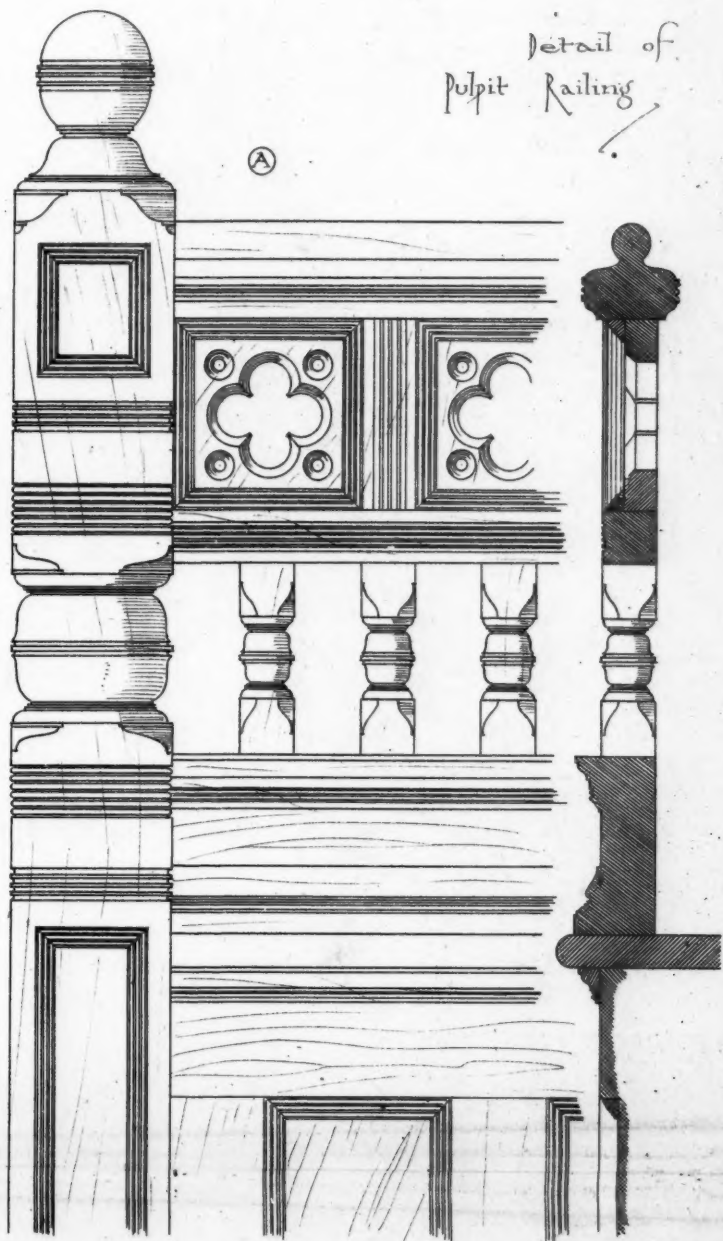
NEW YORK.



Porte
Cochere
Detail.



Detail of
Pulpit Railing

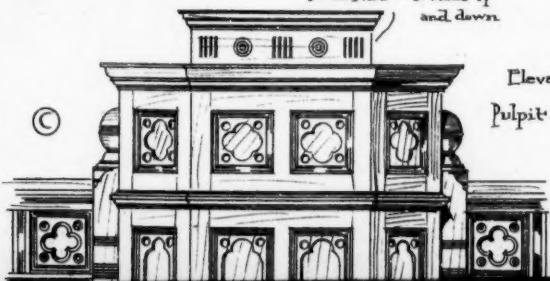


(choir and Pulpit settee)

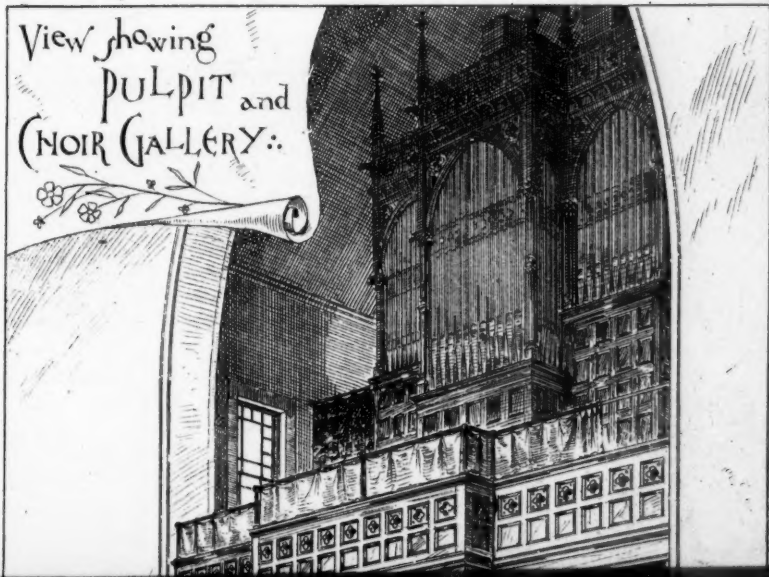
WRIGHT
Architects

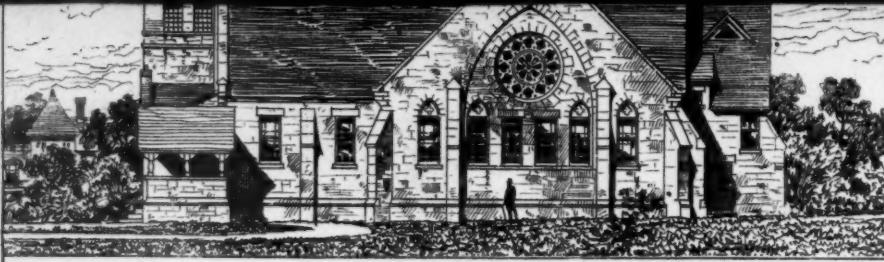
Book Rest ~ To slide up
and down.

Elevation of
Pulpit.

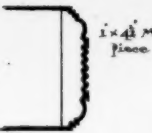


View showing
PULPIT and
CHOIR GALLERY.



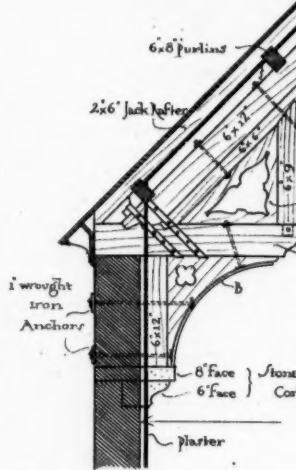
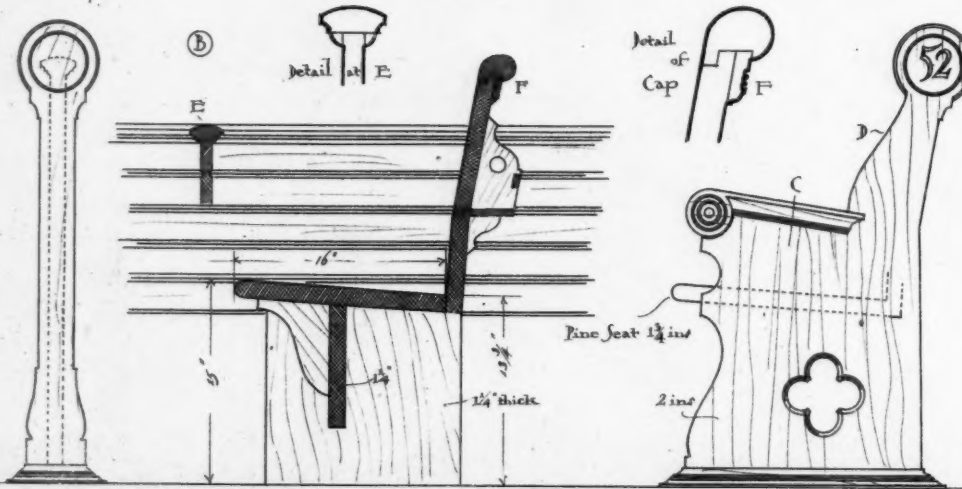


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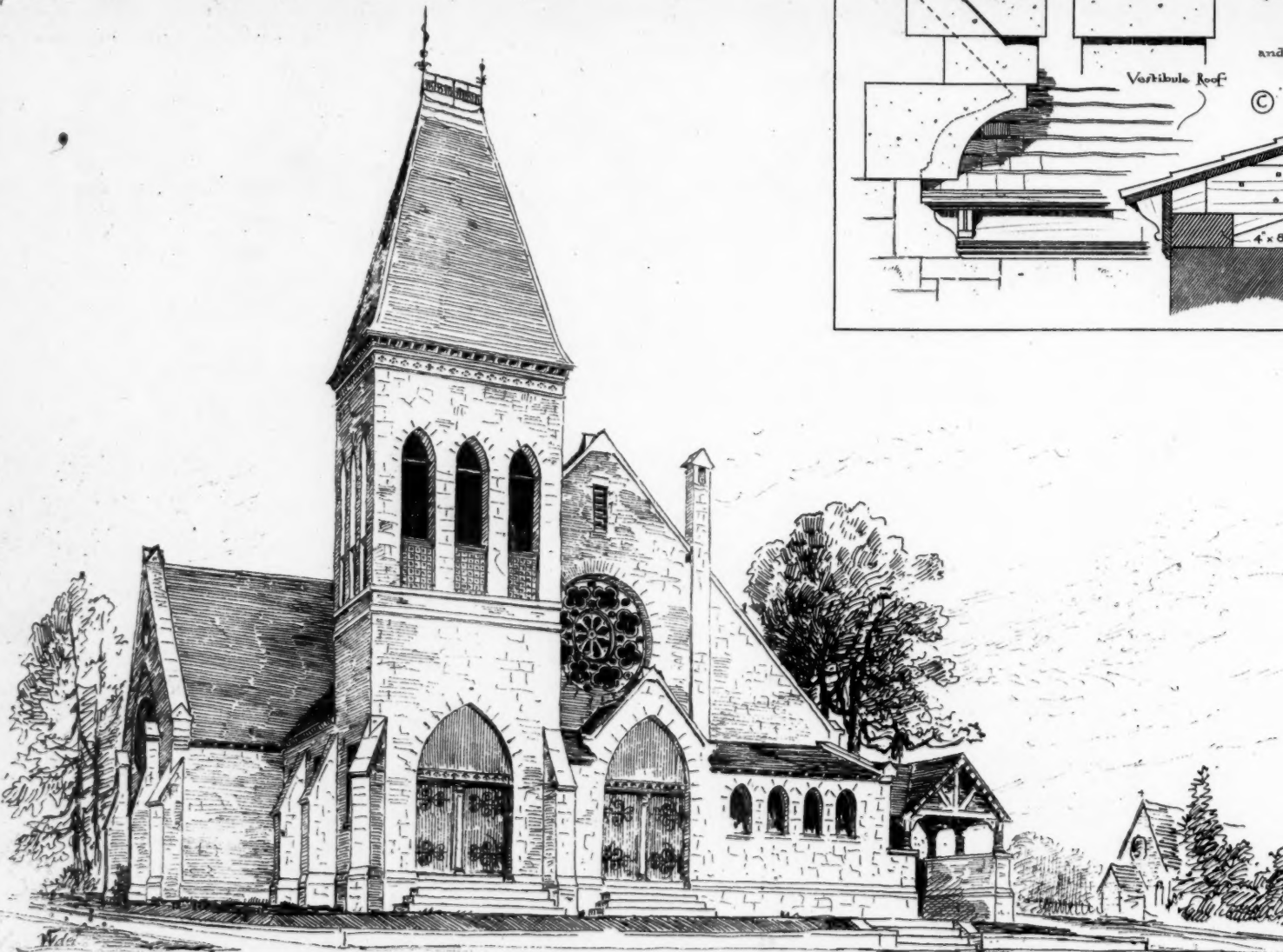


Partition End

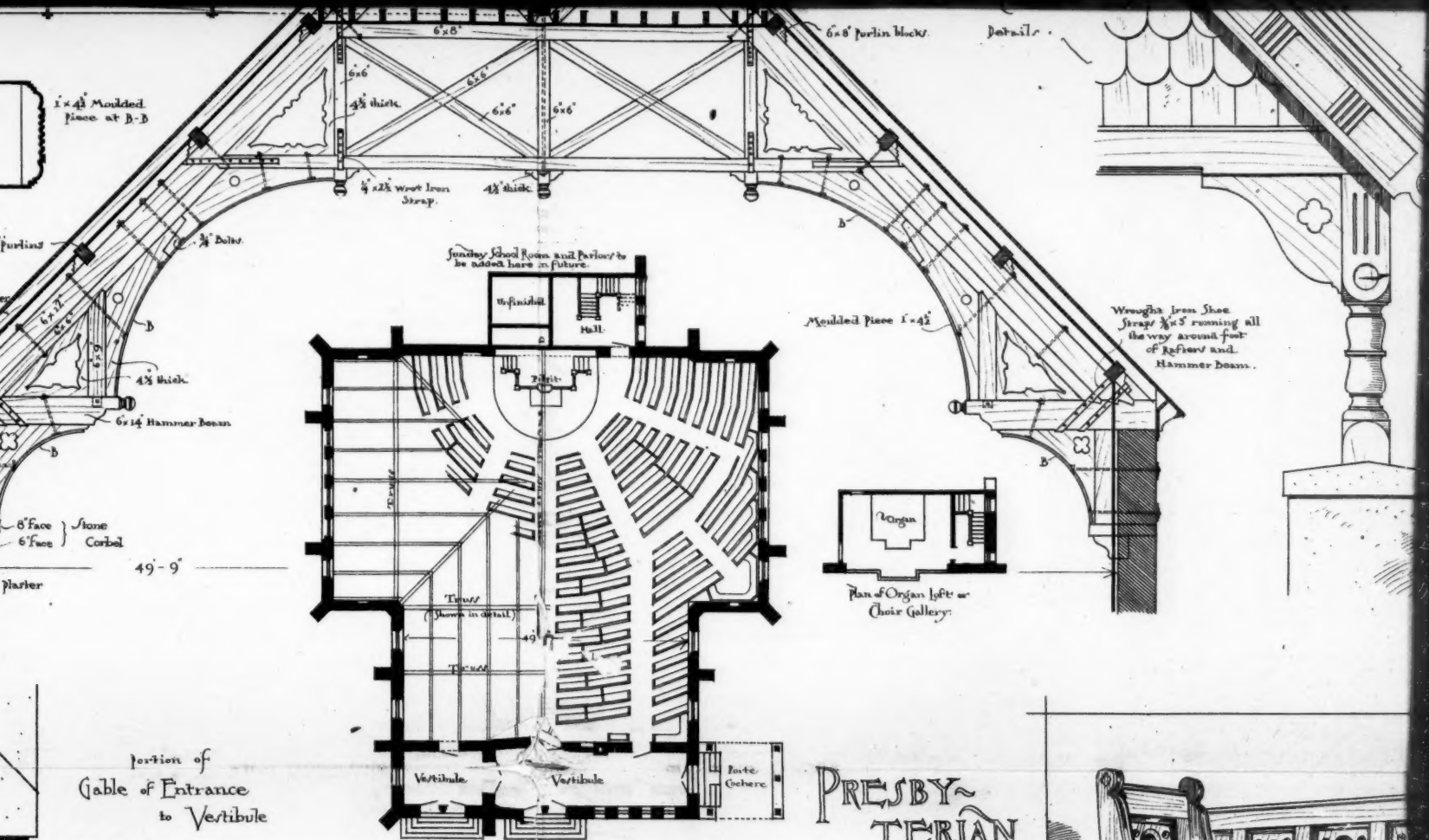
Pews



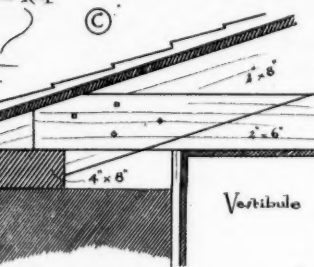
View.



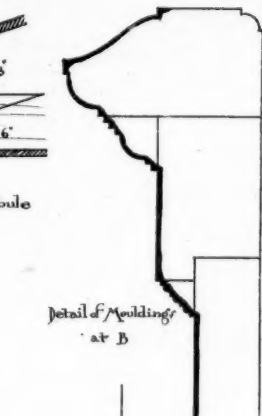
ARCHITECT'S ORIGINAL SKETCH



Portion of
Cable of Entrance
to Vestibule
and Cornice adjoining.



Detail of Mouldings
at B

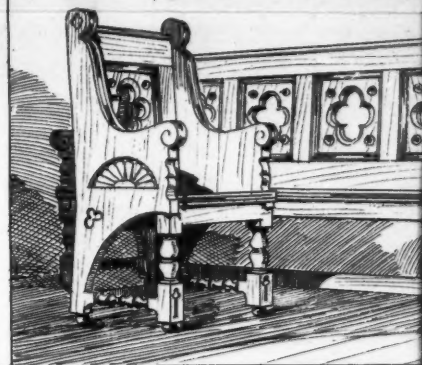


PRESBY- TERIAN CHURCH AT SOUTH ORANGE.

New Jersey

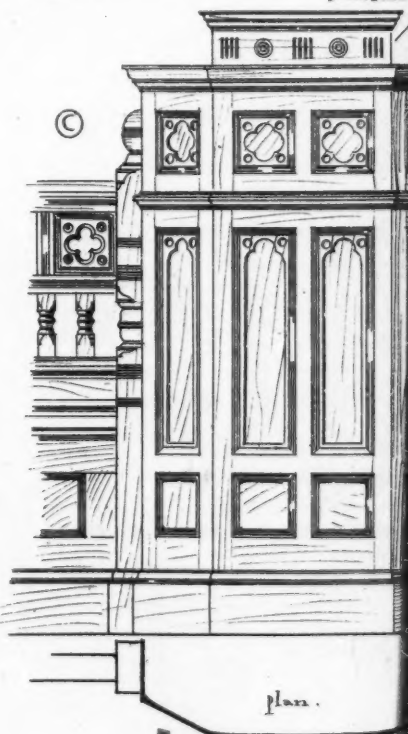
MESSES ROSSITER & WRIGHT
Architects

NEW YORK.



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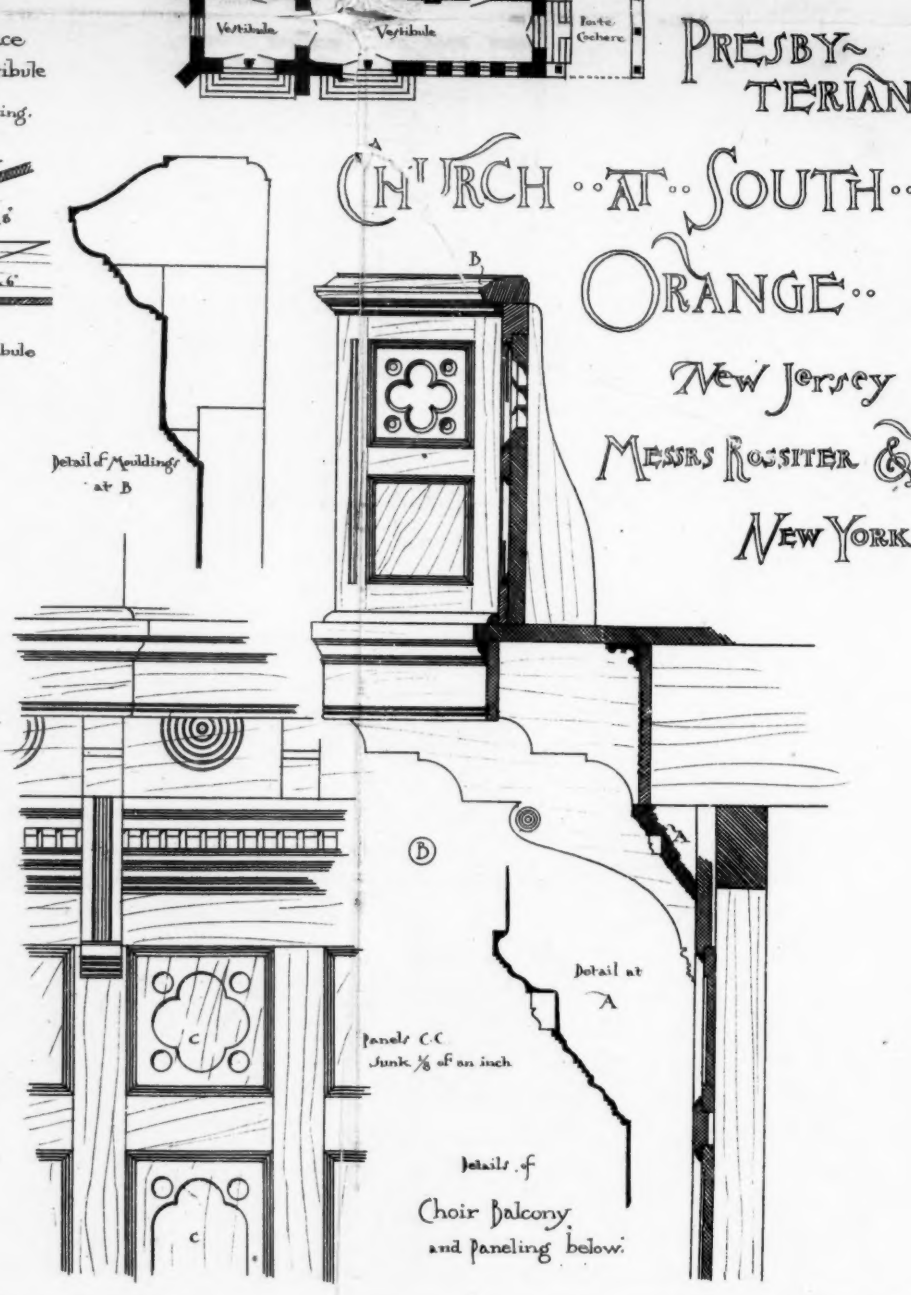
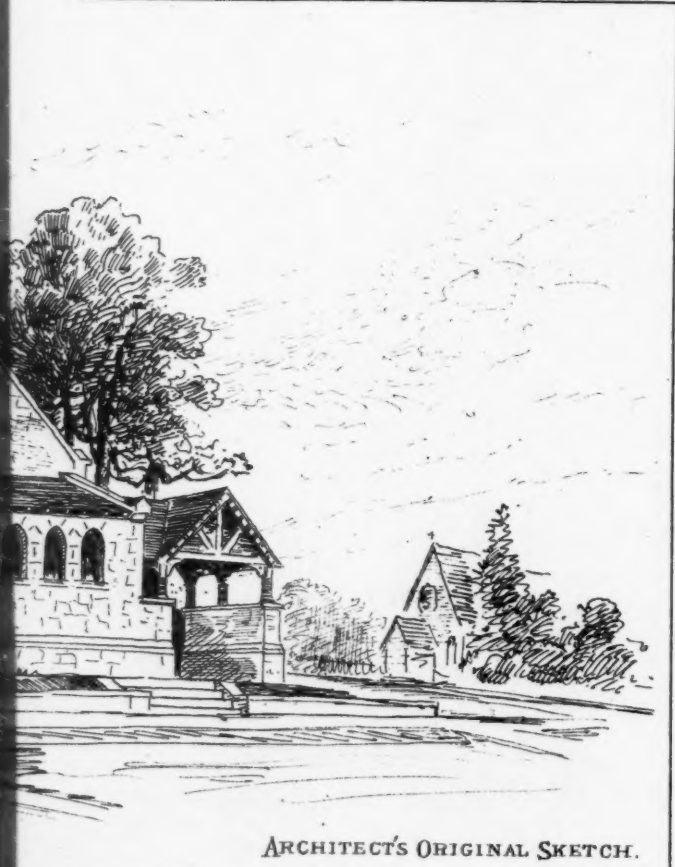
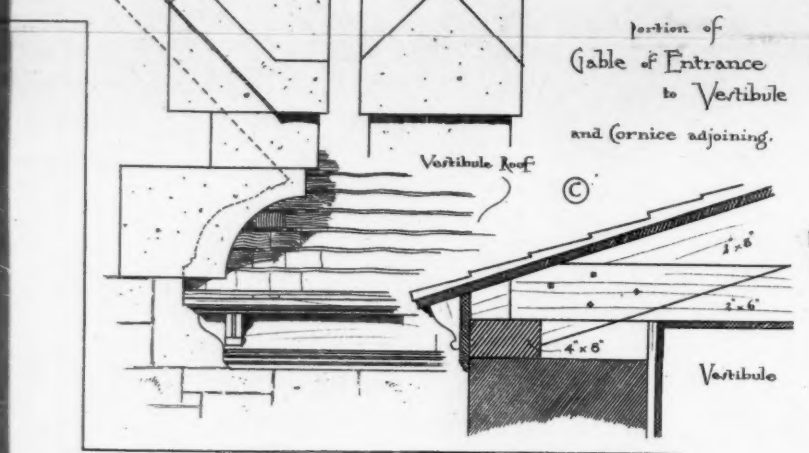
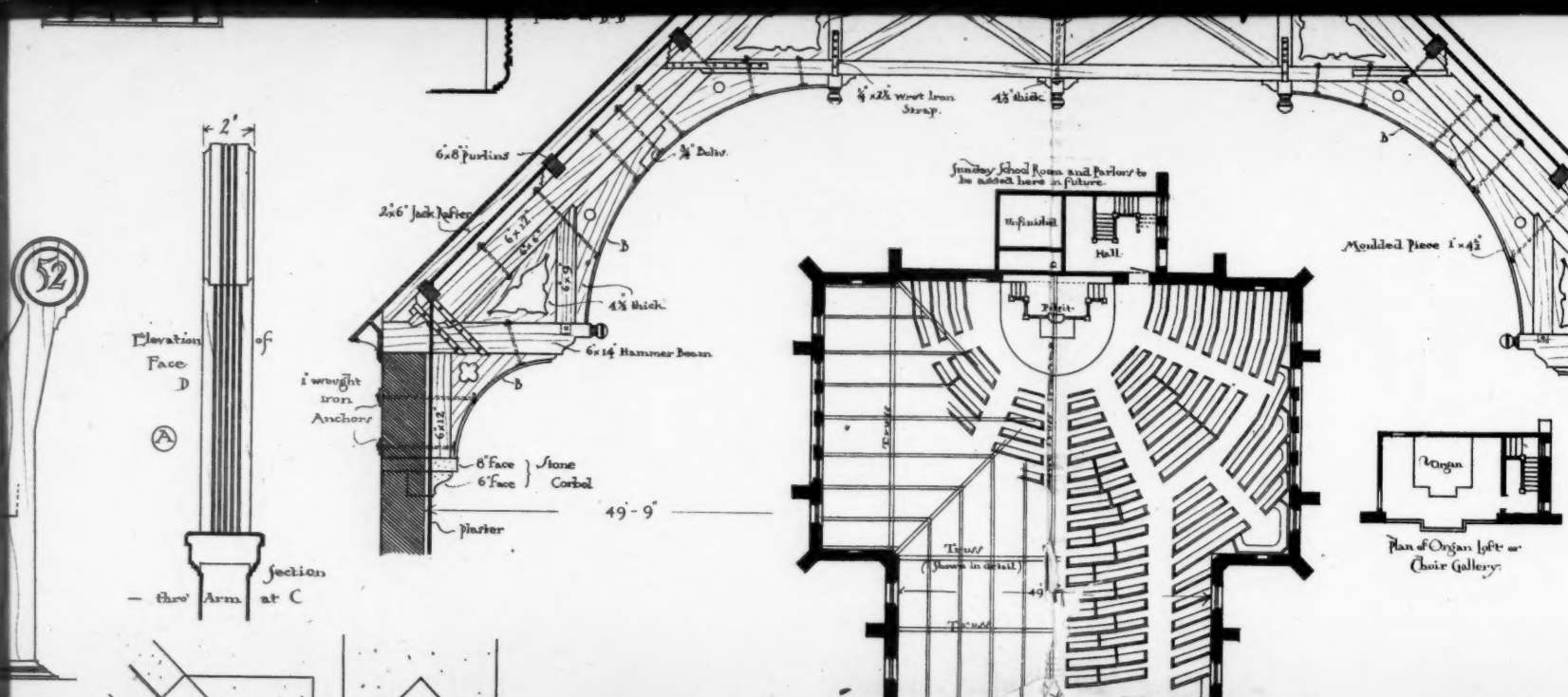


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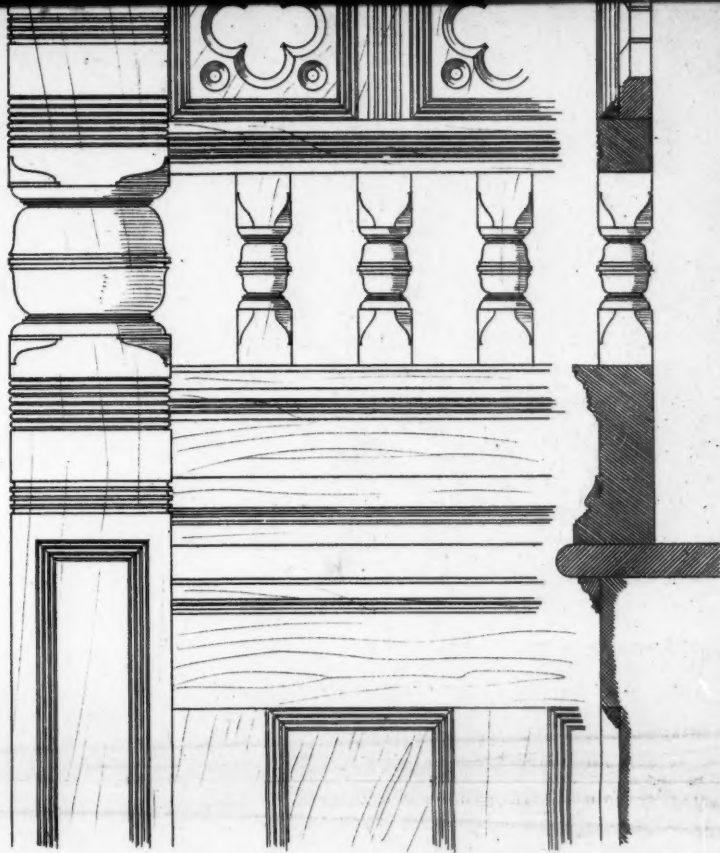
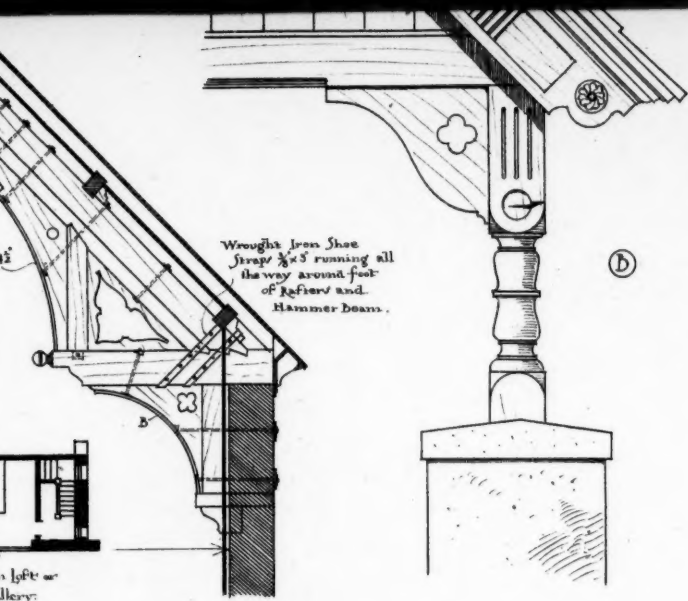
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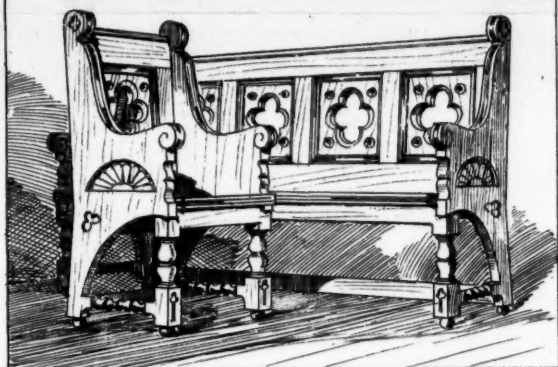
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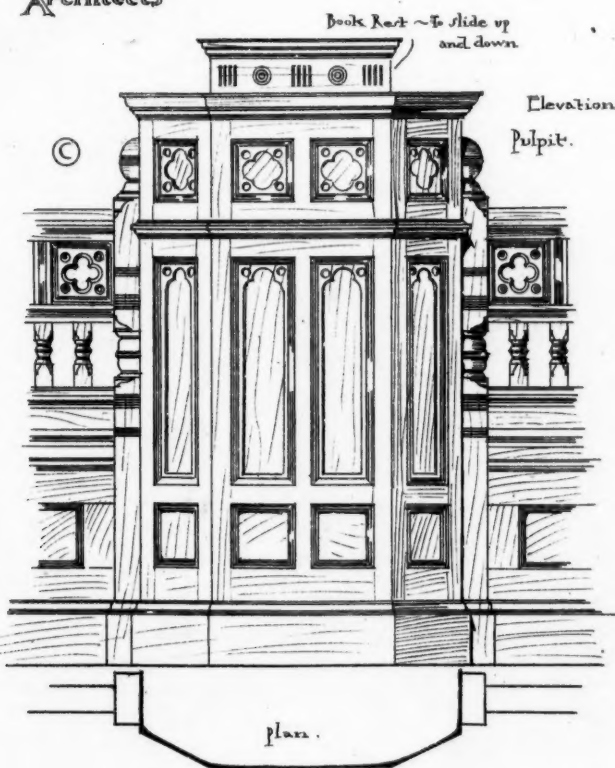
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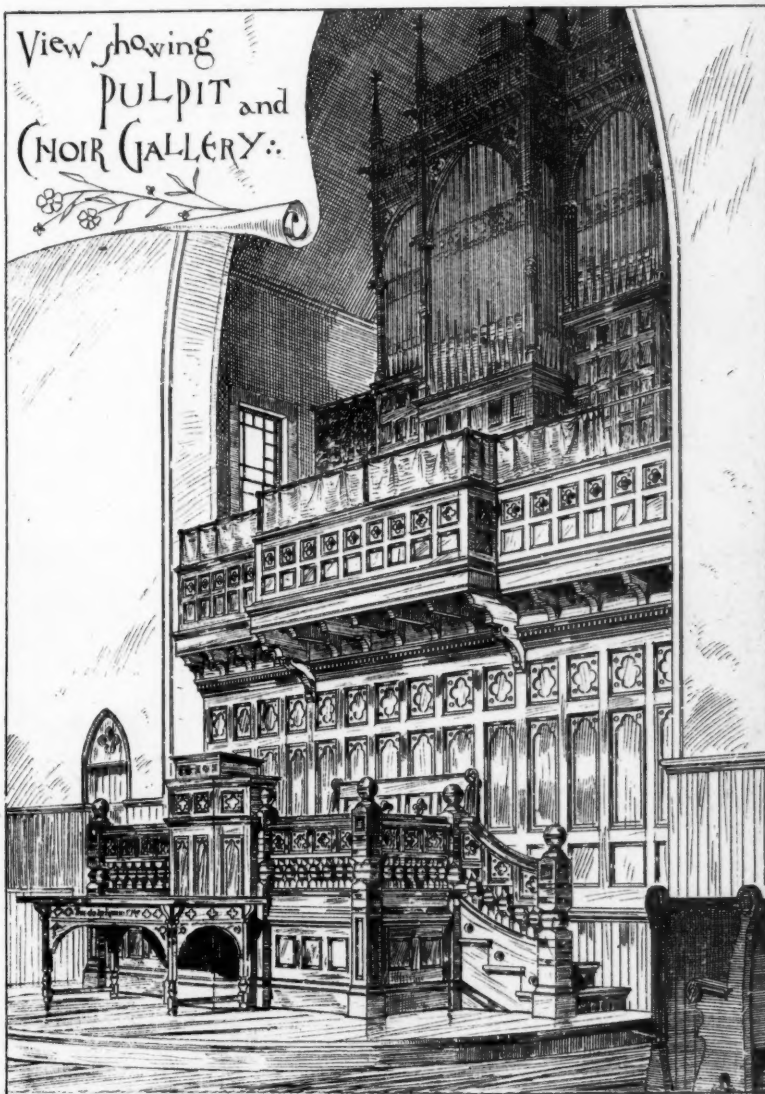
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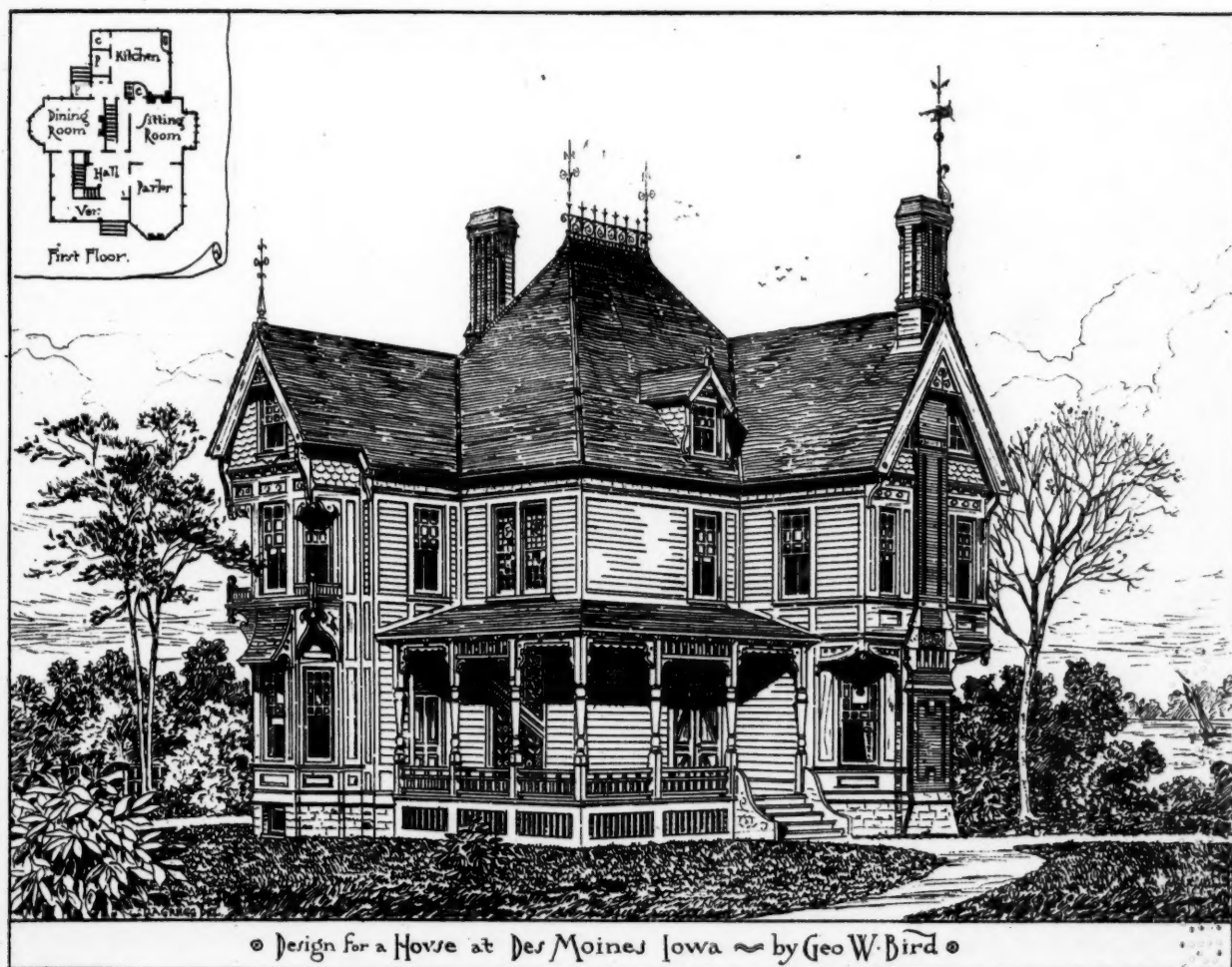
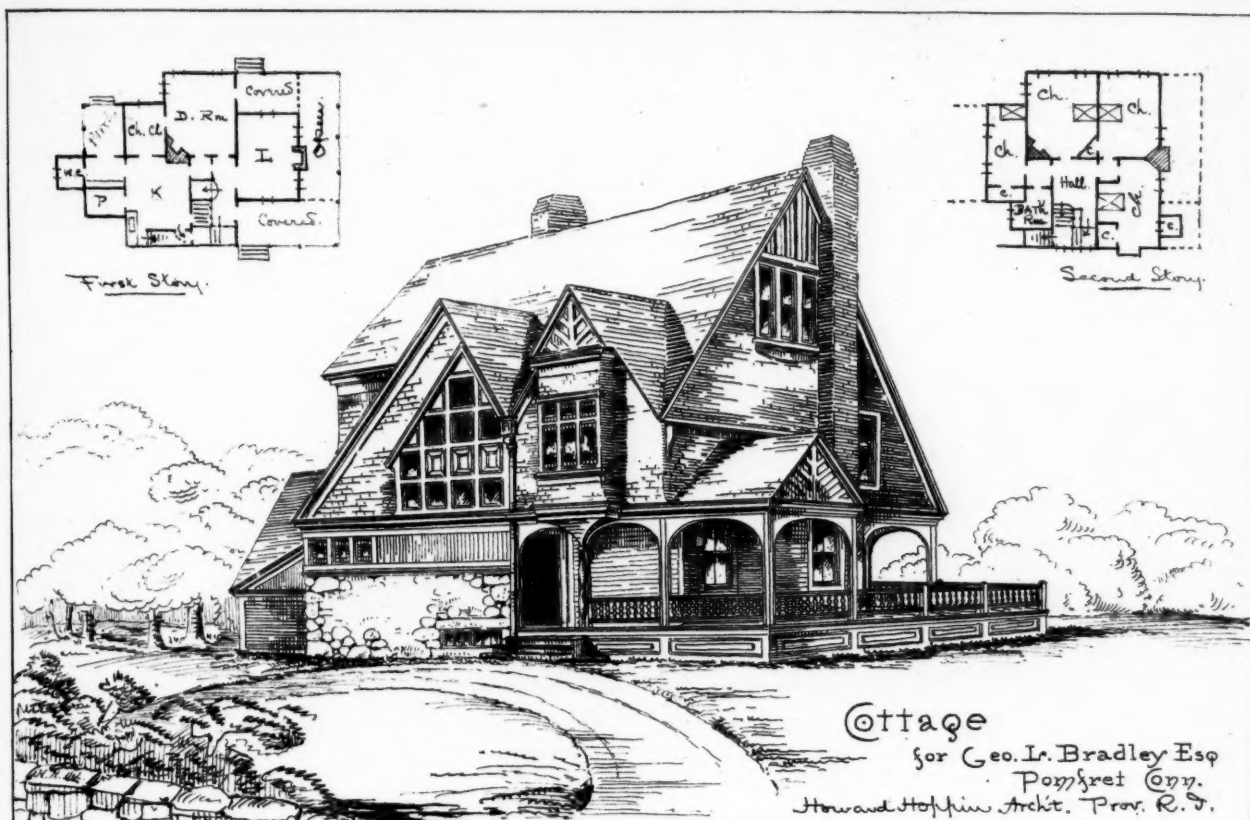
(Chair and Pulpit settee)



J.A. GREGG - DEL.



The Helotype Printing Co. 221 Tremont St. Boston.



should receive an extreme amount of comminution previous to their combination with sands for the production of good mortars. Past constructive history, from the Romans during the so-called Augustan age, to the time of Smeaton, indicates too clearly that our modern system of mortar-making is opposed to the experience of the past, and as now practised by the builders of to-day contrary to, and in direct opposition to, the practice which realized sound work and substantial buildings. Lime, but more especially the fat, or rich, in a purely caustic state, possesses considerable energy when exposed to the air, and to prevent expansion of the mortar in which it may be used should be highly ground or comminuted so as to insure its thorough dispersal amongst the sand. Under the best modern treatment of limes for constructive purposes, no very satisfactory results can be said to be realized, and it is, therefore, the interest of builders to supersede their use, where possible, by that of good and reliable Portland cement. All experimenters (ancient and modern), who have directed their attention to the improvements of lime-mortars, started in their examinations with the desire to introduce some foreign ingredient of a silicious nature, so as to counteract their tendency to mechanical expansion, and at the same time render them hydraulic in character.

Aspdin, who may be regarded as the first practical producer of Portland cement, based his operations on the experience of Smeaton, who proved that the capacity of limes to set under water was due to the presence of foreign matter of varied and fluctuating character. Instead, however, of combining the lime and trass, puzzolana, or other silicious mineral, in a prepared and moist state, the Portland-cement makers treat them primarily in their pure state, and by careful mechanical combination fit them for final chemical action in the heat of the kiln.

Imperfect proportions of the raw materials (carbonate of lime, silica and alumina), or their careless combination, result in a cement under or over limed, as it is technically called,—in the one case producing a weak cement, and in the other a dangerous one, possessing the capacity of expansion. It is seldom that now, in these times of advanced or improved manufacture, that cement of the first-named kind is produced for although possessing the property of quick initial set, it could not reach any satisfactory point of tensile value. Hence the more frequent complaints of cement having a tendency to expansion, owing to its containing an excess of lime in a free or unconverted state. It is impossible to reach a high tensile value without the required and accurate amount of carbonate of lime, and careful cement-makers devote their best attention to this point. High tensile value means a full dose of lime, without which no strong and reliable cement can be produced. Portland cement may be regarded as a silicate of lime, and if it is not accurately proportioned by chemical guidance, the excess of lime, while active in character, prevents its being used. Exposure to the atmosphere will, however, reduce the danger by hydrating the lime, and rendering it thus passive in character.

These remarks will show that "cracking," or "flying" cement, as it is called, is not of the true or scientific Portland type, and the consumer should carefully examine and test all cements of this class before running the risk and danger of using them in any building. They should, in the absence or neglect of systematic testing, make up a small pat of the suspicious cement, and place it in water, where it should remain for at least seven days, and if during that time no cracks are developed it may be used. One of the most important ingredients in any scheme of testing, is that of the fine grinding, producing a powder which passes through a sieve having 2,500 meshes to the square inch. Much finer powder is now asked for by engineers controlling special and important works, and in some specifications it has to pass through a 6,400 mesh sieve. In such cases the tensile value is increased to 450 lbs. per square inch at seven days old (one day in the air).

EXPERIMENTS ON THE TEMPERATURE OF FLUES.



smoke at the lower end of the tube. We have often had strong doubts in our own minds of the value of the smoke test in these cases, bearing in mind the well-known law of physics, that it is heat which expands and rarefies the column of air in a flue or pipe, and that unless the suction power at the top is very strong, it cannot draw smoke out of a cold flue. These opinions have been verified by some experiments recorded by an American authority on ventilation, and which may be of sufficient interest to mention for the

VERY common way of showing the advantage of certain forms of ventilators, such as cow-lips, and exhausts, is to make models of them and fix them on tubes of metal or glass. These experimental models are very frequently seen in sanitary exhibitions, the currents or up-draughts being indicated in the tubes by small pieces of wool, or by making

benefit of those readers who place great confidence in demonstrations with models. Glass tubes of about 2 feet long and 2 inches diameter were used. One of these, of the temperature of the room, was fitted into a tin box over an aperture made for the purpose, while another opening was made at the other end. A lighted taper was held first over the tube, but no current downwards was observed, and, next, over the lower aperture with the same result. A warmer tube of the same kind was substituted, and the smoke was instantly drawn down the lower opening and up through the warm tube, and out at the top. A pipe colder than the room was then tried, and it was found it condensed the air and smoke, which fell rapidly. An addition was then made to the height of the tube of the same temperature as the room, but it was found the additional height added little to the power. By placing a short tube colder than the long one over the lower opening, the smoke was found to rush down the short one and out at the top of the long one, showing that it is the comparative temperature that has to be taken into account. Again, by placing a short tube over the lower opening, warmer than the long tube, which is of the temperature of air, the current was instantly reversed: instead of going up the long tube, the smoke descended and came out through the short hotter tube. These experiments are sufficient to prove that the height of a flue adds very little to the ascensional force of the current, which is controlled by the temperature. If the flue is warmer than the outside air there will be an upward current established: if colder, the reverse action takes place. The form of the flue seems to have little effect also. When we consider that science teaches us that a cubic foot of air expanded by heat to twice its volume will support a column of the atmosphere 1 foot square in base, or 15 lbs. by 144 square inches, or that such a quality would rise about two miles and a half in the atmosphere before it found its level or a stratum of air of the same degree of rarefaction, it will be soon evident that variation of temperature is the chief moving power. Those who exhibit various "exhausts" attached to glass tubes apparently forget the power due to difference of temperature, and attribute too much to the suction of the ventilator. A cold flue or pipe invariably impedes the current, or the smoke is seen to hang about in it. In brick flues in summer time descending currents are often found if we sit near a chimney, and the smell of soot often becomes perceptible from this cause. The siphon-action of chimneys and ventilating tubes in connection with heated rooms can also be clearly explained on the above principles. When a church or assembly-room becomes heated the ventilating tubes are found to act the wrong way: there is a rush of air down them instead of up, the room or church forms the heated leg of the siphon, and draws the air down. The fault, of course, can be easily obviated by either warming the tubes or allowing a colder inlet of air below. They should never be placed in cold walls of brick or stone, unless they are intended to admit the cold air.

The whole of the difficulties and failures attending ventilating schemes are in a large measure due to the neglect of considering the normal temperature of rooms with respect to the outer air. The great use of exhaust appliances is to create a vacuum at the top, and thus aid in establishing a current; but if the flue is positively cold a considerable wind must be blowing across the outlet at the top to create an up-current. Flues on the windward side of houses, in gables and outer walls, are often found to produce smoky chimneys from this cause. In the summer months they are of little or no use, while in winter, on the lighting of the fire, they become down-cast shafts, and are a constant annoyance. Even a small gas-jet turned on at the bottom of a cold flue, will quickly create a current up, where an exhaust ventilator fails to act on account of the stagnation of air outside. A few well verified experiments, made by applying exhaust ventilators to warm and cold flues, noticing the velocity of the currents, would be of value.—*The Building News*.

STRAW LUMBER.

THE Legation Report on the Manufactures of the United States includes the following account of the new straw lumber industry:—There can be no question that straw lumber is admirably adapted to many kinds of finishing work, barrels, table and counter tops, fine doors, and ornamental work; and we are assured that it can be produced and sold in competition with the finer grades of pine or in competition with wide walnut, at about one-half the price of the latter. The standard manufacture is in widths of 32 inches, a length of 12 feet, and a thickness corresponding to that of surfaced boards. These dimensions may be varied to suit such orders as may be given, and embrace any width, length or thickness. Unlike lumber, however, narrower widths are the most costly. The straw lumber may be ripped with the hand-saw or the buzz-saw; may be run through the sticker for the manufacture of mouldings, and takes a nail or screw about as well as oak. It may be finished with varnish or with paint, and is susceptible to a high polish. It is practically water and fire proof, being



manufactured under 500 degrees of heat, and we are assured has been boiled for some hours without any apparent change of structure. Its tensile strength is greater than that of walnut or oak, and its weight about one-fifth greater than the former when dry. It is made from any kind of straw, including hemp and flax fibre, — in fact, from any material that will make pulp, — and a ton of straw will produce 1,000 feet of boards. The pulp is rolled into thin sheets, a number of which, corresponding with the thickness of the lumber desired, are placed together with a peculiar cement, which is claimed to be water-proof, and are then rolled under a pressure sufficient to amalgamate them into a solid mass, which may be worked with a plane if desired.

When it is remembered that it takes one hundred years to grow a tree to maturity, suiting it for commercial purposes, — and a tree producing 32-inch lumber will require fully twice that time, — while 20,000 feet per acre is a large yield under the most favorable circumstances, it will at once be realized that where 3,000 feet can be taken from an acre of ground for an indefinite number of years, the process which enables such a result to be accomplished, and which will yield a really valuable lumber, is one of vast importance. We look for valuable results in the future in the manufacture of lumber from what is practically a waste material, but which will be produced in endless quantities so long as the United States maintains its character as a grain-producing country. The factory at the time of its destruction by fire was turning out 20,000 feet per day, and had orders for 10,000,000 feet.



WIND-MILLS.

THE increasing use of wind-mills where small power is needed at intervals, as in pumping water into a tank, or compressing air, is attracting the attention of engineers to questions connected with this class of motors, and the subject is gradually gaining a valuable literature. At the recent meeting of the Society of Mechanical Engineers, Mr. A. R. Wolff read an interesting note on the economy of the wind-mill as a prime mover, which contains some

CALCULATION OF WIND-MILL PUMPING DUTY AND ECONOMY.
Pumping Duty.

Wheel.	Velocity of wind in Miles per Hour.	Revolution of wheel.	Gallons of Water Raised per Minute to an Elevation of						Equivalent actual useful horse-power developed.	Average number of hours per day during which this result will be obtained.
			25'	50'	75'	100'	150'	200'		
8 1/2'	15 to 23	70 to 75	6.162	3.716	—	—	—	—	.04	8 to 10
10'	15 to 20	60 to 65	19.179	9.563	6.638	4.750	—	—	.12	8 to 10
12'	15 to 20	55 to 60	33.941	17.92	11.851	8.485	5.680	—	.21	8 to 10
14'	15 to 20	50 to 55	45.129	22.569	15.344	11.246	7.807	4.998	.28	8 to 10
16'	15 to 20	45 to 50	61.690	31.634	19.512	16.159	9.771	8.075	.41	8 to 10
18'	15 to 20	40 to 45	97.682	52.165	31.513	24.421	17.493	12.111	.61	8 to 10
20'	15 to 20	35 to 40	124.950	63.39	40.800	31.218	19.144	15.938	.78	8 to 10
22'	15 to 20	30 to 35	112.381	106.964	71.604	49.723	37.249	26.741	1.34	8 to 10

Economy.

1	2	3	4	5	6	7	8	9	10
Designation of Mill.	Gallons of water raised 25' per hour.	Average number of hours per day during which this quantity will be raised.	Equivalent actual useful horse-power developed.	Expense of actual useful power developed in cents per hour.	Expense of actual useful power developed in cents per hour.	Expense of actual useful power developed in cents per hour.	Expense of actual useful power developed in cents per hour.	Expense of actual useful power developed in cents per hour.	Expense of actual useful power developed in cents per hour.
8 1/2' wheel	370	8	.01	0.25	0.25	0.06	0.04	0.69	15.0
10'	1,151	8	.12	0.39	0.39	0.06	0.04	0.70	5.8
12'	2,035	8	.21	0.36	0.36	0.06	0.04	0.82	3.9
14'	2,708	8	.28	0.75	0.75	0.06	0.07	1.03	5.8
16'	3,876	8	.41	1.15	1.15	0.06	0.07	2.43	5.9
18'	5,861	8	.61	1.35	1.35	0.06	0.07	2.84	4.6
20'	7,479	8	.79	1.70	1.70	0.06	0.10	3.56	4.5
22'	12,713	8	1.34	2.08	2.08	0.06	0.10	4.26	3.2

useful facts. Mr. Wolff's investigation leads to the conclusion that the wind blows fast enough to revolve the wheel during eight or ten hours in every twenty-four, on an average, but an actual running of eight hours a day is taken as a basis of estimate of duty and of cost.

Fuel costing nothing, the expenses of wind-power consist principally of interest, repairs and depreciation of plant, oil, and attendance. In an automatic wind-mill the attendance is a small item, it being only necessary to occasionally fill the oil-cups, which requires no skill. Five per cent per annum is assumed to cover repairs and depreciation, and five per cent more will cover interest.

In the accompanying tables Mr. Wolff gives the result of his calculation of wind-mill pumping duty and economy.

The number of gallons pumped by the 30-foot and 35-foot mills and larger sizes, and the economy of the same, are not given in the above table, for the number of larger mills in operation is not sufficient to insure the authenticity of the results thus far obtained. The performance of the 30-foot mill, as far as observed, seems to gravitate to a pumping capacity equivalent to 2.4 horse-power, and an expense of 2.5 cents per horse-power per hour.

When the figures in the table are contrasted with the cost of pumping the same amount of water by other prime movers, where, in addition to expense of interest, repairs, depreciation and oil, there are the greater expenses of fuel and attendance, and often extra insurance on property owing to the use of steam, the economy of the wind-mill is evident.

THE FALLING MOUNTAIN AT ELM.

Chateau at Jougny, France.
A. R. Wolff, Architect.

NEWS of another catastrophe at Elm, in Switzerland, appears in the Continental papers of the past week. Fortunately the new accident was not accompanied by the disaster which befell the village in question on the occasion of the fall of part of the mountain last autumn. On the 12th of September last it will be remembered that

most of the village of Elm was destroyed by a mountain slip, such as had never occurred in Switzerland since the fall of the Rossberg, near Goldau, in 1806. At Elm there were eighty buildings completely destroyed, and 114 lives lost. Herr Heim, who examined the Risikopf shortly after the catastrophe, states that the piece of the mountain which fell measured upwards of 1,200 feet across. The stream of rock and rubbish left after the fall in the valley was a mile long, and from 900 feet to 1,200 feet in width, while the area it covered was about 570,000 square metres. There were several blocks of rock weighing upwards of 3,000 tons hurled down into the valley from a height of 1,800 feet; and the total quantity of rock and earth which fell was estimated at from 15,000,000 to 20,000,000 tons. The geological character of the mountain at Elm is varied, one portion consisting of limestone, and another of sandstone, while, in addition, there were layers of marl and slate belonging to the tertiary foundation. The inhabitants of Elm had been chiefly occupied in quarrying the better and harder portions of this slate. In order to obtain these they had for years been blasting and removing the softer and comparatively valueless portions of the slate, so that the side of the mountain above the village was completely honey-combed with galleries. This undermining of the mountain, in fact, had a great deal to do in bringing about the calamity. After the great fall of September last year, it was soon discovered that there was still a large portion of the Risikopf in a dangerous condition. With some difficulty a cannon was got into position, later in the autumn, and for many days a bombardment was kept up at the crumbling hillside, with a view to bring it down; but without success. It was last winter predicted that within a few months that portion of the Risikopf west of the first fall would be sure to come down, bringing with it a mass of rock and earth nearly three million tons in weight. In the worst case the predicted fall would sweep away that part of the village of Elm which escaped last September.

As we have above intimated the slide which had been so clearly foreseen has at length taken place, though its dimensions proved but trifling compared with what has yet to come. It occurred on Saturday, the 10th of June. The authorities had been keeping up a regular series of measurements, in order to ascertain whether and how fast the loose part of the mountain was moving. It was found that between December, 1881, and May 1882, the upper part of the Risikopf had slipped 70 centimetres in a downward direction, while the crack which separated the moving part of the mountain from the rest of the Risikopf had grown nearly 5 feet wider. Fortunately the direction of the motion was rather more to the east than towards the village of Elm. The top of the mountain was slowly but surely separating itself from the rest. Between the 30th of May and the 12th of June the crevices at the back of the Risikopf had increased their width by 6 to 8 centimetres. The noise of the moving mass had ceased during the winter, but in the course of the month of May

it became quite perceptible again. At length, at four o'clock on Saturday, the 10th inst., a mass of the mountain, as large as several houses in one, was observed first slowly to bend forward and, gradually accelerating its speed, it at length fell, taking the direction of the hollow which had been left by the slip of last September, and finally scattering itself over the débris left on that occasion. The fall was again accompanied by a loud crashing noise, which was clearly heard at the village of Matt, some miles away. Many thought that the whole of the top of the Risikopf had come down. In the course of the evening separate pieces of rock, earth, and stones commenced falling, and continued doing so through the night. This caused the inhabitants to withdraw from the village until the morning when the true state of things could be ascertained. Before daybreak, however, the loose stones and earth had ceased falling, and when daylight came it was seen that, notwithstanding the mass that had fallen, there was no material alteration in the general shape and contour of the Risikopf. On the following two days the mountain was ascended and examined, when it was found that a piece of the mountain of several thousand cubic metres on the east side had fallen eastward, and another smaller portion on the western side had fallen in the direction of Elm. The blocks of rock, however, had not fallen as far as the bottom of the valley.

The most important result of the investigation was that the quantity which fell on this last occasion hardly amounts to one-hundredth part of that portion of the Risikopf which is nearly ready to fall. When the great slip takes place, the mass which will come down will immensely exceed even the great slip of last September. Loose stones and earth are now incessantly falling, and the catastrophe may take place at any moment. It is found that the entire top of the Risikopf is now moving *en masse*, and the result of all the observations is to show that the whole of it will probably come down at one time, or in two or three parts at most. It was hoped that the mountain would at length settle, but this hope is now abandoned, as, since the winter, its motion has been constant. It is not yet possible to judge whether the fall of the chief mass will be towards Elm or in another direction. In any case, every day is bringing us nearer to the most tremendous landslide known in Europe for generations past. Naturally, the inhabitants of Elm are in a constant state of trepidation. In order to hasten the final catastrophe, it has been proposed to bombard the lower portion of the moving mass with far heavier artillery than that which was employed before.—[*The Architect*.

IMAGINARY COAL STRUCTURES.



WE find in the *Architect* some ingenious calculations made by Mr. Bessemer in order to help young people to realize what is meant when it is said that during the year 1881 the quantity of coal raised in Great Britain was no less than 154,184,300 tons. He says:—When Inigo Jones laid out the plan of Lincoln's-inn Fields he placed the houses on opposite sides of the square just as far from each other as to enclose a space between them of precisely the same dimensions as the base of the great pyramid of Geeza. Measuring up to the front walls of the houses, this space is just equal to 11 acres and 4 poles. Now, if my young friends will imagine St. Paul's Cathedral to be placed in the centre of this square space, and having a flagstaff of 95 feet in height standing up above the top of the cross, we shall have attained an altitude of 499 feet, which is precisely equal to that of the great pyramid. Further, let us imagine that four ropes are made to extend from the top of this flagstaff, each one terminating at one of the four corners of the square and touching the front walls of the houses. We shall then have a perfect outline of the pyramid exactly the same size as the original. The whole space enclosed within these diagonal ropes is equal to 79,881,417 cubic feet, and if occupied by one solid mass of coal it would weigh 2,781,531 tons—a mass less than 1-55th part of the coal raised last year in Great Britain. In fact, the coal trade could supply such a mass as this every week, and at the end of the year have more than nine millions of tons to spare.

Higher up the Nile, Thebes presents us with another example of what may be accomplished by human labor. The great temple of Rameses at Carnac, with its hundred columns of 12 feet in diameter, and over 100 feet in height, cannot fail to deeply impress the imagination of all who, in their mind's eye, can realize this magnificent colonnade. It may be interesting to ascertain what size of column and what extent of colonnade we could construct with the coal we laboriously sculpture from its solid bed in every year.

Let us imagine a plain cylindrical column of 50 feet in diameter

and of 500 feet in height: our one year's construction of coal would suffice to make no less than 4,511 of these gigantic columns, which, if placed only at their own diameter apart, would form a colonnade which would extend in a straight line to a distance of no less than 85 miles and 750 yards—in fact we dig in every working day throughout the year a little more than enough to form fourteen of these tall and massive columns, which, if placed upon each other would reach an altitude of 7,000 feet.

But there is yet another great work of antiquity which our boys will not fail to remember as offering itself for comparison: they have all heard of the Great Wall of China, which was erected more than 2,000 years ago to exclude the Tartars from the Chinese Empire. This great wall extends to a distance of 1,400 miles, and is 20 feet in height and 24 feet in thickness, and hence contains no less than 3,548,160,000 cubic feet of solid matter. Now, our last year's production of coal was 4,427,586,820 cubic feet, and is sufficient in bulk to build a wall round London of 200 miles in length, 100 feet high, and 41 feet 11 inches in thickness: a mass not only equal to the whole cubic contents of the Great Wall of China, but sufficient to add another 346 miles to its length.

Although coal is still our great agent in the production of motive power, it must not be forgotten that Sir William Thomson has clearly shown that by the use of dynamo-electric machines, worked by the falls of Niagara, motive power could be generated to an almost unlimited extent, and that no less than 26,250 horse-power so obtained could be conveyed to a distance of 300 miles by means of a single copper wire of half an inch in diameter, with a loss in transmission of not more than 20 per cent, and hence delivering at the opposite end of the wire 21,000 horse-power.

What a magnificent vista of legitimate mercantile enterprise this simple fact opens up to our own country. Why should we not at once connect London with one of our nearest coal-fields by means of a copper rod of one inch in diameter, and capable of transmitting 84,000 horse-power to London, and thus practically bring up the coal by wire instead of by rail.

Let us now see what is equivalent in coal of this amount of motive power. Assuming that each horse-power can be generated by the consumption of three pounds of coal per hour, and that the engines work six and a half days per week, we should require an annual consumption of coal equal to 1,012,600 tons to produce such a result.

Now all this coal would in the case assumed be burned at the pit's mouth, at a cost of 6s. per ton for large and 2s. per ton for small coal—that is, at less than one-fourth the cost of coal in London. This would immensely reduce the cost of the electric-light, and of the motive power now used in London for such a vast variety of purposes, and at the same time save us from the enormous volumes of smoke and foul gases which this million of tons of coal would make if burned in our midst. A 1-inch diameter copper rod would cost about 533l. per mile, and if laid to a colliery 120 miles away, the interest at 5 per cent on its first cost would be less than 1d. per ton on the coal practically conveyed by it direct into the house of the consumer.

A SHABBY TRICK.

NEW YORK, July 29, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs,—We have been informed that a representative of a terra-cotta company, doing business not a hundred miles from this city, has adopted what may seem to him a very clever method for building up a reputation (?). He has with him two small pieces of terra-cotta, one of his company's make and one *chip* picked up at the New Casino on Thirty-ninth Street and Broadway, very likely selected for the purpose, which may or may not be as closely pressed as his own sample. He attempts to prove by this the superiority in texture of the terra-cotta made by his company. When one considers that over one hundred tons of terra-cotta have already been delivered at the New Casino, it is not at all unlikely a *chip* could be selected which might not be up to the standard of the general work, and this is quite likely to occur where such a large quantity is manufactured in so short a time. No concern in the business could have performed work of such elaborate character in quicker time or have given better material. It seems to us this representative is not pursuing a very honorable course in his attempts to injure a competitor in this manner, and the facts of the case, therefore, should be known by the profession generally. It would be hardly safe to trust a contract to a man who resorts to such trickery to get business.

It is for the purpose of setting right any statement which might have been made to the detriment of the work at the New Casino we desire this transaction made public.

KIMBALL & WISEDELL, Architects.

DRY-EARTH CLOSETS.

MONTGOMERY, July, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

CAN you or any of the readers of the *Building News* give me plans for a dry-earth arrangement to be used in privy, on which there is no patent, and oblige

JOHN E. SCOFIELD.

[Any arrangement is suitable by which a small quantity of sifted earth is thrown when required into the vault. The simplest, and in some respects the best, apparatus consists of a box of sifted loam or ashes, and a small

hand-scoop. Another device, which is not patented so far as we know, employs a bin hung on pivots, with a tight cover, and a small service-box attached to one side, opening downward and communicating with the bin. On tilting the bin, by pulling a string, until it is turned rather more than one-quarter of the way around, the dry earth in it runs into the service-box, filling it. It will not run out of the service-box while in this position, as the orifice of this is then directed slightly upward, but as soon as the string is released the bin falls back into place, turning the opening of the service-box downward, and discharging its contents into the vault. Another apparatus of a different kind is described in a pamphlet on Rural School Architecture issued by the Bureau of Education at Washington; and any ingenious person can contrive something to serve the same purpose which he can probably use without infringing on the rights of patentees. — EDS. AMERICAN ARCHITECT.]

OPEN-TIMBER ROOFS.

WASHINGTON, D. C., July 24, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Gents, — Please advise us per next mail of some standard treatise on the construction for open-timber roofs, and oblige

Yours very truly, E. S. BLACKWOOD, Architect,
615 Seventh St.

[THE best work on the subject is "Open-Timber Roofs of the Middle Ages," by R. and J. A. Brandon, now out of print but to be had of second-hand book-sellers at eight or ten dollars a copy. Address J. Sabin & Sons, Nassau Street, New York, or Estes & Lauriat, Washington Street, Boston. As to the construction of such roofs, considered as a work of engineering, there is nothing in print that we know of, although some examples, such as the Westminster Hall roof, have been the subject of published technical criticism. Practically, such roofs are very simple constructive problems. The strains are readily calculated, and for mere appearance the dimensions of the timbers are usually made much greater than is necessary to furnish the requisite resistance. — EDS. AMERICAN ARCHITECT.]

FRIEDRICH THIERSCH.

NEW YORK, July 26, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, — Allow me to call attention to an error which appeared in an editorial notice of last week's *American Architect* in regard to Friedrich Thiersch, one of the prize-winners in the German Parliament House competition. The same mistake was made by the Frankfurt and corrected by a Stuttgart paper, as inclosed clippings show. Thiersch was a schoolmate of your correspondent and of course a pupil of Leins, not of Semper who at that time had left Zürich. His talents were so remarkable that he easily outran all his classmates in competitions and on sketching tours.

Yours respectfully, A. F. D'OENCH.

[OUR information was, we believe, derived from the *Builder*. We are glad to make the correction which our correspondent wishes. — EDS. AMERICAN ARCHITECT.]

A CORRECTION.

In the report of Professor Lanza's experiments in the strength of wooden posts, copied from the Boston *Transcript* in our issue for July 1, the tabular statement of the strength of spruce was incorrectly printed in the *Transcript*, and consequently in our own issue. The table should have read as follows: —

	Max.	Min.	Mean.
Hatfield gives.....	12,996	7,506	9,930
Rankine gives.....	12,300	9,900	11,100
Laslett gives.....	9,707	7,506	9,045
Trautwine gives.....			8,100
Rodman gives.....			6,168

NOTES AND CLIPPINGS.

DISCOVERY OF AN ANCIENT IDOL IN TENNESSEE. — A most interesting discovery was made near Carthage (Tenn.), recently. Mr. Carrol Gibbs while ploughing found a very ancient Indian idol, though the exquisite finish of the figure and its oriental posture point to its having been made by that great prehistoric race which spread over this country before the wild Red Man obtained possession. If it was made by the Red Man it was certainly made at a very early date, before he had lost those Eastern ideas which the figure shows its maker to have possessed. Upon its back is found the figures 1619, but the surface of the letters when compared with the general surface of the body shows them to have been placed there a great while after the figure was completed. It is made of compact yellow sandstone which is as durable as marble, yet time has made great ravages upon it. It is sixteen inches in height. The outlines of the features are very well preserved; in fact the face is very little damaged. It has high cheek bones, flat face and prominent chin. The arms are well shaped and well proportioned. It is represented in a sitting posture with its legs crossed in oriental fashion. There is some attempt at delineation of drapery, but time has only left the outlines, so that no definite conclusion can be reached on this score. The idol is a creditable piece of sculpture for even a highly civilized race, and was certainly made by no novice in the art. It is now in the possession of Mr. W. E. Myer, of this place, who has placed it in his large collection of Indian relics. — [Nashville American.]

ANOTHER CASE OF ARCHITECTURAL RESPONSIBILITY. — John Carson, aged forty-seven, a carpenter, hung himself with a sash-cord in an unfinished house on James Sutton's place, between Mount Kisco and the village of Bedford, N. Y., about 6 o'clock, July 12. He had been foreman for Mr. Sutton during the past two years. It is supposed that his perplexity over the planning of the new house, which is of a very peculiar style of construction, had led him to commit the act.

A CASPIAN AND AZOF CANAL. — A Russian officer, Colonel Blum, has submitted to his Government a plan for joining the Sea of Azof with the Caspian Sea by means of a canal. As the Caspian is likewise to be connected with the Sea of Aral to the east, there will be a direct route from the Black Sea for trade with Khiva, Bokhara, and the other parts of Central Asia recently conquered by Russia, and those that are still independent. In ancient time, and even as late as the middle of the sixteenth century, the river now called the Amu Daria flowed through the Sea of Aral and discharged itself into the Caspian through a mouth which has subsequently been stopped up with sand. The Sea of Azof is 25 metres and the Sea of Aral is 11 metres higher than the Caspian Sea. If the proposed canal is really carried out on a sufficient scale, it will be long before possible for vessels to steam from the Atlantic into the centre of Asia, and to the very middle of the wilds of Tartary. — *The Builder*.

A MOVING TALE. — It is reported that a monster mushroom has forced its way through the solid 9-inch flooring of concrete and asphalt in a Buffalo grain-elevator. The bulge in the floor was first noticed the latter part of last week, but the break did not occur until Wednesday morning.

TREE-PLANTING IN KANSAS. — It is said that an area of 93,000 acres has been planted with trees in Kansas under the new law relating to arboriculture. The cotton tree was largely planted on account of its rapid growth, and 6,000 acres were set with walnut trees. The expectation is that this will operate, in course of time, to relieve the climate of its extreme dryness.

A NEW PORTABLE HOUSE. — The rapid increase of population in Manitoba has stimulated the inventive geniuses of the Dominion to contrive houses that may be portable and quickly put up. L. Forest, of Belleville, Ont., has planned one that is in three-foot sections, and dovetails together. A house, for a hotel or boarding establishment, has been put up at Winnipeg, over 100 feet long, two stories high, and divided into apartments sufficient to accommodate 250 guests. The foundation was laid on Tuesday and the house was completed on the Thursday afternoon following. — [Northwestern Lumberman.]

A ROCK THAT IS POISONOUS. — The rock excavated on the West Shore Railroad, near Milton, on Cameron & Fagin's contract, where the big accident occurred last Wednesday, has a very peculiar quality. It is as poisonous as the ivy and some other vines, the slightest scratch by a piece leaving a troublesome running sore. The thing is quite a new experience to railroad men, and it leaves the wounds to those injured in the accident all the worse. — [Middletown Argus.]

RECOVERY OF A PAINTING BY CARACCI. — A valuable and interesting painting, which for years has been lost sight of, and was supposed to be irrecoverably lost, has lately been recovered at Baden, in Canton Aargau. The history of this painting, one of Annibale Caracci's masterpieces, is remarkable. The convent at Baden owed its existence to two Capuchin friars, Ludovicus and Saxonia. The members of the Diet of 1688, which met at Baden, were so impressed by the preaching of these friars that it was resolved to commemorate their services by building a convent and a chapel. The Spanish Ambassador paid for the construction of the high altar, and his master, Philip II, presented for its adornment a painting by Caracci. In 1593 the church was opened with an imposing ceremony. A century or so thereafter the painting was handed over to a local artist to be cleaned. The local artist did his work so badly that the monks, instead of replacing it in its former position, put the picture away in a lumber room. In 1841, when the convents of the Canton were secularized, the gift of Philip II was, among other things, sold by auction for a few francs. The buyer was about to turn it to use as a piece of old canvas when Herr Brunner, father of the present proprietor of the Ship Hotel at Baden, bought it from him for next to nothing, and, without having any idea of its value, hung it up in his house. A few months ago it occurred to the present Herr Brunner to have the painting cleaned and restored, and he sent it for that purpose to Caesar, the famous picture-cleaner of Augsburg. When the thick coating of dirt and dust was removed, the identity of the painting with the renowned altar-piece of Philip II was discovered, and as it bears the artist's signature, Annibale Carracci Bononius, and the date 1592, there can be no question that it is really the work of that master. The figures, of which there are five, are life-size. — [London News.]

A ROTARY HAMMER. — Dr. W. T. Browne, of Stockton, has recently perfected a rotary engine which promises to revolutionize those branches of industry in which the hammer plays an important part. It consists of a series of hammers arranged so that their faces extend beyond the periphery of a wheel and strike a sliding rod, to which is adjusted a drill, a hammer, or a quartz-crusher, or whatever device is needed to accomplish the desired work. When these hammers strike the drill—the machine now on exhibition is fixed to drill rock—they slide off out of the way in the most remarkable manner, without perceptibly decreasing the velocity of the wheel. They spring into position again and never miss a stroke. The machine now in operation contains eight hammers, and one man turning it can deliver 400 powerful blows a minute. Two pieces of rock show the work that the machine does drilling. In freestone a man drills an inch a minute, turning the machine leisurely. A ratchet turns the drill a small fraction of an inch at each stroke, and all the driller has to do is to turn the crank. In granite rock from half an inch to an inch can be drilled in a minute. The individual hammers each weigh eleven pounds. Turning the wheel forty revolutions a minute the machine delivers 320 blows of sixty-six pounds each; fifty revolutions give 400 blows of eighty-two pounds each, and sixty revolutions give 480 blows of ninety-nine pounds each, aggregating over twenty a minute. — [Stockton (Cal.) Herald.]

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.]

- 261,553. DOOR-HANGER. — David L. Jaques, Cleveland, O.
 261,583. PRESSURE-RESERVOIR FOR SUPPLYING FLUSH-WATER TO WATER-CLOSETS. — Richard R. Coggin and John A. Scollay, Brooklyn, N. Y.
 261,584. FIRE-ESCAPE. — Lewis Collier, Flint, Mich.
 261,588. BOLT. — George Crutenden, Jr., Montclair, N. J.
 261,604. KNOB ATTACHMENT. — Oliver M. Hidden, Detroit, Mich.
 261,670. DOOR-SPRING. — Malcolm Campbell, Holyoke, Mass.
 261,709. AUTOMATIC FIRE-EXTINGUISHER. — Ozro C. Heath, Providence, R. I.
 261,714. ELEVATOR. — John V. Hope, Wednesbury, County of Stafford, Eng.
 261,720. ILLUMINATING-TILE. — Joshua K. Ingalls, Glenora, N. Y.
 261,761. KNOB-ATTACHMENT. — George Price, Birmingham, County of Warwick, England.
 261,764. VENTILATOR. — William W. Robinson, Ripon, Wis.
 261,772. FIRE-GUARD FOR PLACES OF AMUSEMENT. — William C. Shaffer and Samuel M. Plush, Philadelphia, Pa.
 261,789. LOCK. — William C. Thompson, Minneapolis, Minn.
 261,797. SASH-BALANCE. — William Wimer, Union County, Ind.
 261,818. WATER-CLOSET. — Geo. C. Phillips, Boston, Mass.

SUMMARY OF THE WEEK.

Baltimore.

- BUILDING PERMITS.** — Since our last report twenty-six permits have been granted, of which the following are the more important: —
 Mary Kemp, two-sty brick dwell., Marshall Ave., between Wells and Winer Sts.
 Chas. A. Rous, three-sty brick building, n w cor. Biddle and Calvert Sts.
 Baltimore Steam Packet Co., two-sty brick office, foot of Union Dock.
 John Schuler, three-sty brick building, Fremont St., between Columbia and Paca Sts.
 Henry Ziegler, two-sty brick building, n e cor. Monument St. and Duncan Alley.
 P. T. George & Co., four-sty brick warehouse, Calvert St., between Franklin and Centre Sts.
 Church of Ascension Parsonage, two-sty brick building, with mansard roof, Arlington Ave., between Townsend and Lanvale Sts.
 Gustavus Moore, two-sty brick stable, in rear of Division St., between Bloom and Gold Sts.
 A. J. Lightner, two-sty brick building, s e cor. Greenmount Ave. and Biddle St.
 Alonzo Lilly, 2 three-sty brick buildings, n w cor. Madison and Bloom Sts.

Boston.

- BUILDING PERMITS.** — *Brick.* — Village St., No. 35, Ward 16, for James T. Eldredge, four-sty dwell., 50' x 52'; Stephen Moran, builder.
 Village St., No. 33, Ward 16, for James T. Eldredge, four-sty family hotel, 50' x 52'; Stephen Moran, builder.
 Sudbury St., Nos. 30-34, cor. Portland St., for Levi Boles, four-sty mechanical and stores, 42' x 44' x 51'; Sampson, Clark & Co., builders.
 Portland St., Nos. 105-113, Merrimac St., Nos. 50-56, and Market St., Ward 7, for Wm. H. Thorndike, four-sty lodging-house and stores, 45' x 58' and 60'; Chas. J. Lord, builder.
 Commonwealth Ave., No. 128, Ward 11, for Samuel M. Shapleigh, four-sty dwell., 26' x 67' 8".
 Commonwealth Ave., No. 130, Ward 11, for Wm. S. Rand, four-sty dwell., 26' x 67' 8".
 Newbury St., Nos. 168-178, Ward 11, for Silas W. Merrill, 6 three-sty and mansard dwells., 22' x 55'; Silas W. Merrill, builder.
 Hanover St., No. 180, Ward 6, for Mrs. M. Cotter, four-sty dwell. and store, 15' 6" and 17' x 51'; Robert R. Mayers, builder.
 Washington St., rear of, near Grove St., Ward 23, for Anna C. Brodbeck, building, 18' 6" x 24'; John Fuchs, builder.
 Kenilworth St., near Dudley St., Ward 21, for City of Boston, three-sty grammar school-house, 65' 4" x 144' 2"; John Southland, builder.
 Portland St., Nos. 1-7, cor. Hanover St., Ward 7, for Richard Stone, Jr., Trustee, four-sty mercantile and stores, 17' 7 1/2" x 95' 3"; Wm. M. Rumery & Co., builders.
 Wood. — Linden St., near Fairington Ave., Ward 25, for Jesse Tirrel, 2 two-sty dwells., 15' and 20' x 50'; H. M. Perry, builder.
 Sheridan Ave., near Terrace Ave., Ward 23, for Andrew Cassidy, two-sty dwell., 22' x 30'; James Cassidy, builder.
 Tremont St., No. 1176, Ward 19, for Whittier Machine Co., iron storage, 24' x 80'; C. Tilden, Jr., builder.
 Commercial St., near Mills St., Ward 24, for John Cotter, storage, 14' 9" x 19' and 24'; John Cotter, builder.
 Wyman St., near Chestnut Ave., Ward 23, for

Henry Vackert, two-sty dwell., 23' x 30'; John L. Dakin, builder.
 Washington St., near Keyes St., Ward 23, for Eben Weld, two-sty dwell., 15' and 28' x 30'; A. A. Ayers, builder.

Blue Hill Ave., cor. Edgewood St., Ward 21, for Daniel A. Johnson, dwell. and stores, 26' x 42'; Henry J. Bartlett, builder.

Unnamed Pl., off Rand St., near Blue Hill Ave., Ward 20, for Bernard Foley, 2 two-sty dwells., 20' x 30'; ell, 15' x 20'; Henry J. Bartlett, builder.

Elm St., near Ford St., Ward 1, for Benjamin Church, dwell., 20' x 27'; Geo. W. Adams, builder.

Brooklyn.

BUILDING PERMITS. — Fourth Pl., No. 2, s e cor. Henry St., three-sty brick store and dwell., 24' 6" x 43'; cost, \$5,000; owner, architect and builder, Thomas Keogh, 1494 Nelson St.

Furman St., on rear No. 146 Columbia Heights, five-sty brick tenement; cost, \$12,000; owner, Isaac Henderson, 208 Broadway, New York; builders, R. L. Darragh & Co.

Warren St., No. 370, s s, about 350' e Smith St., four-sty brick tenement; cost, \$6,000; owner, John Daly, 137 Smith St.

Dikeman St., s s, between Ferris and Partition Sts., one-sty brick smith shop; cost, \$3,000; owner, Lidgerwood Manufacturing Co., 96 Liberty St., New York; architect, J. V. Beekman; builders, P. Carlin & Son, and J. Martin.

Lexington Ave., s s, 354' w Lewis Ave., 5 three-sty brick tenements; cost, each, \$4,000; owner, John P. Hudson; builder, F. Weeks.

Douglas St., n s, 133' e Washington Ave., three-sty brick and brownstone dwell.; cost, \$3,000; owner, Thos. Monahan; architect, J. D. Reynolds.

Hancock St., s s, 100' w Marcy Ave., 4 three-sty brownstone dwells.; cost, each, \$7,000; owner and builder, H. A. Weed; architect, J. D. Reynolds.

Madison St., n s, 200' e Nostrand Ave., 5 two-sty brownstone dwells.; cost, each, \$3,500; owner, architect and carpenter, T. W. Swimm, 389 Putnam Ave.; mason, P. Costello.

Seventh Ave., w s, 20' s Lincoln Pl., three-sty brick dwell.; cost, \$9,000; owner, H. B. Parsons, Gates Ave.; architect, W. H. Wood; builders, T. B. Rutan and J. Lee.

Fifth St., n s, 129' e Seventh Ave., 10 three-sty brownstone dwells.; cost, each, \$4,000; owner, Chas. Long, 383 Eleventh St.; builder, J. E. Wood.
 Columbia Heights, s w cor. Middagh St., 3 four-sty brownstone tenements; cost, each, \$12,000; owner, Cornelius Donnellon, Pacific St., near Henry St.; architect, G. P. Chappell.

Carlton Ave., n w cor. Bergen St., 2 two-sty brownstone dwells.; total cost, \$14,000; owner, Mrs. Mary Skelly; architect, C. Werner; builder, A. Wilson.

Twenty-second St., s s, about 72' e Sixth Ave., two-sty brick stable; cost, \$2,500; owner, Wm. Alkens, Sixth Ave. and Twenty-second St.; architect, E. C. Squance.

Main St., Nos. 64 and 66, w s, 125' from Front St., 2 five-sty brick tenements; cost, \$11,000 each; owner, J. W. Knight, 114 Hall St.; architect, J. G. Glover; builders, M. J. J. Reynolds and M. C. Rush.

Tork St., s s, between Jay and Bridge Sts., three-sty brick school-house; cost, \$40,000; owners, Board of Education; architect, J. N. Naughton; builders, P. J. Carlin and P. E. O'Brien.

Chicago.

CHURCH. — The corner-stone of the Bohemian Catholic Church, St. Procopius, cor. Allport Ave. and West Eighteenth St., was laid July 23.

BUILDING PERMITS. — Carl Lubke, two-sty and basement brick dwell., 24' x 50', 520 Eighteenth St.; cost, \$4,000.

E. C. Howard, two-sty brick dwell., 20' x 42', Kedzie Ave., near Lake St.; cost, \$4,500.

D. F. Crilly, 9 three-sty and basement brick stores and dwells., 75' x 180', cor. Thirty-first St. and Prairie Ave.; cost, \$75,000.

N. Gould & Son, four-sty and basement brick piano factory, 48' x 50', 2219 and 2221 Cottage Grove Ave.; cost, \$3,800.

Joachim Miller, two-sty brick dwell., 22' x 40', 47 McMullen St.; cost, \$3,000.

Hugh Bradshaw, three-sty and basement brick store and dwell., 24' x 50', 209 Lake St.; cost, \$7,500.

Chas. Dehning, three-sty brick dwell., 25' x 57', 499 Sedgwick St.; cost, \$6,000.

A. F. Weinberger, two-sty brick dwell., 25' x 50', 27 Ewing Pl.; cost, \$7,000.

K. Kromer, three-sty brick store and dwell., 25' x 70', 2222 State St.; cost, \$9,000.

Kirby Cider Co., three-sty and basement brick cider factory, 540, 542 and 544 South Clark St.; cost, \$12,000.

F. H. Johnson, two-sty brick dwell., 25' x 75, 3441 Vernon Ave.; cost, \$5,500.

Board of Education, three-sty and basement brick school-house, 78' x 85', Indiana and Sangamon Sts.; cost, \$40,000.

Board of Education, three-sty and basement brick school-house, 78' x 85', Throop and Twentieth Sts.; cost, \$40,000.

Ellis Hahn, two-sty and basement brick dwell. and barn, 21' x 46', Wood and Yeaton Sts.; cost, \$3,000.

Foster Lamb, two-sty brick dwell., 23' x 60', 81 Hoyne Ave.; cost, \$4,000.

F. Kiver, two-sty and basement brick dwell., 24' x 52, 526 North Halsted St.; cost, \$5,000.

C. Missen, two-sty and basement brick dwell., 22' x 56', 877 North Halsted St.; cost, \$5,000.

H. L. Dahl, two-sty and basement brick dwell., 26' x 45', 634 North La Salle St.; cost, \$5,000.

B. M. Fox, two-sty and basement brick factory, 24' x 80', 270 Clinton St.; cost, \$10,000.

Thos. Nestor, two-sty brick dwell., 22' x 66', 679 Twentieth St.; cost, \$4,500.

P. M. Almini, two-sty and basement brick flats, 32' x 40', 39 and 41 Walton Pl.; cost, \$6,000.

James Garrett, three-sty and cellar brick flats, 22' x 66', 351 Adams St.; cost, \$5,000.

S. L. Robinson, two-sty brick dwell., 22' x 49', 489 Belden Ave.; cost, \$4,500.

C. D. & W. B. Holton, two-sty brick store and

dwell., 41' x 48', Cottage Grove Ave. and Thirty-seventh St.; cost, \$4,000.

C. W. & E. Partridge, 18 two-sty brick dwells., 16' x 60' each, 222 Thirty-seventh St.; cost, \$40,000.

Mrs. J. E. Sweatt, two-sty brick dwell., 22' x 40', 3734 Calumet Ave.; cost, \$3,000.

H. A. Huntington, three-sty and basement brick dwell., 25' x 75', 28 Walton Pl.; cost, \$10,000.

C. W. Fullerton, three-sty and basement brick dwell., 28' x 87', 30 Walton Pl.; cost, \$15,000.

Eliza Flaschbauer, two-sty and basement brick dwell., 20' x 66', 732 Hinman St.; cost, \$4,000.

J. L. Campbell, 5 two-sty and cellar dwells., 40' x 108', Polk and Dekalb Sts.; cost, \$15,000.

FLATS. — Mr. Wheeler is to build flats at the corner of Rush and Ohio Sts., to cost \$120,000, from plans prepared by John Addison, architect. He has also plans for three stores on Wabash Ave., to cost \$15,000 each.

Mrs. F. H. Johnson is to build three-sty flats on Vernon Ave., between Thirty-fourth and Thirty-fifth Sts., from plans by W. L. Carroll.

Cincinnati.

PRICES. — Broken ashlar work laid with Ohio freestone costs about the same as the same quality of work laid with the Hill limestone. This fact was ascertained by recent bids.

BUILDING PERMITS. — Since our last report the following building permits have been issued: —

Peter B. Lanek, 2 three-sty brick dwells, Eighth St., near State Ave.; cost, \$12,000.

A. R. Von Martels, two-sty brick dwell., No. 44 Brown St.; cost, \$4,500.

John F. Shaw, two-sty frame dwell., Gest St., near C. H. & D. E. R.; cost, \$2,000.

Robt. Renolds, two-sty brick dwell., n w cor. Addison and Plum Sts.; cost, \$2,500.

Dr. Thad. A. Reamy, addition to three-sty brick dwell., n e cor. Fourth and John Sts.; Chas. Crapsey, architect; cost, \$5,500.

Mary Mocherson, two-sty frame dwell., McMillan and Locust Sts.; cost, \$2,000.

Henry Martin, addition to four-sty brick dwell., cor. of Twelfth and Main Sts.; cost, \$5,000.

C. Nelson, two-sty brick dwell., Fourth Ave. and Centre St.; cost, \$6,000.

Mrs. Jacob Finnegan, four-sty brick dwell., 54 George St.; cost, \$7,000.

H. Restert, three-sty brick dwell., s e cor. Second Ave. and James St.; cost, \$2,500.

Mrs. J. J. Heider, three-sty brick dwell., Poplar St., near Dalton Ave.; cost, \$4,500.

Mrs. Jacob Fricker, two-sty brick dwell., Brown St., near Baymiller St.; cost, \$3,000.

Henry Sinnderbruck, two-sty brick dwell., Vine St., near Moliter St.; cost, \$5,000.

V. P. Evans, two-sty brick dwell., Eighth St., near Linn St.; cost, \$5,500.

Henry Tarsing, three-sty brick dwell., 129 Woodward St.; cost, \$6,000.

W. C. Peale, three-sty brick dwell., 414 Court St.; cost, \$3,500.

Eleven permits for repairs; cost, \$7,000.

Total permits to date, 462.

Total cost to date, \$1,293,400.

New York.

FACTORY. — For Messrs. F. C. Linde, Hamilton & Co., a six-sty and basement brick warehouse, 50' x 100', is to be built on Thirty-third St., e of First Ave., at a cost of about \$35,000, from designs of Messrs. H. J. Schwarzmann & Co.

ALTERATION. — The residence of Mr. Wm. S. Livingston, No. 113 East Seventeenth St., is to have exterior alterations from designs of Mr. E. Gandolfo.

HOUSE. — On the cor. of Madison Ave. and Sixty-ninth St., a residence, 34' x 85', of brick and Belleville stone, is to be built for A. Kuttroff, from designs of Mr. Wm. Schickel. It is to be fire-proof, with hard-wood finish throughout, and will cost about \$130,000.

BUILDING PERMITS. — Lexington Ave., s s, 64' n One Hundred and Twenty-seventh St., 2 three-sty brick and stone dwells.; cost, each, \$7,000; owner, Charles E. Van Tassel, Yonkers; architect, Chas. Baxter.

Seventy-sixth St., s s, 100' w Ave. A, 2 five-sty brick tenements; cost, each, \$18,000; owner, A. H. Jonas, 152 Delancey St.; architect, Chas. Baxter.

Tenth Ave., n w cor. Sixty-first St., five-sty brownstone tenement; cost, \$20,000; owners, F. R. Heerlein and G. Reichert, 932 Second Ave.; architect, W. Jose; builders, Joseph Schreffler & son.

Tenth Ave., w s, 25' n Sixty-first St., 3 five-sty brownstone tenements; cost, each, \$16,000; owners, architect and builders, same as last.

Washington St., s w cor. Bethune St., five-sty brick warehouse; cost, \$25,000; owner, Rubber Paint Co., Cleveland, O., N. C. Brewer, office in New York, 535 West St.; architect, Chas. Werner; builder, John Allen.

Forty-second St., s s, 206' e Third Ave., 2 five-sty brick tenements; cost, each, \$10,000; owner, Marks Rinaldo, 220 East Thirty-third St.; architect, A. B. Ogden.

Fifty-fifth St., s s, 146' w First Ave., 3 five-sty brick tenements; cost, each, \$10,000; owner and architect, same as last.

Eleventh Ave., n e cor. Fifty-third St., 4 five-sty brick tenements; cost, each, \$12,500; owner, Elsworth L. Striker, 360 West Fifty-first St.; architect, A. Spence; builders, John A. O'Connor & Co.

Tenth Ave., Nos. 455, 457 and 459, two-sty brick church; cost, \$30,000; owner, Broadway Tabernacle Society; architect, H. J. Dudley.

Centre St., Nos. 63 and 65, rear, three-sty brick factory; cost, \$5,000; owner, Colwell Lead Co., J. Hooper, President, 374 West Thirty-fifth St.; builder, E. Smith.

Sixty-first St., n s, 92' w Tenth Ave., 4 five-sty brick tenements, brownstone trimmings; cost, each, \$16,000; owners, F. Heerlein and G. Reichert, 932 Second Ave.; architect, Wm. Jose; builders, Joseph Schaeffler & Son.

Seventy-second St., n s, 100' w Madison Ave., four-sty brownstone dwell.; cost, \$40,000; owner, Anna McDonald, 271 East Seventy-eighth St.; architect, Jas. E. Ware; builder, Charles McDonald.

First Ave., e s, 50' s One Hundred and Nineteenth St., 3 four-sty brick stores and tenements; cost,

each, \$13,000; owner, Teresa Coogan, 422 East One Hundred and Fifteenth St.; architects, Cleverdon & Putzel.

St. Ann's Ave., s. s. 190' s Johns St., two-sty brick stable; cost, \$10,000; owners, Ph. and Wm. Ebling, St. Ann's Ave. and One Hundred and Fifty-sixth St.; architect, Henry Flering; builder, Adam Kaiser.

One Hundred and Forty-first St., s. s. 181' e Alexander Ave., 3 two-sty frame dwellings; cost, each, \$3,000; owner, Elizabeth H. Brown, 309 East Fifty-eighth St.; architect, H. S. Baker; builder, H. Ketcham.

Eighty-third St., s. s. 300' w Ninth Ave., 2 four-sty brick brownstone front flats; cost, each, \$25,000; owner, Geo. H. Harloe, n w cor. One Hundred and Twenty-sixth St. and Fourth Ave.; architect and builder, Wm. Harloe.

North Moore St., No. 56, five-sty brick tenement; cost, \$11,000; owner, Anthony McKeenolds, 209 West One Hundred and Twenty-eighth St.; architect, Wm. J. Merritt.

Fifth Ave., n. e. cor. Sixty-seventh St., four-sty and mansard brick and stone dwell.; cost, \$90,000; owner, Wm. H. Fogg, 339 Fifth Ave.; architect, E. D. Lindsey; builder, John J. Tucker.

Eightieth St., s. s. 250' e Second Ave., 2 five-sty brick flats; cost, each, \$20,000; owner, Washington Bros., 218 East One Hundred and Twenty-sixth St.; architect, Chas. Baxter.

ALTERATIONS. — *East Tenth St.*, No. 434, repair damage by fire; cost, \$4,575; owner, Wm. F. Youngs, 143 Rodney St., Brooklyn; builders, John T. Rowland and J. D. Miner.

Gramercy Pl., s. s. 60' n Twentieth St., raised 5', interior alterations for bachelors' apartment-house; cost, \$20,000; owner, Mary T. King, 31 West Twenty-second St.; architect, Joseph M. Dunn; builder, Geo. Mulligan.

East Fifty-second St., No. 7, main building to be three stories, three-sty brick extension, also interior alterations; cost, \$8,500; owner, Ogden Goellet, 425 Fifth Ave.; architect, J. M. Dunn; builders, M. Eidlitz and Geo. Mulligan.

One Hundred and Thirtieth St., n. s. 100' w Fifth Ave., two-sty brick extensions; cost, \$4,000; owner, Society Church of Puritans, G. M. Smith, chairman, etc., 58 West One Hundred and Thirty-second St.; architects, Silliman & Farnsworth; builder, not selected.

East Forty-first St., No. 48, raised to four stories, also four-sty brick extension, interior alterations, etc.; cost, \$7,000; owner, James A. Flack, 425 East Fifty-seventh St.; architect, A. B. Ogden.

Whitehall St., Nos. 15 to 25, repair damage by fire; cost, \$8,500; owners, Robert and Ogden Goellet, 261 Broadway; architect and builder, Henry Wallace.

Third Ave., w. s. about 75' s One Hundred and Thirtieth St., Mt. Morris Theatre, new stage, etc.; cost, \$4,000; lessee, Hamilton & Chandler, 114 West Forty-fourth St.; architect and builder, John Denham.

Mulberry St., Nos. 145 and 147, repair damage by fire; cost, \$3,600; owner, Lemuel L. Fountaine, 23 Park Row.

Philadelphia.

MONTHLY RECORD. — During the month of July there were issued 335 building permits.

BUILDING PERMITS. — *Snyder Ave.*, n. s. w of Fifteenth St., 2 two-sty dwellings, 18' x 42'; Clayton Allen, owner.

Vine St., near Franklin St., St. Phillips Church to be replaced by business houses.

Race St., below Fourth St., German Reformed Church, is to be altered into stores; Jno. Lucas & Co., owners.

Thirteenth St., e. s. n of Somerset St., 10 two-sty dwellings, 15' x 40'; Hiram A. Miller, contractor.

Amber St., w. s. s. of Lehigh Ave., 2 two-sty dwellings, 12' x 20'; Wm. Dickson & Bro.

Moore St., n. s. w of Front St., one-sty church, 50' x 50'; H. M. Martin, contractor.

Cumberland St., s. s. e of Ninth St., one-sty stable, 16' x 100'; Philip Theobald, owner.

Leverington Ave., s. s. between Mitchell St. and Ridge Road, three-sty dwell., 16' x 38'; Andrew Shinkle, owner.

Cumberland St., s. e. cor. Colville St., three-sty store and dwell., 18' x 51'; W. Schoenleber, contractor.

Collins St., n. s. w of Sargeant St., three-sty dwell., 18' x 48'; Pat. Gallagher, owner.

Fourth St., s. w. cor. Wharton St., three-sty addition to store and interior alterations, 18' x 33'; Thos. Nesbit, contractor.

Canal St., w. s. n of Girard Ave., four-sty factory, 18' x 92'; M. Magee, contractor.

Ward St., e. s. n of Tasker St., 4 two-sty dwellings, 15' x 28'; Peter Sheets, owner.

Shelton St., s. s. w of Main St., 4 three-sty dwellings, 18' x 46'; D. S. McNabb, contractor.

Alder St., No. 917, three-sty dwell., 14' x 26'; A. M. Conneen, contractor.

West York St., No. 505, 2 three-sty dwellings, 18' x 50'; A. G. McKelwee, contractors.

Long Lane, e. s. s. of Reed St., 4 two-sty dwellings, 16' x 30'; Robert McFarland, owner.

Hancock St., s. w. cor. Coulter St., three-sty dwell., 30' x 60'; Jas. Kinnear & Sons, contractors.

Leiper and Allen Sts., s. e. of 2 three-sty dwellings, 14' x 43'; Wendell & Smith, contractors.

Franklin St., s. w. cor. Allen St., 2 two-sty dwellings, 16' x 42'; Wendell & Smith, contractors.

Memphis St., w. s. n of Montgomery Ave., 3 two-sty dwellings, 12' x 27'; David J. Getz, contractor.

Price St., s. s. e of Main St., three-sty dwell., 20' x 40'; Jno. Breidling, contractor.

Germantown Ave., w. s. s. of Juniata St., three-sty dwell., 18' x 42'; Benj. Wright, contractor.

York Road, e. s. s. of Fisher's Lane, two-sty dwell., 32' x 33'; Benj. Wright, contractor.

Gorgas St., s. s. e of Germantown Ave., three-sty dwell., 22' x 35'; W. Kohl & Co., contractors.

Mehan Ave., s. w. cor. Musgrave St., 2 three-sty dwellings, 16' x 32'; Wm. Garvin, contractor.

Thirty-eighth St., n. w. cor. Sycamore St., 4 two-sty dwellings, 15' x 40'; Jas. C. Sheddick, owner.

Eadline St., s. s. w of Thirty-fourth St., 6 three-sty dwellings, 16' x 49'; J. C. Sheddick, owner.

East Norris St., No. 503, two-sty dwell., 14' x 40'; W. Parker, owner.

Rochester.

DEPOT. — Work was commenced on the new depot for the N. Y. C. & H. R. R. R. here on the 16th ult., the contract having been awarded to Geo. H. Thompson & Co., building consisting of train-house and depot, costing from \$150,000 to \$200,000.

WAREHOUSE. — Contract for a large commercial building, cor. of State and Church Sts., has been awarded to C. W. Voshall; S. D. Walbridge, owner; A. J. Warner, architect.

St. Louis.

BUILDING PERMITS. — Seventy-six permits have been issued since our last report, twenty-four of which are for important frame houses. Of the rest, those worth \$5,500 and over are as follows: —

Drummond Tobacco Co., two-sty warehouse; cost, \$10,000; Kirgin & Bro., contractors.

Thos. Tierney, two-sty dwell.; cost, \$2,500; J. J. McMahon, contractor.

N. Spindler, two-sty dwell.; cost, \$2,600; H. Wauschaffe, contractor.

Harmonie Club, two-sty club-house; cost, \$33,000; Isaac Taylor, architect; Wickwire, contractor.

Dr. Jno. L. Fitzporter, 4 two-sty tenement-houses; cost, \$3,200; J. J. Ryan, contractor.

Jos. Hercules, two-sty dwell.; cost, \$3,400; A. Upr, contractor.

French Silvering Co., two-sty factory; cost, \$5,000; G. I. Barnett, architect; Barnes & Morrison, contractors.

J. Whelan, two-sty dwell.; cost, \$5,000; Meagher, architect; R. M. Schmiel, contractor.

G. W. Todd & Co., three-sty storeroom; cost, \$5,000; Jno. Wood, contractor.

Kupferle & Boisselier, repair three-sty factory; cost, \$3,000; S. H. Hoffman, contractor.

August Wiese, two-sty dwell.; cost, \$5,600; C. W. Rocklayer, contractor.

Mrs. Harriet Pullis, two-sty dwell.; cost, \$4,000; A. J. Cramer, contractor.

Clark & Ferguson, two-sty dwell.; cost, \$10,000; Grable, architect; A. J. Cramer, contractor.

Evans & Howard, three-sty addition to works; cost, \$9,000; McCluskey, contractor.

Mrs. M. N. Reber, 4 two-sty dwellings; cost, \$9,600; E. Hudspeth, contractor.

Thos. Foley, two-sty tenement-house; cost, \$2,500; Philip Kiechers, contractor.

German Evangelical Lutheran Synod of Missouri, three-sty theological seminary; cost, \$75,000; C. F. May, architect; contract sub-let.

H. Hirner, two-sty store and dwell.; cost, \$3,700; F. Mueller, contractor.

Thos. Gugerty, 3 two-sty dwellings; cost, \$12,000; Thos. Gugerty, contractor.

Dr. Pauley, two-sty dwell.; cost, \$3,000; Rocklage, contractor.

St. Louis Mutual House Building Company No. 3, two-sty dwell.; cost, \$5,900; Mortimer, architect; J. V. Majors, contractor.

D. B. Brennan, three-sty dwell.; cost, \$9,500; Brady, architect; A. McNie, contractor.

F. Nietz, two-sty dwell.; cost, \$2,500; W. C. Popp, contractor.

F. Wekerle, two-sty dwell.; cost, \$3,000; W. C. Popp, contractor.

Mrs. Finkmann, two-sty dwell.; cost, \$4,000; H. Ellermann, contractor.

J. Brungard, two-sty dwell.; cost, \$3,500.

St. Louis Mutual House Building Co. No. 3, two-sty dwell.; cost, \$3,450; Mortimer, architect; H. Wauschaffe, contractor.

St. Louis Mutual House Building Co. No. 3, two-sty dwell.; cost, \$2,720; Mortimer, architect; C. Wehking, contractor.

Ed. R. Monk, 3 two-sty dwellings; cost, \$12,000; contract sub-let.

Mrs. McCorkin, 2 three-sty dwellings; cost, \$12,700; J. B. Lindsay, contractor.

James H. Tomb, 2 two-sty dwellings; cost, \$5,000; J. Kollmeier, contractor.

St. Louis Mutual House Building Co. No. 3, two-sty dwell.; cost, \$3,254; Mortimer, architect; T. Offermann, contractor.

Washington.

Dr. L. Dorsey, two-sty and basement brick dwell., 22' x 32', Massachusetts Ave., between Ninth and Tenth Sts., n. w.; cost, \$5,350.

James M. Johnston, 2 three-sty and basement brick dwellings, 20' x 40', Jefferson Pl., between Eighth and Nineteenth Sts., n. w.; cost, \$9,250.

James M. Johnston, remodel brick dwell., 1215 F St., n. w.; cost, \$2,300.

S. T. G. Morsell, remodel brick dwell., 918 McPherson Sq., n. w.; cost, \$2,000.

L. D. Merchant, 3 two-sty and basement brick dwellings, 18' x 35', Second St., between Pennsylvania Ave. and C St., s. e.; cost, \$8,000.

H. P. Mills, two-sty and cellar brick dwell., 10' 11" x 35', Q St., between Sixteenth and Seventeenth Sts., n. w.; cost, \$2,500.

Produce Exchange Co., 3 three-sty warehouses, 19' x 64', Louisiana Ave., between Ninth and Tenth Sts., n. w.; cost, \$36,000.

W. F. Reamer, 2 two-sty and basement brick dwellings, 20' x 22', cor. Ninth and K Sts.; cost, \$3,500.

D. D. Taylor, 4 two-sty brick dwellings, 19' x 48', A St., between Sixth and Seventh Sts., n. e.; cost, \$8,000.

W. B. Webb, four-sty brick store and office, Pennsylvania Ave., between Fourteenth and Fifteenth Sts., n. w.; cost, \$9,000.

David A. Windsor, 3 three-sty and basement brick dwellings, 16' 8" x 36', Eleventh St., between K and L Sts., n. w.; cost, \$15,000.

Weaver & Cominsky, 2 two-sty brick store buildings, 14' x 25', Seventh St., between D and E Sts., s. w.; cost, \$2,300.

General Notes.

ABINGTON, MASS. — Dr. Dickerman, a house, 23' x 50', twelve rooms; also, a stable; W. V. Howard, of Brockton, architect.

AVONDALE, O. — I. J. Freidlander is to build a limestone dwelling-house on South Crescent Ave.; cost, \$20,000; Mr. Jas. W. McLaughlin, of Cincinnati, architect.

BROCKTON, MASS. — Ellis Packard is building a two-and-a-half-sty house, 40' x 70'; costing \$10,000 and upwards; day work, Queen Anne style.

Capt. R. B. Grover is building on South Main St. a two-and-a-half-sty house, 36' x 58', with corner tower; Queen Anne style.

Geo. H. Gould is building a house on Chester Ave., 27' x 60', with fourteen rooms; Queen Anne.

A. M. Herrod, a house on North Main St., 26' x 56', with fourteen rooms; day work.

Gardner Brothers, a house on Highland St., 28' 6" x 52', with fourteen rooms.

W. V. Howard is architect for all the above work.

CAMBRIDGEPORT, MASS. — The Cottage-street Methodist Society has purchased land, 7,200 square feet, for \$5,500, and propose to build a new edifice.

CAPE MAY, N. J. — Cottage for Frank McLaughlin, Esq.; Wilson Bros. & Co., of Philadelphia, architects.

CLIFTON, PA. — Stone house to be erected for J. L. Bunting; size, 40' x 55'; cost, about \$10,000; J. K. Yarnall, architect, Philadelphia.

CRENSHAW, PA. — Alteration to cottage of Mrs. M. W. Watson; Wilson Bros. & Co., architects, Philadelphia.

DUBUQUE, IOWA. — Thos. Reddin, Esq., is building a two-sty frame cottage on Cardiff St., to cost about \$2,500.

Plans are being prepared for a two-sty brick house for J. R. Waller, Esq., to be built opposite Washington Park, at a cost of about \$10,000.

N. H. Shedenga, Esq., is preparing to build a two-sty brick house on Main St., opposite Jackson Park; to cost about \$6,000; F. D. Hyde, architect, of this city, furnishes the plans for each.

EAST PROVIDENCE, R. I. — The committee of the Council and School Committee have selected the location for the proposed school-house.

FREEPORT, ILL. — L. L. Smith, Esq., is preparing to erect a frame cottage residence from plans by F. D. Hyde, architect, Dubuque, Io.

GILL, MASS. — Five new buildings, four dormitories and a kitchen and laundry, are to be built immediately at Evangelist Moody's boys' school. The buildings are to be of brick, two stories, 40' x 42', and capable of accommodating 100 boys. A. R. & E. S. Foster, of Keene, N. H., have the contract.

HARTFORD, CONN. — An Old People's Home is building in this city, from drawings of Mr. John C. Mead, architect. The structure measures 43' x 243', with a ward, 30' x 96', and is three stories high. Accommodation is afforded for one hundred and seventeen old ladies and gentlemen; the cost will be between \$80,000 and \$90,000.

HOLBROOK, MASS. — Dr. Fisher, a house, 39' x 42', thirteen rooms; Queen Anne; W. V. Howard, of Brockton, architect.

KANSAS CITY, MO. — A permit has been taken out by J. McClintock to erect a three-sty brick dwell. at s. w. cor. of Sixth St. and Broadway; cost, \$6,500.

LITTLE SANDUSKY, O. — A two-sty brick school-building, 28' x 42', is to be built; cost, \$3,500; N. B. Bacon, architect. Work to begin in September.

LONG BRANCH, N. J. — Two more residences to cost about \$8,000 each are to be built for W. Liddy of New York, from designs of W. C. Romeyn of the same city.

MCGREGOR, IOWA. — John Flemming, Esq., is making extensive alterations in his house, from plans furnished by F. D. Hyde, Dubuque, Io.

MILLEVILLE, N. J. — A building two stories and basement to be called the "Workmen's Institute," size, 50' x 60'; to contain men and women's baths, library, smoking-room and hall; to cost about \$15,000; John K. Yarnall, architect, Philadelphia.

MT. DESERT, ME. — A house and stable are being built for Mr. F. W. Lawrence; Messrs. Rotch & Tilden, architects, Boston.

NEW ROCHELLE, N. J. — A large school-house is to be built, two stories and basement, to be of brick, with Wyoming Valley bluestone. The cost will be about \$40,000; Messrs. D. & J. Jardine, of New York, are the architects.

OSHKOSH, WIS. — The Chicago & Northwestern Railroad Company has purchased half a block on the north side of the city for the ostensible purpose of building a large depot.

RICHMOND, VA. — Messrs. A. Hoen and Co., six-sty and basement building, 55' x 57', Bank St., bet. Eleventh and Twelfth Sts., brick, with granite and terra-cotta finish; cost, \$30,000; Mr. Wm. F. Weber, Baltimore, architect.

ROCKLAND, ME. — Messrs. Kimball & Wisedell, of New York, are preparing plans for remodeling a church.

ROSEMONT, PA. — Stone mansion for John H. Converse, Esq.; Wilson Bros. & Co., of Philadelphia, architects.

SALISBURY, MD. — Mr. J. J. Morris, two-sty frame store and hall building; cost, \$9,000.

Mr. J. J. Morris, two-sty and attic frame building; cost, \$8,000.

Two-sty frame school building; cost, \$4,000; Mr. Frank E. Davis, Baltimore, architect.

SAN ANTONIO, TEX. — A house is to be built for Mr. Jno. W. Brackenridge; from designs of Mr. Chas. L. Berg, of N. Y.

SAN FRANCISCO, CAL. — Col. Charles F. Crocker has given instructions to Messrs. Wright & Sanders, architects, to proceed with the construction of the "Crocker Art Building," on Post St., between Kearney and Dupont.

SHEPARDVILLE, VA. — A residence is to be built for Mr. Baker, from designs of Mr. Geo. Edward Harding, of New York.

SOUTH ABINGTON, MASS. — H. H. Jenkins is building a house, 27' x 58', with fifteen rooms; also a stable, 30' x 42'; N. S. Holmes, of Brockton, contractor.

G. L. Paine, a house, 24' x 52', eight rooms; also, a stable, 25' x 34'.

Geo. Reed, a house, 23' x 52', twelve rooms.

W. V. Howard, of Brockton, is architect of all the above.

SPRING LAKE, N. J. — Mr. Thos. Beaver will build 3 cottages, to cost \$8,000 each; J. K. Yarnall, of Philadelphia, architect.

ST. PAUL, MINN. — Plans are being drawn for a brick and stone house to cost \$20,000, by Mr. H. R. Marshall, of New York, for Mr. R. D. Noyes.

(Continued in Supplement, page 4.)

THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT.

No. 6.]

SATURDAY, AUGUST 5, 1882.

THE PRESCOTT PATENT DOOR-HANGER.

WE take the liberty of calling the attention of the public to the new device for sliding doors, namely, the Prescott Door-Hanger, one of the most decided improvements in door hanging, and one which is being adopted by the leading builders in the country, especially where a sliding-door is to be used.

between the door and the wall to which the hanger is connected. When the door is closed the hanger stands perpendicular behind the jamb-casing, and at all times is concealed from view.

They may be applied to heavy hard-wood doors, which may then be opened or closed with surprising ease and perfectly noiseless movement.

with portion of door cut away to show its position when the door is half open.

The "Brace Hanger" is designed for use upon doors between parlors, in public buildings, closet doors, or in any place where it is desirable to have the hanger entirely concealed from view, in order to secure a handsome finish. It will be seen by referring to the cut that this hanger slides a door between partitions or upon either side, and is entirely out of sight at all times; the door is hung so as to rise a little as it moves back; when closed it makes a tight joint upon the floor or carpet, and yet moves back without friction or wear, the same as the Balance Hanger, Figure 1.

The question is often asked, "Can these hangers be applied to doors after a house has been plastered?" As the hanger is secured to one of the jamb-studs by angle-irons it admits of hanging the door at any time, as the casing has to be put on last, which conceals the hanger from view and at all times, and

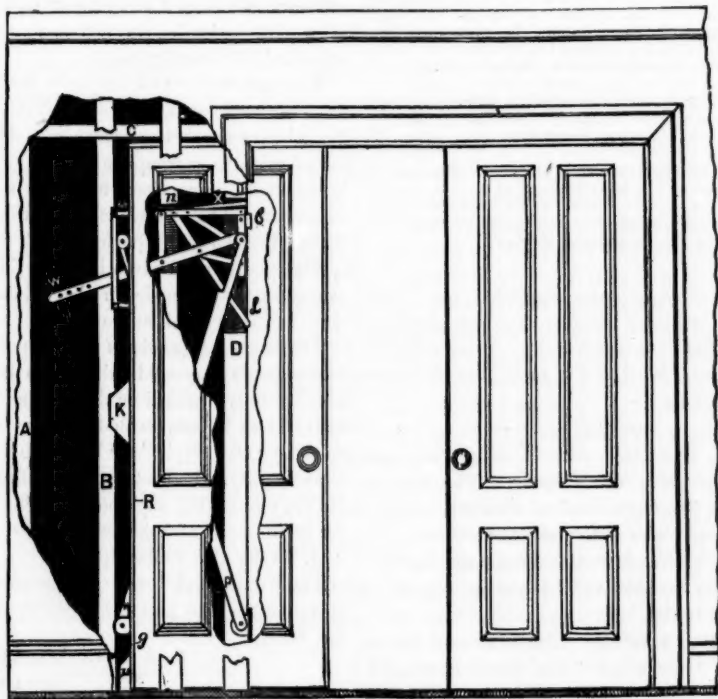


Fig. 1.

The great practical value of the Prescott Hanger is strikingly shown in the "Balance Hangers." Figure 1, which shows a pair of drawing-room doors, one closed and the other partly open, with the door on one side of the partition broken away, showing the hanger secured to the other; this is designed for use only on doors which move between double partitions, and is especially adapted for parlors. The hanger is secured to the back edge of the door, and the front of the door-frame behind the casing. When the door is open the hanger is crossed on one side of the door,

By the illustration it will be seen that the Balance Hanger is a contrivance of great merit. By its use no track is required either above or below; in its operation it allows the door to rise a little, thus saving wear of carpet, which is a very important item for consideration. The Balance and Brace Hangers are made right and left, in such a way that when opening right-hand doors the door moves to the right, and left-hand doors to the left, when facing that side of door over which the hanger moves.

Figure 2 exhibits the "Brace Hanger,"

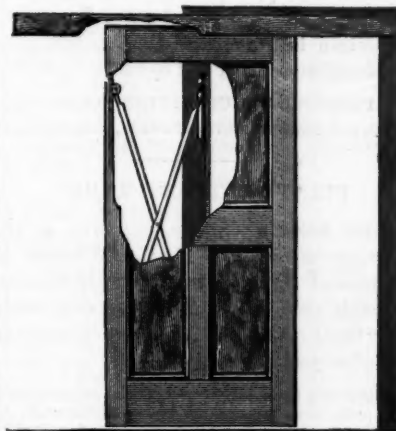


Fig. 2.

when hung the door moves with such perfect ease, that it is a puzzle to many as to what the door actually moves on.

Figure 3 exhibits an inside view of the "Truss Hanger."

The "Truss Hanger" is particularly designed for use upon barn, stable, depot, or store-house doors, or in any place where elegance of finish is not desired, the hanger being exposed to view, as shown in the above cut, one door closed and the other open.

Truss Hangers will operate doors inside or out of buildings, but should always be attached to the inner side of door. A child is able to move a door hung with this hanger as easily as though it were hung upon hinges.

Balance and Brace Hangers are being very extensively introduced into new residences in New York, Philadelphia, Baltimore, Washington, Boston, San Francisco, and in fact all the principal cities throughout the United States and wherever they have become known; and the convenience attending their use leading in many instances to the substitution of this device for swinging doors, especially in closets, effecting a great saving of room, which is of great advantage.

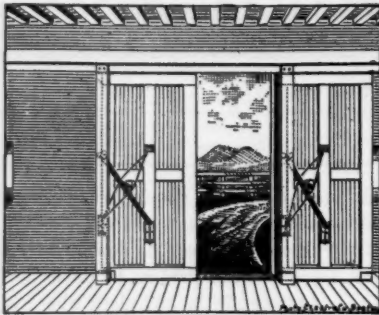


Fig. 3.

The Truss Hanger illustrated in Figure 3, has been quietly gaining in public favor until it has become known, by reference of one party to another, here and there all over the country.

Invented at first chiefly for barn doors, it has since been found far superior to any device known for sliding-doors of factories, sheds, and warehouses: doors of the largest size are moved with the greatest ease.

Evidently this may be termed a revolution in the hanging of sliding-doors.

The highest premium was awarded at the Exhibition for 1880 of the New England Agricultural Society, New York State Agricultural Society, Connecticut State Agricultural Society, Cincinnati Industrial Exposition, American Institute, New York.

Manufactured and sold by the

PRESCOTT MANUFACTURING COMPANY,
OFFICE 235 WASHINGTON STREET, BOSTON, MASS.

PIRATING TRADE-MARKS.

The following article appeared in the *Commercial Industrial World*, of Chicago, in its issue of February 9th, 1882. It bears so strongly upon the piracy of our own brand of "OLD STYLE" Roofing, that we take the liberty of reporting it:—

"Pirating trade-marks seems to be growing with a rapidity that is anything but complimentary to the sense of fair dealing which should prevail in the commercial world. Some individuals very conveniently forget that there is any such thing as property in trade-marks; but these gentlemen ought to be instructed by the more honorable portions of the trade that it is not a safe nor legitimate transaction to trespass upon the rights of others by appropriating this species of property. Men have labored years and spent fortunes in building up a business in certain commodities, and these commodities, to which they have given a certain specific name, have become familiar to the trade and their designation is, in reality, an important part of the thing produced. The value of this name, of course, depends upon its age and circulation, but whether it is of greater, or less value, it matters not, the right to the property in the name is one which, by law and common civil usage, should command respect,

It may seem a nice thing for some one, who is devoid of principle and enterprise, to imitate the trade-mark of another, and thus, without risk, trouble, expense, or brain work, be benefitted by their unlawful appropriation of another's property; but, if he has not honesty, or self-respect enough to keep him from his unlawful course, he should be restrained by the public condemnation of his brethren in the trade. Some business men take the matter in their own hands and compel an observance of their rights, by ridiculing and publicly denouncing the parties who would feloniously appropriate their special trade-mark; some notable instances of this method of treatment could be cited at the present moment. But, while some men are capable of thus defending their rights, others are not, and it is due to the honest trader that he should receive the assistance of other traders when attempting to enforce his rights against those who would pirate his trade-mark, because it is a matter in which all are more or less interested.

But, it may be asked: How can the trade assist a single individual in protecting his right against infringers? The answer is, they can refuse to become a party to the illegal transaction by refraining from purchasing articles whose trade-marks are pirated. They can whenever occasion requires denounce the piratical act, and, whenever the case is clear, hold this act as an evidence of the commercial dishonor of the party perpetrating it.

Some may say that this is an individual matter and that the trade, generally, should not be called upon to interfere between parties who make claim to the same trade-mark, any more than they should be called upon to interfere between parties who lay claim to the same piece of land. There is a distinction, however, between the two cases. In the former the trade are interested in two ways: First, in enforcing a wholesome respect for the property in trade-marks,—a matter in which they are directly interested,—and second, in maintaining the reputation of their trade, which, certainly, should not be a light consideration with them.

If it is once known that there is perfect immunity for those who appropriate trade-marks the value of this species of property will be comparatively worthless. While the courts offer redress in many cases, yet the dealer should not be subjected to this expensive and tedious method of protecting his rights, when, by the cultivation of a right public spirit, infringers would be restrained from their unlawful course, and the necessity for going into courts to protect one's rights would be obviated. When the time comes when it is considered as much of an offence to steal a trade-mark as it is to steal a horse there will be far fewer depredations of the former description than now. In point of principle there can be no difference between the two species of offences. Men can be restrained by the establishment of a good, healthy public sentiment which would condemn their piratical acts, when they would not be restrained by fear of the penalties of the law."

In our own case, regarding our "Old Style" brand of Roofing, and the deserved reputation that it now enjoys as undoubtedly the "best" Roofing Tin made, the facts are simply these:—

1. Many years ago we "invented" a re-dipped, or double-coated Roofing Plate, and arranged with our friends—"The Copper Miner's Tin Plate Co.," of Taibach, Glamorganshire, Wales—to make it exclusively for us. It is, therefore, strictly a maker's brand in every respect, and "is not in any way a private brand."

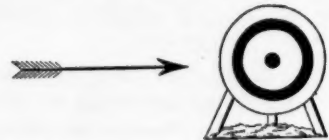
2. We naturally looked around for a "name" or "brand" that would distinguish this one plate from all others, and selected the two words "Old Style," for a brand "that would not conflict in any way with any other maker's brand," and which had never been used before on any plate.

3. Our brand of "Old Style" is duly "registered" as a "Trade-Mark," and we alone have clearly the exclusive right to use it. We have imported and sold this brand for many years, and it has deservedly acquired the highest reputation. We were not disturbed in our justly acquired possession of it until July of last year, when we were surprised to find that an "imitation" was being imported, and that our brand had been stolen.

4. As "imitation is the sincerest flattery" its merits naturally provoked imitations, but it was left for one maker alone to deliberately appropriate our "brand" with the sole view of injuring it.

5. Hitherto, when a brand has even been encroached upon, an appeal to gentlemanly feeling and business honor has been all that was necessary. In this case, however, remonstrances have been in vain, and our friends—"The Copper Miner's Tin Plate Co."—are obliged to seek in the courts damages for this infringement of our "Trade Mark." As there can be no question of our legal right in the matter, we ask the trade to do all in their power to discourage this piracy of a well-known brand that has been registered as a "Trade-Mark."

6. To guard against imitations of the "Old Style" Roofing in the future, we shall use our "Registered device—an arrow pointing to the centre, or 'bull's eye' of a target," in connection with this brand.



In addition to the above this important fact should be borne in mind; "the cheapest kind of Roofing Plates may be easily re-dipped, thus giving a good looking surface, and they can be sold as double-coated plates, at a high price." An article is not worth imitating if it is not good.

The genuine "Old Style" Roofing is double-coated, or re-dipped, and the surface has a heavy mottled appearance. The coating of metal is so complete and heavy that it is absolutely impervious to either water or dampness. The "surface" of the "Old Style" is absolutely "perfect."

The quality of the iron is of the finest and purest charcoal, made in the old-fashioned way, and is as tough as leather.

The boxes are made of good tough wood, and strongly strapped with hoop iron, and are distinctly branded on the end and side, in heavy block letters, burned deeply into the wood—"Old Style"—"Warranted Extra Fine Quality, Double-Coated Roofing Tin." In addition to this, each box contains a small tin decorated card, bearing the name of "N. & G. Taylor Co., Philadelphia."

The "imitations" now being offered by other parties bear none of these distinguishing marks.

N. & G. TAYLOR CO.,
PHILADELPHIA.

The American Architect and Building News.

PUBLISHED EVERY SATURDAY BY

JAMES R. OSGOOD & COMPANY,
211 TREMONT STREET, BOSTON, MASS.

An illustrated Journal of Constructive and Decorative Art, devoted to the Interests of Architects, Builders, Decorators, etc.

15 cents per copy; \$7.50 per year; \$6.00 in advance; 12 Monthly Numbers with Detail Sheet, \$1.75.

The "Advertisers' Trade Supplement" is maintained in the interest of advertisers in the *American Architect and Building News*.

THE NEW SYSTEM OF BRICK MAKING.

IN brick making, as in all other industries where the demand is great, says the *Scientific American*, and machinery is replacing hand labor, as a result it is not only possible to bring the rate of production up to the demands of the market, but the quality of the product is vastly superior to that of the best hand-made article, and we think that with our system the quality of brick manufactured is far in advance of the product of other machines. Bricks made by machinery have been commonly deficient in strength, unequal in size and density. The Gregg triple-pressure and combination brick-machine possesses new and valuable features, which insure a yield of bricks superior to the best hand-made, and at a comparatively small cost. These bricks are superior in appearance, and in the matter of homogeneity and strength they are far ahead of any other brick made.

The following report of tests made by General Q. A. Gillmore shows the extraordinary strength of these bricks:

UNITED STATES ENGINEERS' OFFICE.

WILLIAM L. GREGG, Esq.:—

Dear Sir,—I have the honor to state that some tests have been applied to the bricks received from you with very satisfactory results.

The bricks possess remarkable density, hardness, and compressive strength.

The tests made and the results obtained are given below:

FIRST TEST.

Three bricks were placed together without mortar, one above the other, flatwise, making a pile 8 inches long, 4 inches wide, and 6½ inches high, the upper and lower sides of each brick being rubbed to secure good contact.

The pile was then subjected to a pressure of 100,000 pounds, without cracking or disturbance of any kind. Surface pressed, equal to 32 square inches (4 × 8).

The pile was subjected to pressure between thin pine cushions, one below the lower brick and the other above the upper one.

SECOND TEST.

Three half bricks, making a pile 4 inches by 4 inches and 6½ inches high, were then subjected to pressure between wooden cushions. Area of surface pressed, 16 square inches (4 × 4).

The pile crushed at 90,000 pounds or 5,625 pounds to the square inch.

THIRD TEST.

Some two-inch cubes were cut from the bricks, and crushed separately, with the following results:

No. 1 crushed at 40,000 pounds; equal to 10,000 pounds to square inch.

No. 2 crushed at 37,000 pounds; equal to 9,250 pounds to square inch.

The above were crushed between steel plates.

No. 3 crushed at 37,000 pounds; equal to 7,750 pounds to square inch.

No. 4 crushed at 30,000 pounds; equal to 7,500 pounds to square inch.

Nos. 3 and 4 were crushed between one-quarter inch pine cushions.

The crushing strength of these bricks is greater than any bricks ever tested by me.

Very respectfully,

Your obedient servant,

Q. A. GILLMORE,

Lt.-Col. Eng'rs, Bvt. Maj.-Gen.

Similar tests were applied by direction of the Supervising Architect of the United States, at the Treasury Department, Washington, with the same results, and the bricks were ordered to be used in the government work.

Heretofore in the construction of bricks by machinery, and especially face or front bricks, it has been found practically impossible to supply an equal amount of clay to each of the mould boxes. This results in unequal size and density in the bricks, and when but one pressure is imparted to the clay, as in ordinary machines, the bricks are often defective in

strength, at the corners and edges especially, and hence unsuitable for use as first quality front or face bricks. These serious objections have been overcome by Gregg's brick-machines.

The mechanical construction of the semachines is such that the heavy developing pressures take place while the mould table is at rest, thus requiring but a nominal amount of power to operate them, and avoiding strain, wear and tear, and breakage, as well as the great loss of power common to other machines.

Brick-machines may properly be classified under three heads: dry-clay machines, slush machines, and crude or moist-clay machines.

From the peculiar construction of dry-clay machines where "filler boxes" or graduating measures are used to fill the mould boxes, the clay must be dried and granulated to fill with any degree of regularity into the "filler boxes," and thence into the moulds. And when moulds are grouped together it becomes a physical impossibility by the dry-clay system to fill them alike, hence those deficient in clay will but partially develop the bricks; this, added to the fact of the cohesive quality of the clay being destroyed by extracting the moisture before moulding, complete vitrification cannot take place in the burning, and the result is that bricks made from the dry clay disintegrate with the action of the elements. In the manufacture of slush brick the other extreme is met. To facilitate moulding in the "hand way" a large portion of water is added, and the bricks being so soft must be spread upon floors to dry. The slow out-door process of drying, or evaporation, is one of the most favorable processes for the hand-brick maker, but it requires the continuous insurance of favorable atmospheric influences, and a continuity of fair weather, which practically can never be relied on.

Clay, to be made into bricks by hand moulding, must of necessity be so wet that at least 25 per cent of water must be evaporated before it is safe to burn, so that in fact, in works producing 30,000 bricks per day, upwards of 23 tons of water have to be evaporated therefrom every twenty-four hours—the labor attending which being an expensive item, and the bricks being rendered porous by the operation.

Gregg's triple-pressure and combination brick-machines occupy a medium position between dry-clay and slush machines: thus a first saving is effected, as the machines accept the crude clay, and manufacture it to advantage in so stiff a state as not to contain more than one-eighth the above amount of water to be evaporated, and yet all of its cohesive qualities are retained. The fusion being complete, the bond between the particles is perfect and the bricks are less porous, consequently stronger, and absorb less moisture when burned.

After being pressed the bricks are placed on iron cars and passed through a drying tunnel, where they are dried with regularity, not being subjected to rains and atmospheric changes as by the old out-door system; they are then passed directly to the burning kiln, and are there burned and made ready for the market.

The great benefit to be derived by operating this system is not only the economy and regu-

larity of the manufacture, but the increased value of the product. By keeping a strict account of the cost of manufacturing 1,000,000 bricks by the old system and a similar account of a like number made by the Gregg system, it will readily be seen that they can be made by the latter process at one-half the cost of the former, as well as at all seasons of the year, and be worth twice as much in the market as a kiln of ordinary brick.

The Gregg machines have obtained a world-wide reputation at the various expositions, both in this country and in Europe, where they have invariably received the highest awards.

Mr. William L. Gregg, the inventor of this system, has organized in New England the "New England Press Brick Manufacturing Company," having offices in the Equitable Building, Boston, Mass. The works of this company are capable of turning out 100,000 bricks per day, this being the largest production of fine bricks made in any of the Eastern States.

This establishment is specially fitted with machines for turning out the finer grades of bricks for fronts, mouldings, cornices, etc., ornamental and shape bricks.

All inquiries should be addressed to the

GREGG INTERNATIONAL

BRICK MACHINE COMPANY,

EQUITABLE BUILDING, BOSTON, MASS.

NOTES.

MESSRS. Johnson & Wilson, agents for Saylor's Portland Cement, 91 Liberty Street, New York, report that the capacity of the works has been increased to 8,000 barrels per month.

OSGOOD'S American Guide-Books.

The White Mountains.

Largely augmented in 1881. With 6 Maps and 6 Panoramas. 1 vol. 16mo. Flexible cloth. \$1.50.

New England.

With 17 Maps and Plans. 1 vol. 16mo. Flexible Cloth. \$1.50.

The Maritime Provinces.

With 9 Maps and Plans. 1 vol. 16mo. Flexible Cloth. \$1.50.

The Middle States.

With 22 Maps and Plans. 1 vol. 16mo. Flexible Cloth. \$1.50.

"Fortunately we now have a guide-book library which, as far as it extends, is every whit as good as Baedeker. Clearness and compactness, the two lesser requisites, have been attained. As for accuracy, the amount of work done by the editor has been enormous. To say that the books are better than any American books of the sort that have hitherto appeared would be superfluous; there is no comparison to be made between them and their predecessors."—*The Independent*.

A Tallahassee Girl.

The Ninth Round-Robin Novel. 16mo, \$1.00.

"The magnetic beauty of the scenes described and a breath of Magnolia-blossoms pervade the book."—*N. Y. Home Journal*.

"A bright, fresh, crispy story, lively from beginning to end, and full of poetic prose."—*San Francisco Post*.

"Its pen-pictures of Tallahassee are so enchanting that one longs for wings to fly to that region of delight, and repose among its flowers."—*Christian Intelligencer*.

JAMES R. OSGOOD & CO., Publishers,
211 Tremont Street, Boston.

(Continued from page 68.)

TARRYTOWN, N. Y.—A residence, stone and frame, to cost \$7,000, is to be built for Mr. Wm. C. Casey, from designs of Mr. H. R. Marshall, of New York.

TOWSON, BALTIMORE COUNTY, MD.—One-st'y fire-proof addition to court-house; cost, \$10,000; Mr. Frank E. Davis, Baltimore, architect.

"UNIVERSITY OF VA.", VA.—Observatory for the University; Wilson Bros., of Philadelphia, architects.

URBANA, O.—The corner-stone of the new Baptist church was laid July 20.

WETHERSFIELD, CONN.—Mr. John C. Mead is the architect of a stable for Mr. S. W. Robbins. It is of wood, measures 38' x 48' and 22' x 40', and costs \$5,000.

Industrial.

AKRON, O.—The Portage Straw-Board Co. is to build a brick factory, 160' x 350'.

ALBANY, N. Y.—A hardware manufactory will soon be established. The foundry will be 50' x 120', main building 35' x 80'.

ATHOL, MASS.—The Athol Machine Company is preparing to build its new brick foundry, which will be 45' x 90', with an L, 25' x 60'.

NASHUA, N. H.—The White Mountain Freezer Company have broken ground for a foundry.

NEW BRITAIN, CONN.—The North & Judd Manufacturing Co. are building a new malleable iron foundry, 90' x 130', and a main building 40' x 185'; also, a two-st'y assorting-room, 40' x 190'.

SKOWHEGAN, ME.—It is stated that Keene Bros., Lynn, Mass., shoe manufacturers, have under consideration the building of a factory at Skowhegan.

VERMILLION, O.—The Bartlett Iron and Steel Company will soon build large works.

WARREN, MASS.—The Warren Cotton Company is to build several dwellings for the employees.

WESTFIELD, MASS.—The Smith Manufacturing Company is about building a large foundry.

WEST GARDNER, MASS.—Heywood Brothers & Co. will soon build a new shop, 75' x 200'.

YOUNGSTOWN, O.—The Malleable Iron Company is about building an addition, 70' x 150'.

Bids and Contracts.

HOLYOKE, MASS.—The contract for building the foundry and storehouse of the Holyoke foundry company has been given to Lynch Bros. for \$16,037; Lynch Bros. have sub-let the wood and iron work to F. F. O'Neill.

PROPOSALS.**COURT HOUSE.**

[At LaFayette, Ind.]

Sealed proposals will be received at the Auditor's Office of Tippecanoe County, Indiana at the City of LaFayette, until 2 o'clock, P. M., of Tuesday, Sept. 12, 1882, for furnishing all the materials and labor required in the erection, construction and completion of the new Court-House for said County, according to the plan, drawings and specifications, prepared by E. Max, architect, and now on file in said Auditor's Office. Bids are to be made taking into account the right of the bidder without charge to all the stone now delivered on the ground for said building, and also the right to use of the derricks, work-shed, and ground leased the County for the purpose of making bricks; and also the window-frames now made for first story; all being property heretofore provided and prepared for said building by former contractors, and by County received from them in settlement of non-completion of contract on account of the death of Francis L. Farman, one of said contractors. Bids will be received for the completion of the entire building from the condition in which it now is, and also for the distinct parts thereof according to said plan, drawings and specifications; and also for completing the first or basement story above the lower water-table, or the entire face of the stone in first story above said lower water-table bush hammered and sunk margins, instead of with stone with sunk margins and a rock pitched face. All bids to be filled out according to blanks to be had of said Auditor for use of bidders, and by inserting amounts for work bid for, and without additional conditions or qualifications.

All bids must be accompanied with a good and sufficient bond, in a penalty of not less than one-fourth of the cost of the work bid for, signed by at least two responsible resident freehold sureties, according to act of Legislature, approved March 11th, 1875, (see acts 1875, page 36); (also Act of Legislature, approved March 14th, 1877.) (See Acts Special Session, 1877, page 29).

Blank bonds will be furnished by Auditor of said County, and if sureties do not reside in Tippecanoe County, their goodness and sufficiency beyond any doubt should be certified to by Clerk of County where sureties do reside.

The Board of Commissioners reserve the right to reject any and all bids if in its judgment the interest of the County should so require.

By order of the Board of Commissioners of the County of Tippecanoe.

CYRENIUS JOHNSON, Auditor.

RAILROAD MASONRY.

[At Philadelphia, Pa.]

PENNSYLVANIA RAILROAD COMPANY,
OFFICE OF CHIEF ENGINEER, 233 S. FOURTH ST.,
PHILADELPHIA, July 25, 1882.

Sealed proposals will be received at this office until 9 A. M., August 10, for all the graduation and masonry required by said Company to complete the Susquehanna and Clearfield Railroad from Keating to Karthaus, about twenty-two miles. Plans and specifications can be seen at Room No. 40 at this office.

WILLIAM H. BROWN,
Chief Engineer.

BUILDING.

[At Benton Harbor, Mich.]

On and after August 3, 1882, we will be prepared to receive bids for the erection of a two-st'y and basement brick building, 85' x 125', at Benton Harbor, Mich. Plans and specifications can be seen at our office in Benton Harbor.

PITCHER, JONES & SONNER.

PROPOSALS.**IRON ROOF.**

[At Albany, N. Y.]

NEW CAPITOL,
OFFICE OF THE SUPERINTENDENT,
ALBANY, N. Y., July 20, 1882.

Sealed proposals will be received at this office (where proposal blanks can be procured) until 12 o'clock, noon, Friday, August 18, 1882, for furnishing and putting up all the iron-work required to build the roof of the west front (including both pavilions) of this building, in accordance with plans and specifications now to be seen at this office. Said work is to be completed on or before the 1st day of February, 1883.

Each bid must be enclosed in an envelope, addressed to the undersigned, indorsed "Proposal for Iron Roof," and must be accompanied by bonds of two sureties, residents of the State of New York, each to the amount of \$10,000.

Said sureties are to guarantee that the bidders will execute a contract if it is awarded to them, and will perform the same faithfully in accordance with the plans and specifications. The right is reserved for the Superintendent, with the concurrence of the New Capitol Commission, to reject any or all bids, and, after a contract is entered into, to declare said contract forfeited, whenever, in their judgment, it is not being performed for the interest of the State.

JAMES W. EATON,
Superintendent New Capitol.

IRON ROOFS, ETC.

[At Memphis, Tenn.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., July 22, 1882.

Sealed proposals will be received at this office until 12 M., on the 11th day of August, 1882, for furnishing and putting in place complete the iron roofs, etc., required for the custom-house, etc., at Memphis, Tenn., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

JAS. G. HILL,
Supervising Architect.

IRON BRIDGE.

[Near Madisonville, O.]

AUDITOR'S OFFICE, HAMILTON CO., O.,
CINCINNATI, July 17, 1882.

Sealed proposals will be received at the office of the Commissioners of Hamilton County until Saturday, August 12, 1882, at 12 o'clock, M., for the construction of an iron superstructure over Duck Creek, on the road from Madisonville to Oakley, near George Martin's Place, Columbia Township.

Clear span of 60'; clear roadway of 18'; strength required, 100 pounds per square foot of floor surface in addition to its own weight. Ultimate tensile strength, 50,000 pounds per square inch. Five will be used as a factor of safety. Bidders must furnish their own plans and specifications, accompanied by full and complete strain sheets.

The Commissioners reserve the right to reject any or all bids.

Proposals should be indorsed as above, and addressed to the Commissioners of Hamilton County, O.

W. S. CAPELLER,
County Auditor.

IRON-WORK.

[At Cleveland, O.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., July 19, 1882.

Sealed proposals will be received at this office until 12 M., on the 7th day of August, 1882, for furnishing and putting in place complete the iron roofs, etc., required for the north extension of the custom-house building at Cleveland, O., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

JAS. G. HILL,
Supervising Architect.

COUNTY INFIRMARY.

[At Evansville, Ind.]

Sealed proposals will be received at the office of the Auditor of Vanderburgh County, Evansville, Ind., up to 1 P. M., August 12, 1882, for furnishing all materials and work required to erect and finish complete a County Infirmary Building, to be built on the farm recently purchased by the county, in accordance with the plans and specifications on file in the Auditors Office of said county.

Bidders will be required to give satisfactory security, as the law requires, for the faithful performance of contract.

Proposals shall be made upon blanks furnished by the Auditor, and indorsed "Proposal for County Infirmary."

County Commissioners reserve the right to reject any and all bids.

WM. WARREN, A. V. C.

TIMBER, ETC.

[At Washington, D. C.]

NAVY DEPARTMENT,
BUREAU OF CONSTRUCTION AND REPAIR,
WASHINGTON, D. C., July 12, 1882.

Sealed proposals to furnish timber and other materials for the Navy for the fiscal year ending June 30, 1883, will be received at this Bureau until 12 o'clock, M., the 8th of August next, at which time the bids will be open.

The proposals must be addressed to the "Chief of the Bureau of Construction and Repair, Navy Department, Washington," and must be indorsed "Proposals for timber, etc., for the Navy," that they may be distinguished from ordinary business letters.

Printed schedules of the various yards, with instructions to bidders, forms of offers and other information can be obtained on application to the Purchasing Paymaster or Commandants of the respective navy yards, or to the Bureau of Construction and Repair, Navy Department.

No contracts will be awarded until after appropriations to cover the same have been made by Congress and been duly approved.

T. D. WILSON, Chief Constructor U. S. Navy,
Chief of Bureau of Construction and Repair.

PROPOSALS.**STEAM-BOILERS, ETC.**

[At Columbus, O.]

Sealed proposals will be received by the Adjutant-General, Treasurer, and Secretary of State, until 2 o'clock, P. M., of Wednesday, the 16th day of August, 1882, at the office of the Secretary of State, in the State-house, Columbus, O., for the construction and erection of certain works, and for making alterations at the said state-house.

The work will be divided as follows, viz.:

CLASS NO. 1.

Supplying and setting four steam-boilers, each 30' long and 4' 6" in diameter, with all necessary mountings.

CLASS NO. 2.

Supplying, fitting and hanging sundry steam-pipes and fittings, and also taking down, refitting and hanging sundry other steam-pipes and fittings.

CLASS NO. 3.

Supplying and fitting gas and water pipes.

CLASS NO. 4.

Masonry, plastering and concrete.

CLASS NO. 5.

Constructing raised floors in the Senate Chamber and House of Representatives, and sundry other carpenter-work.

CLASS NO. 6.

Sheet-metal and iron work.

CLASS NO. 7.

Paving and gas-tar concrete in basement.

The work may be let as a whole or in separate contracts, for each class of work indicated above.

Proposals must be made only on the forms supplied for that purpose.

The right to reject any or all proposals is reserved. Satisfactory security will be required for the proper performance of the work under each contract.

Plans may be seen, and specifications, forms of proposals and forms of contract obtained, at the said office of the Secretary of State, Columbus, O., or at the office of Messrs. Anderson & Hobby, Civil and Sanitary Engineers, Johnston Buildings, Cincinnati, O.

SAMUEL B. SMITH, Adjutant-General.

JOSEPH TURNER, Treasurer.

CHARLES TOWNSEND, Secretary of State.

COUNTY INFIRMARY.

[At Evansville, Ind.]

Sealed proposals will be received at the office of the Auditor of Vanderburgh County, Evansville, Ind., up to 1 P. M., August 12, 1882, for furnishing all materials and work required to erect and finish complete a county infirmary-building, to be built on the farm recently purchased by the county, in accordance with the plans and specifications on file in the Auditor's office of said county.

Bidders will be required to give satisfactory security, as the law requires, for the faithful performance of contract.

Proposals shall be made upon blanks furnished by the Auditor, and indorsed "Proposal for County Infirmary."

County Commissioners reserve the right to reject any and all bids.

WM. WARREN, A. V. C.

PARLIAMENT-HOUSE.

[At Quebec, Canada.]

DEPARTMENT OF AGRICULTURE
AND PUBLIC WORKS,
QUEBEC, June 12, 1882.

Sealed tenders, addressed to the undersigned, will be received at this office until Wednesday, 16th August next, inclusively, for the construction of a new Parliament-House at Quebec. The plans and specifications of the work may be seen at this office, every day, after the 31st of July next, between the hours of 10 A. M. and 4 P. M. The tenders must be endorsed: "Tender for New Parliament-House." The Department will not be bound to accept the lowest or any of the tenders. By order, ERNEST GAGNON, Secretary.

TERMINAL STATION.

[At New York, N. Y.]

Sealed proposals will be received by the Trustees of the New York and Brooklyn Bridge, at their office, No. 21 Water Street, Brooklyn, indorsed "Proposals for station at the New York terminus of the East River Bridge," until 12 o'clock noon of August 12, 1882, for furnishing all of the material and erecting complete a station building and viaduct at the terminus of the New York approach of the bridge.

Drawings may be seen and specifications obtained at the engineer's office, No. 279 Front Street, New York.

Also, for a similar station and viaduct for the Brooklyn terminus of the bridge.

Drawings may be seen and specifications obtained at the engineer's office, No. 279 Water Street, Brooklyn.

W. A. ROEBLING, Chief Engineer.

PAINTS, OILS, HARDWARE, ETC.

[At New York, N. Y.]

OFFICE OF THE INSPECTOR OF LIFE-SAVING
STATIONS, No. 3 BOWLING GREEN,
NEW YORK CITY, July 24, 1882.

Sealed proposals will be received at this office until 12 o'clock, noon, of Monday, the 14th day of August, 1882, for furnishing supplies to be delivered at New York, for use of the Life-Saving Service for the fiscal year ending June 30, 1883.

The supplies needed consist of ship chandlery, paints, oils, etc., stoves, etc., hardware, crockery, etc., and many other articles, all of which are enumerated in the specifications attached to the forms of bids, which may be obtained on application to this office.

Proposals to be addressed to the undersigned, and indorsed "Proposals for Supplies."

The right is reserved to reject any or all bids, and to waive defects, if deemed for the interest of the Government.

J. H. MERRYMAN,
Captain U. S. R. M.,
Inspector of Life-Saving Stations.