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THE Episcopal Cathedral in New York is going on slowly, and the Trustees are beginning to consider what sort of stone to use for the exterior. The apse is already high above ground, in rough masonry, but will be faced, later, with the stone selected for the whole exterior. The doubt in the minds of the Trustees seems to be now whether to choose granite or marble, some thinking that marble would be too conspicuous. So far as this is concerned, we should not think that any hesitation need be felt. The marble spires of St. Patrick's Cathedral are not unpleasantly prominent in a distant view, but rather the contrary, as, in a cloudy day, they melt into the background so much as to be far less conspicuous than the dark, sandstone spire of Trinity; and, in view of the great difficulty of executing satisfactory carved detail in granite, a softer and finer-grained stone is very much to be preferred. It is to be expected, and very much to be hoped, that, before the Cathedral is finished, a great deal of rich sculptured ornamentation will be put upon it, either as a part of the design, or in the way of memorials; and, as it would be hopeless to try to get a good effect for work of that sort in granite, the only alternative, in case of the choice of granite for the building, would be to insert blocks of finer-grained stone, in which carved detail would appear to advantage; and the result of the insertion of blocks would be a patchy, blotched appearance, which is extremely repulsive for the outside of a building. If it is found that the whiteness of marble might be at first too striking, a good limestone would be less prominent, and would lend itself nearly as well as marble to sculpture; and some of the American limestones are nearly or quite as durable as marble. Our own choice, however, would certainly be the Lee or Stockbridge marble, such as is used in the Capitol at Washington. This has blue veins, which give it a little play of color, and it also contains a small amount of iron. In the course of years, the iron slowly oxidizes, giving the stone a beautiful creamy tint through which the blue veins appear just distinctly enough to give transparency and softness to the color. In comparison with the ordinary marbles, which simply blacken in weathering, the Berkshire County marbles are like poetry compared with prose, and we hope that the Cathedral Trustees will not assume that all marbles are alike, and that they will not choose any marble without ascertaining what it will look like a generation hence.

AS we do not wish to be accused by marble dealers of attempting to advertise a particular stone, we will explain that our liking for Lee marble dates from a time, some twenty-five years ago, when our daily walks led us past a marble front on William Street, in New York, which was conspicuous among its brownstone neighbors by its beautiful color, which most of our readers will understand when we say that it was just that of a light wash of burnt sienna, shaded, natu-

rally, according to the exposure of the various portions. Whether the building is there now, or not, we cannot say, but its effect of delicate warmth, in the midst of the dinginess about it, pleased us, in those days, so much that we made inquiries about the stone of which it was built, and learned that it was of either Lee or Stockbridge marble. Some years later, we saw the same stone in the colonnade of the Capitol at Washington, and our admiration for it, as a material for architectural effect, was increased, and has continued to increase as we have observed the effect of time upon the Capitol, which, to our mind, grows more beautiful every year.

SOME one, who does not sign his name, writes us, in regard to the Clearing-House building, in New York, which is said to have been insured at a premium of one-tenth of one per cent for five years, that it is "in middle of block, but is not surrounded by old buildings," apparently intending by this to correct our comment of a few weeks ago on the matter, in which we observed that the building was situated in the middle of the block, on a narrow street, and surrounded by old buildings. We are always glad to be set right when we make an erroneous statement, but, in this case, the difficulty seems to be mainly one of opinion as to what constitutes an old building. Our unknown critic goes on to say that the Clearing-House has the Bank of Commerce for its nearest neighbor on one side, the American Exchange Bank on the other; in the rear "some old buildings, from which it is defended by a fire-wall built for that purpose; and in front, across the street, the Equitable Building; and we are further informed that the American Exchange Bank is an "old-style fireproof building, with filled-in floors." As the front portion of the Equitable Building was erected about twenty-five years ago, we think that it may also be classed, in the light of modern fireproof construction, as "old-style"; so that, according to our critic's own description, the Clearing-House has an "old-style" building on one side, another, partly "old-style," in front, and, in the rear, some acknowledged to be really old. Considering that almost the whole modern science of fireproof construction has grown up since the front portion of the Equitable Building was finished, and that "old-style" fireproof buildings are now regarded by fire-engineers and architects as having very little fireproof quality, it seems to us that our characterization of the surroundings of the Clearing-House was quite justified.

OUR unknown correspondent, who seems to be familiar with insurance matters, goes on to say that the Clearing-House is the best-watched building in New York, and could suffer very little damage, in case the small amount of woodwork in it should take fire, all of which is undoubtedly true; and he adds that the present fireproof rates in New York are "war measures" between the companies, who are fighting for business, and insure at losing rates to secure customers. Of course we do not deny any of this. The article referred to simply called attention to the extraordinary reduction in insurance rates in New York on modern fireproof buildings, without examining into the reasons for it, but the conclusion that we drew from the reduction, that the rates on such buildings were not likely ever to be restored to the standard which prevailed a few months ago, we still hold. Meanwhile, it is reported that a policy has been written on a high office-building in New York, which certainly lacks some of the special security attributed by our correspondent to the Clearing-House, at the same rate, but for a larger sum, one million dollars having been insured, it is said, for five years, for one thousand dollars.

THE buildings occupied by the Architectural and Engineering Departments of the Massachusetts Institute of Technology, in Boston, took fire last week, from the overturning of a tinman's furnace on the roof, as is said, and the upper story of the building was practically destroyed. The valuable library of the Architectural Department, which is kept in the next lower story of the building, narrowly escaped destruction; but some fifty of the students, who were near at hand, devoted themselves bravely and efficiently to the work of caring for it, and all of the books and photographs were saved uninjured though the casts were destroyed. The Engineering Library, which is also very extensive, was saved in the same manner, with the valuable instruments belonging to the Department, and the only irreparable loss fell upon the students themselves,

some of whom lost drawings and materials. The students of the graduating classes whose thesis work was in the building can felicitate themselves that their loss was not greater.

THE College of Architecture at Cornell University has followed the lead of Columbia and the University of Pennsylvania, in establishing an annual fellowship in architecture, of the value of two thousand dollars. The fellowship is restricted to graduates or special students, who have completed a two years' course, of the College of Architecture, and is to be awarded in competition. The holder is required to spend two years in advanced study, either at Cornell, or in Europe, under the direction of the Faculty of the College. It does not appear whether the fellowship is founded by private generosity, or is maintained by the University, but it may be presumed that the latter is the case.

SURPRISES will, apparently, never cease in connection with the new Pennsylvania Capitol. It will be remembered that, a few weeks ago, the lowest bid received for the work, including hasty modifications made for the purpose of reducing the expense, and omitting, as is understood, the plumbing, heating and some other details, was said to have been about a million dollars, or nearly twice the appropriation; now it is announced that a contract has been awarded for the construction of the building for three hundred and twenty-five thousand dollars, or not very much more than half the appropriation, and about one-fourth the amount that the bidders are said to have demanded a little while ago. What miracle has been wrought, meanwhile, upon the bidders, or upon the plans and specifications, we cannot even guess; and the profession will await an explanation with interest.

ALTHOUGH real-estate is generally supposed to be the safest form of investment, there is no business in which more heartless and impudent frauds are practised than in that which concerns such property. The scandals connected with building and loan associations have long been famous in the annals of courts, but the list of them is not yet full, and even under color of law some very doubtful practices are often indulged in at the expense of those who imagine that they are enjoying the benefit of a philanthropic scheme. Not long ago, a joint-stock concern, having less than twenty members, established itself in business in New York as a "society for savings and Home-Building," and announced that it was prepared to buy lots and build houses for its patrons, taking pay on the instalment plan. It should be said that there are responsible corporations which carry on business of this kind, contenting themselves with a moderate interest on their capital, and carrying out their agreements faithfully, to the satisfaction of all who deal with them; but inexperienced people cannot always judge between the sound and honest companies and the fraudulent ones, and those which make the most use of the sentimental catch-words about "homes," and "savings," and the like, which excite the sympathies of women, are most likely to be untrustworthy. In the New York case, a lady applied to this "savings and home-building" company to build a house for her, paying, as alleged, an instalment of about thirty-five dollars, and signing an application for a loan of eight hundred dollars. She was given a receipt for her money, and was told that the house would be done in about three months. Some time passed, but the house was not built, and she received no answer to her application for a loan. Meanwhile the Company, or members of the concern, tried to effect the loan, but, as it appeared, unsuccessfully; and the lady laid the matter before a lawyer, who advised her to demand the return of her instalment. She went, accordingly, to the Company's office for this purpose, and was immediately served with a summons to answer a claim of certain lawyers, amounting to about sixty dollars, for "examination of title" of the lots on which the "home-building" Company professed to intend building her house; and the next day, another bill was sent her, from the Company, with a charge of twenty dollars for "negotiating loan"; four dollars for interest on the loan, which, it must be remembered, had never been effected, and twenty dollars more for "interviews" in relation to the matter.

ALTHOUGH the Cuban war has brought nearly every sort of business to a standstill, the establishments for manufacturing military and naval supplies and munitions are, it is hardly necessary to say, running night and day, with all the

force available, and their activity is reflected to a certain extent in other branches of industry. One curious effect of the sudden call for a certain class of manufactured articles is the revelation of the scarcity of skilled labor. Of unskilled labor there is now, as usual, enough and to spare; but it seems to be impossible to supply the demand for men who can make good iron castings, and put together and finish the elaborate machines which have taken the place of the rough and clumsy ordnance of a century ago. Of course, there are men enough who represent themselves, in answer to the advertisements of the manufacturers, as skilled workmen, imagining, apparently, that a short experience as laborers or helpers in a foundry entitle them to that distinction, and it is said that the foremen of some of the Philadelphia factories have had some strange experiences with workmen of this sort, finding their hollow castings made solid, through the omission of the core; or the cores put in upside down, or other blunders perpetrated. As these blunders are costly affairs for the manufacturers, the men who know enough to avoid them command almost any wages that they ask, and the Philadelphia Press observes that to these men the war has brought prosperity.

M. MOREL-LACORDAIRE, an official expert in matters of furniture and decoration, gives, in *La Semaine des Constructeurs*, some amusing reminiscences of his experience. Speaking of Smyrna, or what we should call Turkish, rugs, he says that he was lately called in to give advice in a dispute between a very rich client and a dealer, who had sold him a rug. The purchaser of the rug had two grievances: the dealer, when he brought the rug and spread it on the floor, closed the inside blinds, thus raising a presumption of his intention to deceive; and when a brighter light was thrown upon it the ground was discovered to be spotted, notwithstanding the dealer's assurances that the rug was a new one. On examining the object of the controversy, the expert found it to be a magnificent Turcoman rug, of the best quality, but he was obliged, in order to convince his client, to deliver to him and his friends a little lecture on Oriental rugs. The spots of which the amateur complained, and which were simply slight variations in shade of the ground color, instead of defects, were proofs of genuineness. The Oriental dyers, according to M. Morel-Lacordaire, take their trade very easily. They stand over their pails of dye-stuff, smoking cigarettes, and, in the intervals of the whiffs, dipping tufts of wool in the liquid. Naturally, the tone which the wool takes depends upon its character, the time and manner of its immersion, the state of the dyeing bath, and other factors, and each tuft, practically, differs in shade from all the others. The weaver, furnished with a pile of tufts, selects from them as he sees fit, and the consequence is that a plain ground, in any Oriental weaving, is always mottled with endless shades of the prevailing color. Whether, as some pretend, the slight, and, to our eyes, almost imperceptible variations in color between the portions of dyed wool are made use of by the Eastern weavers to produce intentional effects in the ground, or whether they take the tufts as they come, only avoiding juxtaposition of extreme tints, is perhaps uncertain, but, in any case, the effect of the blending of slightly different shades is to produce a richness of color which cannot be approached by Western methods of manufacture, and is the distinguishing mark of Oriental fabrics generally. As to the closing of the shutter, the expert, on viewing the locality, concluded that the dealer, who was probably something of a judge of decorative effect, had found the colors of the room, in combination with those of his rug, too harsh, and had shut out a part of the light, in order to melt them more pleasantly together; and he advises his lay readers, in similar cases, if they meet with a dealer of sufficient taste to undertake the management of light in that way, to regard this as a reason for placing confidence in what he says. Another observation which M. Morel-Lacordaire makes is new to us, and may be useful to some of our readers. Speaking of Turkish carpets, he says that the "hautes laines," or first-class woollen rugs, which are very closely woven, should weigh from five and one-half to six and one-half pounds to the square yard, after beating out the dust, of which there is often a pound to the yard. Of course, the introduction of silk or camel's-hair, which is used in the plain grounds of the best rugs, would affect the weight; but inexperienced persons will do well to remember that good rugs are heavy.

THE EVOLUTION OF DECORATIVE MOTIVES.¹—IV.

THE EGYPTIAN LOTUS AND EGG-AND-DART.—I.



Fig. 39. Plant-forms in Early Greek Pottery (after Flürwängler v. Löschke.)
a from Thera; b from Crete.

FLORAL and foliage forms would seem at first sight to be among the most obvious resources of the decorator. Their intrinsic beauty, both of outline and color, the regular and often geometric disposition of their parts, and their extraordinary abundance in nature, have brought them into general use in modern decorative design. We are accustomed to see them used in conventional color-patterns or in naturalistic designs in carpets and rugs, on wall-papers and tiles, in all sorts of ceramic decoration, in calico-prints and brocades, in garlands, festoons, rosettes and surface-patterns carved in stone and wood on all sorts of structures. The decorative sculptors of the Middle Ages in Europe drew many of their happiest inspirations from natural leaves and flowers, and the beautiful tiles and plates and vases of the Persian ceramists of the same period are brilliantly adorned with semi-naturalistic representations of the carnation-pink, rose, tulip, dahlia and other flowers. It seems only natural to suppose that primitive decorators must have early discovered the decorative beauty and fitness of flower and leaf forms, and made use of them almost at the beginning of their artistic development.

This, however, is not the case. Floral forms are very rare in savage and primitive art, and absolutely lacking in the majority of its phases. Savage and half-savage peoples are not blind to the beauty of flowers, and some of them, like the Hawaiians and Samoans, use them in their festivals with the most lavish profusion, but they do not turn them to account in their ornament. To us this is a strange fact; but it is explained by the origins of savage art, which has grown up wholly or almost wholly from beginnings in fetish or totem representations and skeuomorphic patterns. The conscious effort to imitate nature for the sake of the beauty of its forms is a late phase of artistic growth; the primitive artist knows no such motive or resource in his art. Natural forms are used and in time conventionalized with sole regard to their magic significance. The decorative modification of these forms into patterns is a gradual and unconscious process, as already explained, which tends not towards, but away from, any recourse to nature directly for suggestions of ornament-motives. Tradition rules savage art with absolute rigidity, and in the historic styles its powerful grasp has so controlled the development of decorative design as to keep it for centuries in one narrow path, repeating with but slight modifications the old motives again and again, until some political or social cataclysm has opened to the artist new resources or a new line of development. The obstinacy with which the civilized world of antiquity persisted in shutting its eyes to the wealth of decorative suggestion available on every hand in the leaves and flowers of common plants, and confined itself to a few simple symbolic motives handed down by one age to the next, is amazing to modern minds. There is no sign of recourse to nature, otherwise than in the line of religious symbolism or magic, in Egyptian ornament, or in any historic art until the Mycenaean Age of Greek art. During this period the potters of Rhodes, Mycenae, Thera, Cyprus and a few other localities made free use of a limited number of the forms of local plant and marine life in the adornment of their pottery. Egyptian traditions, disseminated widely by Phœnician and Carian trade, are plainly discernible in much of this decoration, and convergence toward the lotus type evidently dominated or modified a considerable portion of these representations of the local vegetation. But it seems to me quite clear that a large number of these plants, to which were given, as a matter of decorative habit, outlines resembling Egyptian lotiform and palmette motives, are nevertheless efforts to represent local plants and not lotuses at all; while the mussel, cuttle-fish, and squid, and various vines, are unmistakably portrayed in this prehistoric but well-developed



Fig. 43. Blue Lotus, from Nature.



Fig. 40. From Early Greek Pottery: Fish and Mussel.



Fig. 42.

art (Figs. 39, 40). There is, I believe, no evidence that these had any magic import, and, if not, we have here the earliest examples of ornament borrowed from nature directly, without symbolism; but the question of the significance of these forms is an open one, to which archaeology may in the future return some definite answer.

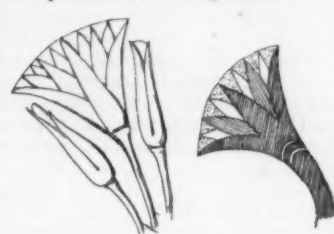


Fig. 44. Conventional Lotus, from Egyptian Temple Reliefs. (The First is from a Relief of the Offering of Seti to Osiris, at Abydos.)

This non-symbolic naturalistic decoration seems to have passed away with the dawn of Greek history, driven out by an art based almost entirely on Egyptian and Asiatic motives. Greek art in the historic period made use of the ivy, grape-vine, laurel, acanthus and perhaps a few other plants in pottery and in carved decoration, and conventionalized their forms with consummate skill; but every one of these seems to have had some definite symbolic significance or association. The ivy and vine were sacred to Dionysos; the laurel-crown was the prize in the Olympic games, sacred to Zeus; the acanthus was a sepulchral and funereal plant. The anthemion was not a flower at all, but a derivative from the Egyptian lotus-palmette, partly by way of Assyria. Garlands and festoons were carved in late Greek art upon altars and sarcophagi, as reminiscences of the sacrificial and funereal use of wreaths and festoons of natural flowers, fruits and leaves. We must therefore eliminate from our conceptions of Greek ornament-motives any idea that they were copied from nature, except just so far as they had some symbolic significance, whether a conscious symbolic purpose dictated their use or not. The motive which leads to the use of a form may be quite independent of the original purpose and significance which introduced the form into decoration.

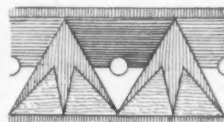


Fig. 45. Conventional Lotus, from a Painting of a Necklace (after Owen Jones).

Roman art adopted the whole Greek system of decorative forms; but although it subjected them to radical modification, changing both their general character and their particular treatment, it made no advance towards naturalistic decoration. It adopted the Greek symbolism, with its griffins, masks, garlands, vines and ivy; it added genii and amorini springing out of acanthus-scrolls and trophies of arms; but though Roman symbolism was much like that of modern decoration, artificial and superficial, with but little of the magic import of Egyptian and early Greek ornament, it did not turn to nature directly for decorative suggestions. A possible exception is seen in some of the details of Roman carved rinceaux, in which fruits, bursting seed-pods, butterflies and mice occur in combinations such as we call grotesque. The Roman grotesques are the nearest approach in Classic art to the conscious recourse to nature for models of ornament.

Byzantine decoration was both highly symbolic and highly conventional. It inherited mixed traditions from both Greek and Roman art, appropriating to Christian uses many of the symbols of Classic paganism, and adding thereto the symbols of the Christian faith—the cross, peacock, dove and lamb; but of these the cross was the only one which entered into the conventional patterns of Byzantine ornament. Occasional representations of the funereal cypress are modified anthemions in treatment: nature as a source of ornament was farther away from the Byzantines than it was from the Romans.

It was the French lay-builders of the end of the twelfth century, especially those of the Île-de-France, who first boldly discarded the worn-out traditions of Classic art in their carving, and found in the humblest plants at their feet, in field and forest, a new inspiration for decorative design.² They introduced a new era in the history of ornament-motives; they were pioneers in that new world of nature-forms in ornament which is one of the glories of Gothic design. About the same time the artists of Persia were developing floral design in brilliant colors in their wonderfully beautiful tiles and plates, borrowing possibly from the Chinese porcelain which was imported at a very remote age into Persia, but animated above all by the innate Persian love of flowers for their own sake (Fig. 41). The Persians were celebrated for their gardens from the times of the Achæmenidæ, and their poetry is full of allusions to the loveliness of various flowers. They used the carnation-pink, the rose, dahlia, tulip and other flowers in their ceramic decoration, their textile patterns, and their

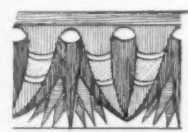


Fig. 47. Lotus Border (after Owen Jones).

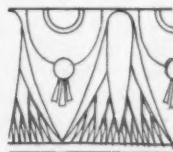


Fig. 48. Lotus Border (after Owen Jones).

¹ Continued from No. 1160, page 94.

² See Viollet-le-Duc, "Dictionnaire Raisonné," S. V. Flore, Sculpture.

manuscript-illuminations, depicting them in brilliant colors in a half-natural, half-conventional treatment full of grace of line and harmony of movement. Chinese and Japanese art is also full of floral motives and pictorial representations of plant life, handled with greater variety of treatment than is found in Persian art, and always with consummate decorative propriety; and the Mohammedan art of India also uses floral designs freely.



Fig. 49. Lotus Border (after Flinders Petrie; Prisse).

The modern use of flowers in ornament owes its existence in large measure to the influence of these Oriental works of art, which have been known and prized in Occidental lands for centuries.

The occurrence of floral and plant forms in Egyptian ornament is a subject of peculiar interest and importance because of the great antiquity of Egyptian art. The very earliest examples we have of its products belong to an advanced stage of artistic development, and point, therefore, to beginnings in an antiquity so remote as to be quite beyond the bounds of history and almost of speculation. It is, consequently, highly significant that in this outgrowth of uncounted centuries of civilization we find no sign of natural forms used in decoration except as symbols or talismans. Indeed, as we have already noticed, "every object" (to quote Maspéro's words) "was an amulet as well as an ornament," and its magical efficacy was determined by the words or formulas spoken when it was consecrated. Here is a clear survival from primitive magic, recalling what Mr. Cushing tells us of Zuni pottery, which the Zuni woman-potter calls a "Made Being," and supplies with food as she places it in the kiln, taking special care as to the words and sounds uttered during its finishing. Egyptian art was not, however, in any sense a savage art: it displays a life and variety which one meets with only in the art of civilized peoples; but in its use of natural forms it reveals the tenacity and persistence of primitive traditions.

Throughout the whole history of Egyptian art the talisman idea survives as a tradition, but with its original force and significance weakened. Symbolism was apparently beginning to take the place of magic, and talisman-motives and symbolic motives are found side by side. But what interests us in this art is less the meaning than the treatment of the forms used and the changes they underwent, for throughout Egyptian art decorative considerations evidently controlled the artistic development of the motives which originated in magic and symbolism.

Flinders Petrie¹ identifies the lotus, papyrus, daisy, convolvulus, vine and palm in Egyptian decoration, and these are about the only vegetable forms of frequent occurrence in it. But the daisy he

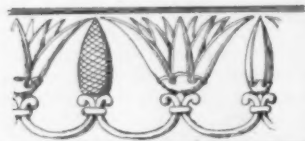


Fig. 52. Assyrian Lotus (repeated from Figure 4, No. 1153 of American Architect).

traces to a skeuomorphic origin in discs of leather sewed on to a fabric with radiating stitches, making it really a case of almost accidental convergence, — imitation suggested by resemblance; while the remaining plants mentioned were either symbols or talismans, or at least powerfully affected by, and often associated decoratively with, the talismanic

lotus. Professor Goodyear goes so far as to claim the rosette or daisy, the palmette, the papyrus, and indeed every floral form in Egyptian art, as a lotus or lotus-derivative.² This extreme conclusion has not found universal acceptance; but the illustrations presented in support of it show, at least, the dominance of lotus-symbolism and its influence upon the treatment of floral and other forms of different origin.

The lotus is, indeed, the most important single element in Egyptian ornament. The Protean variety of its combinations is the more marvellous when we consider the extreme simplicity of the forms by which it was conventionally portrayed. Its universal use came about in the first place, no doubt, from its religious significance. It was a symbol and talisman of great efficacy and importance. It represented the principle of life and immortality, and hence the reproductive power of nature, and the resurrection. Its roots took life from the fertile mud, and its leaves floated upon the waters of the vitalizing Nile, at whose periodic inundation dead nature springs again to life. This symbolism of life and resurrection associated it with Ra the sun, with Osiris and Horus, with Ptah and Amen, and gave it an especial fitness for use in sepulchral art, and in all that pertained to or depended upon the Egyptian doctrine of immortality; while as a talisman sacred to Osiris and bearing the vital principle



Fig. 53. Lotus and Grapes (after Owen Jones).

it would find application to almost every phase and feature of daily life.

Yet its symbolism alone does not explain the part it played in ornament. The scarabæus was an amulet of equal efficacy with the lotus, but it never became an ornament-motive. It was the intrinsic adaptability of the lotus-form to decorative treatment that gave it its vogue in art. This was early recognized, so that at the very beginning of the historic period we find it had already entered upon that second stage of the life-history of a symbolic motive in which decorative considerations begin to operate upon it. Its magic significance had begun to fade into a tradition, respected indeed, but not deeply felt, while its effectiveness as an ornament had been discovered and utilized in combinations which underwent almost endless variations as time went on.



Fig. 54. Lotus Border, from a Sarcophagus (after Owen Jones).

This decorative adaptability was due to the fact that the lotus, as conventionalized by the Egyptian artist, contained the germs of two most prolific ornament-ideas, closely related but leading to widely-separated developments. The first is the trident-motive — three diverging lines or strokes springing from a common stem (Fig. 49a). The second is the palmette-motive — a decorative amplification of the first, consisting of a fan or bouquet of diverging strokes radiating from a common nucleus or stem (Fig. 49b). Such diverse ornaments as the fleur-de-lis, the egg-and-dart, and the Ionic capital belong to the first category; the honeysuckle, or anthemion, is the most familiar outgrowth of the second.

The lotus, of which the early Egyptians knew and represented two varieties, the blue and the white (*Nymphaea caerulea* and *Nymphaea lotus*), was at a very early period conventionalized into a simple decorative form. Figure 43 shows the blue lotus in nature; Figure 44 the typical lotus of the Egyptian reliefs. In these, it will be observed that the flower is shown in elevation, and that of its four green sepals three are represented so as to form a trident, between whose points appear the petals, which are also invariably pointed in Egyptian designs. Sometimes the outline of the flower was approximately triangular, sometimes bell-shaped; but in all cases the trident of three sepals is the really important feature of the design, of which the petals are hardly more than mere enrichments. This is especially noticeable in lotus-borders, to which the tridents give their movement and rhythm, and the petals their finish and elegance of detail. In time the last vestige of naturalism fades away, as magic



Fig. 55. Arabic Stucco Ornament: Mosque of Kalaoun, Cairo.



Fig. 56. Egyptian Lotus, Ova and Grape Pattern, from a Tomb (after Owen Jones).

and symbolism give place to decorative considerations: the petals disappear completely, and the lotus, converted into a species of fleur-de-lis or into a trident with sharp prongs, takes its place as an absolutely conventional ornament-motive (Figs. 45, 46).

These various developments probably covered a long period, but they must have been largely completed before the time of the Middle Empire, for we find lotuses in all stages of this development occurring contemporaneously in Egyptian decoration from the time of the twelfth dynasty down. It must not be forgotten that tradition always preserves for a certain — or uncertain — length of time forms and customs whose significance has disappeared, and that side by side with every new development there may coexist the most incongruous survivals of the older phase from which it has come. The chronology of Egyptian lotus-development is probably an impossible science. The old survived with the new, the primitive with the highly-developed. Examples of obviously derivative lotus-forms are not necessarily later in date than others of more primitive character. Our reasoning as to the development of Egyptian motives has to be based on inherent probabilities rather than on chronological evidence. Here, also, we cannot dogmatize.

The lotus as an amulet-ornament was used from the earliest antiquity in necklaces and breast-ornaments of gold, representations of which are figured on nearly all mummy-cases (cartonnages) and sarcophagus-lids, as may be seen in any Egyptian museum.³ In these the lotus generally has the bell-outline, which was the customary shape for the amulet (Figs. 47, 57). The linear succession of such bell-forms called for something to fill the vacant spaces left between them, and the lotus-bud came into universal use for this purpose. This combination introduced the very important principle of the decorative



Fig. 57. Detail from an Egiptian amulet in Enamel (see Perrot and Chipiez, "History of Ancient Egyptian Art,"—II, Figure 314).

A specially fine collection is in the Metropolitan Museum of Art, New York.

¹ Flinders Petrie, "Egyptian Decorative Art," p. 55. London: Methuen & Co. 1895.

² W. H. Goodyear, "Grammar of the Lotus," *passim*. London: Sampson Low, Marston & Co. 1891.

alternation of contrasted forms, and produced a pattern admirably suited for indefinite repetition in bands and borders. It became the universally accepted motive for this purpose, and was applied to all sorts of objects, although its most frequent occurrence is in tombs and on mummy-cases. Figure 48 is taken from a sarcophagus, Figure 49, from a tomb. This alternation also appears in the representations of awnings and pavilion-hangings in Egyptian reliefs, in which lotuses and buds are used as pendants or fringes (Fig. 58). The Assyrians copied, or, rather, imitated, this form in fringes and border-patterns in which there is traceable the convergent influence of knot-and-tassel fringes (Fig. 50). It is not, perhaps, at present determinable whether the knot-and-tassel was first suggested by the lotus-and-bud, or (as seems more likely) was in Assyria the older form of fringe, and merely converged towards the Egyptian form when the latter entered Assyria, probably under the eighteenth dynasty. It is not unlikely, indeed, that the first use of the lotus-fringe in Egypt itself resulted from the resemblance of the bell-shaped lotus and bud to the tied fringes of rugs and hangings. Such convergence of naturalistic or magical and skeuomorphic elements in the genesis of early patterns is, I believe, a most important phenomenon in the evolution of ornament; a phenomenon which has hardly received from the enthusiastic partisans of particular theories the attention which it deserves.¹



Fig. 58. Lotus Border, from a Tent-hanging.

The lotus-and-bud pattern is not of frequent occurrence earlier than the eighteenth dynasty, if, indeed, it was at all used as a border-pattern before that time,² but it is the most common of all designs in the tomb-decorations of that and subsequent periods. In nearly all cases the lotus is represented as hanging directly from the upper margin of the border. Only by the rarest exception are the several "repeats" of the lotus linked together to form a continuous design; Figure 51 illustrates one of these. The failure to recognize the great artistic advantage of such an organic connection of the elements of the pattern into a continuous movement, and to develop the idea systematically, affords a striking example of the inertia of decorative tradition. It was nearly a thousand years before the Assyrians seized upon that idea as a principle, making a rule of what had been the exception in Egypt (Fig. 52); and even they confined themselves to the simplest forms of linked volutes in composing their lotus, pine-cone, palmette and "pomegranate" borders. In a later chapter we shall see what remarkable results the Greek decorators attained from the development of the same principle.

The particular significance of the lotus-and-bud combination was, in the course of time, obscured by the dominance of decorative demands, and perhaps, also, by the theory of the *Ka* or double. It was believed that the *Ka*, a vague and shadowy double of the deceased, lived in the tomb until Osiris with the forty assessors admitted it to the under-world of blessed spirits in the Land of the Sun of Night. In this shadowy existence in the tomb, the *Ka* subsisted upon the semblances of real things; and pictures of fruit, of the chase, of vine-clad bowers, painted upon the walls furnished it with the same enjoyments which on earth it would have derived from the actual objects so represented. This may be one reason, as decorative invention is probably another, why in tomb-decoration the bud between the lotuses was so often replaced by a bunch of grapes, as in Figure 53. Decorative variation alone can account for such combinations as appear in Figures 48 and 54, in which the bud is replaced by nondescript forms, effective as ornament, but difficult or impossible of symbolic interpretation. In Figure 49, it would appear that the conventional nucleus or base, painted usually in yellow and red, at the base of every lotus, and representing the ovary of the blossom, had suggested by transverse curves the bands of color across the oval space which there replaces the lotus-bud. In Figure 45 the place of the bud is taken by small dots; in other examples the rosette appears; in still others, the pattern is composed entirely of large and small lotuses, as in Figure 51. As an interesting and curious example of accidental reversion to the lotus type, compare with this the Arabic border in Figure 55, from the Kalaoun Mosque in Cairo.

A. D. F. HAMLIN.

(To be continued.)

ARTISTIC COPYRIGHT.

AT a recent meeting of the Royal Institute of British Architects M. Georges Harmand, *avocat à la Cour d'Appel*, Paris, read a paper on "Artistic Copyright, with Special Reference to Architects."

M. Harmand said that one of his objects was to give an idea of the state of opinion on the Continent regarding the question of copyright. Over the greater part of Europe architects enjoyed protection for the works they created, and it was of greatest importance that the profession in England should have the same privileges. Unity in the protection of their art was the best means to its development and its triumph. The fact that for a long period architects had not claimed copyright in their works was no reason against

the right. There was ample evidence to show that from remote ages architects had been accustomed to put their names, or to leave some other trace of their personality, on the monuments they erected. Instances of the custom were cited by the lecturer from a paper read by M. Ch. Lucas at Milan in 1892. Years before any other European country England had made laws for the protection of artists and authors. Till quite recently, however, the reproduction of architects' designs for publication was an expensive matter, and only monographs of a few very important buildings or the works of a few very great architects had been published. In the present day it was easy for architects to get full reproduction of their works, and for the sake of their own memory, their credit and their fame they should strive to secure the preservation of their drawings and the guaranty of their authorship. In England the rights of artists in reproducing their works by printing processes were protected by statute, architectural drawings being expressly mentioned; but English architects apparently lacked confidence in their rights, and hesitated to claim the protection the law afforded them. The question of unification of the legislative measures relating to copyright had been well thrashed out at congresses held by the International Literary and Artistic Association at various cities of Europe; and as a result a Convention was agreed upon at Berne in 1886 between Great Britain, France, Italy, Spain, Belgium, Germany, etc., which provided for the grant of copyright to, among other works, drawings and works of painting and sculpture, to engravings, prints, etc., and to "plastic works relating to geography, topography, architecture, and sciences in general," also to any production belonging to literature, science and art capable of reproduction by printing, etc. But the law of some nations party to the Convention did not fully protect architecture. In Germany an architect enjoyed copyright in his designs so long only as they exist on paper; he lost his rights in his drawings as soon as a building was erected from them. In Great Britain, the lecturer understood, architecture was not protected by law, except for drawings and plans. Conferences had been held all over Europe by the Association above referred to, and strenuous efforts made to secure full protection for architecture. Having dealt with the object of copyright, its privileges, the class of work whose authors were universally admitted to be entitled to the right, the lecturer went on to show that, by their methods of work and the nature of their inventions, architects were in a similar position to painters, sculptors and other artists, and should be conceded the same safeguards for their protection. Quoting judgments of French and Belgian legal tribunals, emphasis was laid on a recent decision at Antwerp, where it was held that, in order to be considered the author of a protected work, it was not necessary for a man to produce a work entirely original in all its parts; it was sufficient that he had made a design, traced a drawing and plan, and infused his own individuality into elements gathered from works whose copyright had expired. Such was an artistic creation which merited the protection of the law. The lecturer then touched upon the arguments adduced against the rights contended for, and having shown their unsoundness, proceeded to treat of the relations between the architect and his employer. The architect furnishes plans and drawings, and agrees with his client for their reproduction in a building on a certain site. Such plans and drawings represent the original work of the architect. The client bargains for the possession and use of the building and the enjoyment of its beauty, if it have artistic qualities. But, the lecturer contended, the right of reproducing the building on paper, by drawing, photography or printing process, did not pass to the client, but remained in the architect. If the client desired in any way to produce his building pictorially, by engraving or other process, the architect could consent, for an agreed consideration, or he could refuse. The client, again, had no right to the original drawings, but only to copies, and this was sufficient to warn the client that the architect intended to keep the copyright for himself. The drawings handed to the owner should show some evidence of their being copies merely, and should bear the architect's signature. The owner had no right to repeat the building on any other site, or to permit any one else to do so. The architect received fees calculated on the cost of the one building only. Repetition could only be made with the architect's sanction, and, if repeated, he was entitled to fresh fees. It was important for the preservation of his rights that the original drawings should bear the architect's signature. His signature could not well be preserved on the buildings themselves, but as they were mere reproductions of his drawings, his interests would be sufficiently safeguarded by the signature being placed on the original drawings and any copies, prints or photographs of them. An architect could always print reproductions of his drawings under his own name, but the client had no more right to make prints or photographs of his buildings without the architect's consent than to repeat the buildings on another site. In concluding, the lecturer expressed his conviction that when architects felt that they could work and create for their profit, and have the reward of their pains and efforts, they would strive more after genuineness, and architecture as an art would progress to the greater glory of beauty. If architects in Great Britain did not enjoy such rights in their creations as the lecturer had advocated, he hoped they would do their utmost to prevent the matter being overlooked in any new copyright act.

Professor Kerr proposed a vote of thanks to the lecturer for the very suggestive paper, which, if looked at as an academical argument, would be found full of information. If architectural copyright

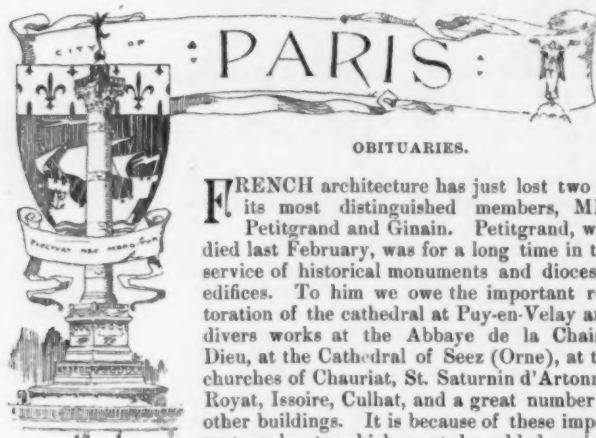
¹ Dr. Colley March quoted with approval by Haddon ("Evolution in Art," pp. 146-148) holds to the tassel origin of Assyrian fringe-patterns; Professor Goodenar opposes it. May not the above suggestion explain the true origin of both the Egyptian and Assyrian patterns?

² Flinders Petrie, "Egyptian Decorative Art," p. 64.

could be established in England, the profession might benefit, because public attention would be drawn to it. It was, however, to be understood that the Teutonic and Latin races differed greatly in their feeling for architecture, consequently the French would show more spirit and interest when dealing with architectural copyright than the English. In fact, if such copyright was established, it would afford a great chance to those who wanted to find out on what ground the architect made his claim. The point was to prove the commercial value of the design. Architectural drawings were protected in this country, provided the paper-work was registered and the fee paid; but to be granted copyright like sculptors and painters was wrong. Sculptors and painters were reproducers of goods that were salable, whereas architectural drawings were not.

Mr. John Slater seconded the vote. He thought it was absurd that the painter could claim copyright and the architect not. If the artist reproduced something that was salable, he thought the architect did also, for a building was always salable.

Mr. J. Hebb said architects as a body would not agree to copyright, as they did not object to their work being copied, imitation being the sincerest form of flattery. — *The Architect*.



restorations of French "monuments," that the Société Centrale decreed, in 1896, to M. Petitgrand its medal for studies on French monuments. At the Universal Exposition of 1889 he obtained a gold medal and was named Chevalier of the Legion of Honor. He succeeded M. Corroyer as architect in charge of the restoration of Mont St. Michel, of which he finished a large portion. Besides his practical and learned qualifications, M. Petitgrand was a remarkably good draughtsman and water-colorist.

The loss caused by the death of M. Ginain, a member of the Institute, is still greater. M. Léon Ginain, Officer of the Legion of Honor, Officer of Public Instruction, died on the 7th of March, at the age of 73 years. He was a pupil of Lebas, and entered the École des Beaux-Arts in 1842. He was four times *logiste*, obtaining the second grand prize in 1849 and the first grand prize in 1852, the problem being a *gymnase*. In the original competition for the Nouvel Opéra, in 1860, he obtained a first prize, while Garnier only secured a fifth prize. Architect of the city of Paris and of the government, M. Ginain built at Paris some very important structures — the Church of Notre Dame des Champs, on the Boulevard Montparnasse, the new part of the École de Médecine, on the Boulevard St. Germain, the École Pratique de Médecine, and the Musée Galliera. He was elected Member of the Institute in 1881, taking the chair of Lefuel, and was professor in the old Atelier Laisné at the École des Beaux-Arts. A modest man and conscientious artist, M. Léon Ginain was a representative of the Classic and academic school. The general appearance of his buildings is severe and imposing, but his last work, the Musée Galliera, while preserving the Classic style, leaves the impression of greater lightness and a gayer harmony. He was beloved by his contemporaries, and leaves behind only regrets and the memory of a life spent in honorable labor.



THE LEGAL RESPONSIBILITY OF AN ARCHITECT.

THE responsibility resting on an architect, said the Supreme Court of Maine recently, is essentially the same as that which rests upon the lawyer to his client, or upon the physician to his patient, or which rests upon any one to another where such person pretends to possess some skill and ability in some special employment, and offers his services to the public on account of his fitness to act in the line of business for which he may be employed. The undertaking of an architect implies that he possesses skill and ability, including taste, sufficient to enable him to perform the required services at least ordinarily and reasonably well; and that he will exercise and apply in the given case his skill and ability, his

judgment and taste, reasonably and without neglect. But the undertaking does not imply or warrant a satisfactory result. It will be enough that any failure shall not be the fault of the architect. There is no implied promise that miscalculations may not occur. An error of judgment is not necessarily evidence of want of skill or care, for mistakes and miscalculations are incident to all the business of life.

We do not indorse the above as the sole responsibility of a member of the association, but as a judicial statement of the legal status of one employed as an architect. This would be modified, of course, by any special contract that might be made between the projector and the designer of the building. It means simply that the ordinary employment does not include a warranty; but there may be a warranty by express agreement, or by implication from the other terms of a contract, where a special employment has been made. If one sells a machine for a certain purpose, it implies a warranty that it will perform the requisite functions. So the lawyer or the doctor may, though they usually are not, be employed under a contract guaranteeing certain results, and if their fee is conditioned thereon, they cannot recover unless it has been attained. The decision of the Court in Maine, from which we have quoted, merely brings architects, under an ordinary employment, within the rule of law applicable to professional services; establishes the extent to which they will be excused by a court of law; not from a professional or business standpoint.

Provision for Decision by Architect. — A building-contract with a city provided that, if the building should not be completed in 500 working-days, the architect should certify what portion of the delay was chargeable to the contractor, and such certificate when approved by the commissioner of public works should be final. Another clause stipulated that whenever, in the opinion of the architect, the contractor had performed his contract, the architect should so certify to the commissioner, whereupon the city should, after thirty days, pay the amount due under the contract. The court held that the commissioner was merely to determine the extent of the delays caused by the city, while the decision respecting other delays was to be made by the architect, whose certificate was exclusive.

[Lantry vs. N. Y. City, 44 N. Y. Supp. Rep. 874.]

When Decision of Architect is binding. — A provision of a building-contract that the decision of the architect shall be final and binding upon all parties is binding unless it is shown that the architect acted fraudulently, and the burden of proving such fraud is upon the party alleging it.

[Lindeman vs. Wagner, 67 Ill. App. Ct. Rep. 134.]

When Owner is bound by Architect. — The acquiescence of an architect, who represents the owner of a building, in the building as constructed, during the progress of the work, is binding on the owner, under a provision in the contract that the work is to be done to the entire satisfaction of the owner and the architect, and that the whole work is to be inspected as it goes on, and accepted by the owner and architect before final payment.

The owner who fails, either personally or through his architect, to express dissatisfaction with such work as it progresses cannot refuse to pay the contract price, under a provision that the work is to be done to the entire satisfaction of the owner, who will have full power to reject all work and materials which are not of the best of the kind specified, and the work is to be inspected as it goes on.

[Laycock vs. Moon (Sup. Ct. Wis.), 72 N. W. Rep. 372.]

Owner may appeal from Decision of Architect. — A building-contract provided that, if alterations were made in the plans, the value of the work added or omitted should be computed by the architect, and in the event of dissatisfaction of either party the matter should be referred to arbitrators. The contract elsewhere set forth that the architect was acting as the agent of the owner. The court held that, nevertheless, the owner was entitled to appeal from the decision of the architect to the arbitrators.

[Weggner vs. Greenstine (Sup. Ct. Mich.), 72 N. W. Rep. 170.]

Provision for Architect's Certificate. — A provision in a building-contract that the decision of the architect shall be final and conclusive is binding, subject to the implied condition that it be honest.

[Welch vs. Hubschmidt B. & W. Co. (New Jersey), 38 Atlantic Reporter, 824.]

Architect's Certificate Condition Precedent. — Where a building-contract provided for final payment to be made on the certificate of the architect in writing that the work had been completed to his satisfaction, there can be no recovery without such certificate, unless it has been waived, or wrongfully refused by the architect on demand.

[Ashley vs. Henahan (Sup. Ct. Ohio), 47 Northeastern Rep. 574.]

THE LIFE OF SLATE ROOFS. — The duration of slate roofs is variously placed, but is usually given as sixty years. A resident of Bangor, Pa., informs a contemporary, however, that in 1863, when he was living in England, he assisted in removing the slate from the roof of a building of the Plymouth dockyards that was known to have stood over 300 years. After the old building had been torn down a new structure was erected on the same site, and the slates, after being redressed, were placed on the new roof, and at last accounts were still there. — *Philadelphia Record*.

BOOKS AND PAPERS

MR. WILLIAM PAUL GERHARD has published in book form his lecture,¹ delivered before the Franklin Institute of Philadelphia, adding to it an appendix, reprinted from the *Sanitarian*, on the work of the sanitary engineer in time of war, epidemic or sudden calamity. Although the address was intended for delivery before an audience, the audience of the Franklin Institute is, to a certain extent, one of experts, and Mr. Gerhard treats his subject as one talking to his equals. To them he can say, as he does frankly, that the sanitary engineer must, in these days, know a great deal of civil engineering, a good deal of architecture, particularly of architectural construction, and something of nearly all the trades connected with construction, including carpentry, bricklaying and stonemasonry, plumbing, gas-fitting and drain-laying. In addition to these, he must know the elements of anatomy and physiology, and much more than the elements of the modern medical science of hygiene. To all these branches of theoretical knowledge he must add the practical observation which will alone fit him for applying quickly his theoretical science to actual needs.

It is hardly necessary to say that a man combining all these qualifications is a very different person from the genteel plumbers who, a few years ago, used to call themselves "Sanitary Engineers"; and the public has begun to find out the difference, and to value the services of those really entitled to the name as they deserve. More than that, young men already look to sanitary engineering as a profession of serious importance, and several of our best technical schools have arranged courses for training such students. It is with the view of suggesting the direction and scope of the studies required that Mr. Gerhard's tract was written, and those interested in the subject will find in it considerations of great value, presented by one thoroughly qualified to give such advice.

MR. WILLIAM H. BIRKMIRE has written a number of books and written them well, but his latest work is valuable only in so far as it deals with construction or with details of steel and iron-work.² Fortunately the topic is so comprehensive, there is so much in connection with high office-buildings which is of interest to read and of value when in shape of permanent record, that the book may well be pardoned where it indulges in architectural criticism *per se*. The magnitude of the subject-matter is perhaps more appreciable after one has stood in front of the post-office in New York looking up at the uncompleted frame of the Ivins Syndicate Building on the left, which is to-day up to about the thirtieth story, with more to come, or looking down the long line of Broadway and seeing how thickly the fifteen to thirty story buildings are studded on each side. At no time in the world's history were there building operations so complicated in their nature, so elaborately equipped with great variety of mechanical devices, or on the whole so admirably constructed and planned as the modern tall office-building. By tall office-building a very different thing is meant now from what the term would have implied a few years ago. When the St. Paul Building was proposed for a height of twenty-three stories above the ground it seemed a perilously audacious undertaking, but we know of at least one structure in contemplation which is to be carried to a height of thirty-three stories, and not very long since, if we remember rightly, some drawings were published in the New York papers showing a building one hundred stories high; and after reading Mr. Birkmire's book, considering how carefully in detail every feature of the building is calculated, how scientifically the parts are adjusted to each other, how thorough the technical arrangement can be made, there does not seem to be any practical constructive limit to the height of a building. A few years ago, indeed less than three years ago, we were told that the limit of height was measured by elevator capacity and that the limit was somewhere in the vicinity of twenty stories. With added stories, the space required for elevators was so excessive that not enough available space was left for rent. But the high-speed elevator, and the scheme of running part of the elevators only part way, has changed even that measure. In the St. Paul Building only two of the elevators make the whole rise of three hundred feet, being "express" to the sixteenth floor. Two others only serve a few of the stories. By this means a great deal of space is saved in the upper stories which can be rented, and though, as a matter of fact, after the elevators and stairs in the St. Paul Building are taken out the remaining space is not a great deal, still the height seems to be warranted by the results. The Eiffel Tower is carried to a height of one thousand feet and, so far as relates to mechanical or engineering difficulties, there is nothing to hinder carrying a commercial building to twice this height if desired, and with probably a larger degree of safety and greater rigidity than would be possible in a structure of the type of the Eiffel Tower.

Of course there is the other side of the question, and we imagine that most architects do not believe that a building of more than eight to ten stories should, in an æsthetic sense, be tolerated at all; and

fascinating as the problem is, anxious as we all may be to build these gigantic structures, we cannot but admit that, as a matter of architecture pure and simple, they present a problem which has not yet been solved with perfect satisfaction, even though Mr. Birkmire's enthusiasm carries him to the extent of assuming that these buildings present a combination of a perfectly-carried sky-line, a harmonious blending of color, and a noble appearance of the useful and beautiful combined. Furthermore, the brutal disregard of one's neighbors which these huge structures really represent ought to be enough to condemn them from every standpoint of taste and culture. Great they are, engineering achievements they undoubtedly have become, good architecture they rarely present, and though Mr. Price's beautiful Surety Building is a conspicuously successful example of what can be done with so unwieldy a problem, the greater portion of these structures surely do not represent the kind of work by which our architects would most be wished to be remembered.

But all this does not lessen the worth of Mr. Birkmire's contribution to constructive science. He treats the subject in all its multiple phases and presents a most conveniently-arranged mass of information by which all of us who hope to have our turn at a tall office-building, in spite of our æsthetic convictions, will be glad to profit.

ILLUSTRATIONS

[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

DINING-ROOM: HOTEL WALDORF-ASTORIA, NEW YORK, N. Y. MR. H. J. HARDENBERGH, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

HOSPITAL FOR STATE ORPHANS' ASYLUM, CORSICANA, TEX. MESSRS. F. S. GLOVER AND GLENN ALLEN, ARCHITECTS, HOUSTON, TEX.

THE building is to be of buff pressed brick and gray sandstone trimmings with mottled tile roof. The plan has been arranged with the view of adding another story to each of the end wings at such time as the growth of the institution may require it. The heating is by the indirect steam system and ventilation is secured by the small flues around the wards, with registers at both the floor and ceiling; these flues are connected by galvanized-iron pipes with the ventilating towers on the roof. In addition to the rooms on the first and second floors, the basement contains kitchen, pantries and store-rooms and nurses' dining and sitting rooms.

NEW FRONT OF THE CENTRAL M. E. CHURCH, W. 30TH ST., NEW YORK, N. Y. MR. W. B. BIGELOW, ARCHITECT, NEW YORK, N. Y.

A CHURCH TOWER. MR. FRANK E. WALLIS, ARCHITECT, NEW YORK, N. Y.

DESIGN FOR A HOUSE. MR. W. E. PASCO, ARCHITECT, HARTFORD, CONN.

INTERIOR OF CHRIST CHURCH, NEW HAVEN, CONN. MR. HENRY VAUGHAN, ARCHITECT, BOSTON, MASS.

HOUSE OF C. H. CONWAY, ESQ., NEAR BOSTON, MASS. MR. J. T. KELLEY, ARCHITECT, BOSTON, MASS.

[The following named illustrations may be found by reference to our advertising pages.]

NEW POST-OFFICE, SURBITON, ENG. MR. E. G. RIVERS, ARCHITECT.

This plate is copied from the *Building News*.

ENGLISH MANORS AND ENGLISH COTTAGES.

COURT-YARD OF THE PSALLETTE, NANTES, FRANCE.

This plate is copied from Baron Taylor's "*Voyages pittoresques*."

[Additional Illustrations in the International Edition.]

PARLOR OF THE "ROYAL SUITE": HOTEL WALDORF-ASTORIA, NEW YORK, N. Y. MR. H. J. HARDENBERGH, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print.]

¹"Sanitary Engineering." By William Paul Gerhard, Civil Engineer. New York: Published by the Author, 36 Union Square East. 1898.

²"The Planning and Construction of High Office-Buildings." By William H. Birkmire. New York: John Wiley & Sons. 1898.

DETAIL IN STAIRCASE HALL: LIBRARY OF CONGRESS, WASHINGTON, D. C. ARCHITECTS, MESSRS. SMITHMEYER & PELZ; P. J. PELZ; E. P. CASEY.

[Gelatine Print.]

"RHINEFIELD," HANTS, ENG. MESSRS. ROMAINE WALKER & TANNER, ARCHITECTS.

ST. MARY-LE-STRAND, LONDON, ENG.: INTERIOR, LOOKING EAST.



BOSTON FIRES IN 1897. — There were 1,281 fires in Boston in 1897, causing a loss of \$861,203. — *Exchange*.

MARKET PRICES OF LONDON'S FAMOUS PUBLIC BUILDINGS. — A striking article which appeared in London recently, describing the "market" value of London, has a timely suggestiveness in connection with the battle between public and private interests over Copley Square, says the *Boston Transcript*. London's greatest treasures are known by name to all, and London is so far away that the valuation put upon them will not stir other emotions than precisely those which it is the purpose of the statistician to arouse. Mansion House, which cost £70,000 to build, says the writer, is now valued at fully ten times that figure. The Royal Exchange, as a building of bricks and mortar, is worth £200,000, but land in that neighborhood has recently sold at the rate of \$10,000,000 an acre, so that £2,000,000 is probably not an excessive valuation for the Exchange. Eight bridges over the Thames cost £5,000,000 to build, but are now worth much more than that, while the tunnels underneath are worth other millions, and the embankment is worth probably double the £2,000,000 which it cost to make. "If St. Paul's were private property, you might induce the owner to sell it for £10,000,000, but the likelihood is very remote. Those tattered banners which you have seen so often would arouse pretty keen bidding at the sales. Westminster Abbey is difficult to value. But the sales give us some idea of what historic treasures are worth in the market, and I should not be surprised if the abbey — put up in lots — realized £50,000,000." The British Museum, which anybody can see for nothing, could not be bought up by all the millionaires in America. If it were absolutely empty it would be worth £1,500,000, and it is full of priceless treasures. The National Gallery is worth millions. "It cost, with the new Tate Gallery section, £350,000 to build, and has one picture which cost £14 an inch." The Nelson column, close by, is worth £50,000, and the statue of King George III, a little way down Pall Mall, cost £4,000. The Albert Hall and Royal Aquarium are both worth about £250,000, but the Crystal Palace cost more than three times the value of both of these. Earl's Court, the great show rivaling the palace, has millions' worth of treasures, and even when it is empty the twenty-five acres of gardens and buildings are worth £300,000. Imagine buying the Tower, the Holborn viaduct, the miles of sewers, walks and pavements; the various markets, of which four — which are for cattle — actually cost £10,000,000 between them; think of the hospitals and schools and churches, and fancy the market value of the parks cut into city lots. The entrances alone of Hyde Park are said to have cost nearly \$1,500,000. Does the statement made by the English writer seem extravagant, that all the coined money in the world to-day would not adequately represent the value of what the poor can see and use in London? — *Philadelphia Press*.

BULLET HOLES IN CHURCH DOORS. — The removal of thick incrustations of dirt and varnish from the old woodwork above the outer central doors of the northern porch of Westminster Abbey, prior to polishing up for Easter, shows that the wood is thickly penetrated with a great quantity of small shot, and bears bullet marks. The old doors beneath were removed about three years ago to admit of a freer method of egress, and they were riddled in a similar manner. The Abbey workmen engaged in cleaning the woodwork say it is four or five hundred years old. It is very thick oak and is studded with large iron bolt-headed nails, and it and the old doors have filled a space about fifteen feet in height by seven feet in width. The oaken doors of the Church of St. Clement Danes in the Strand have been riddled in much the same manner. Surmise can only be ventured upon to account for these strange marks on the old doors of ecclesiastical edifices, many of which were sanctuaries. From the earliest Saxon times the sanctuary of Westminster — or, as Stowe calls it, "The Abbey Church Sanctuary," which he specified as "the church, churchyard, close, etc." — formed a place of refuge for offenders of all kinds, until it was suppressed, with all other sanctuaries, in the reign of James I. "But the right of asylum," says Dean Stanley, "rendered the whole precinct a vast 'Cave of Adullam' for all the distressed and discontented of the metropolis who desired, according to the phrase of the time, 'to take Westminster.' Sometimes, if they were of higher rank, they established their quarters in the great northern porch of the Abbey, with tents pitched and guards watching round, for days and nights together. Sometimes they darted away from their captors to secure the momentary protection of the consecrated ground." Thus some of the nimble-footed ones occasionally lost their lives, and perhaps now and then a little lead that was meant for them went astray. Long after the suppression the neighborhood of the Abbey was a hotbed of iniquity and vice, and it may be that during this period, if not before it, the woodwork of the northern porch suffered from over-free firing. — *London News*.

BELLS IN JERUSALEM. — Turks and Jews as well as Christians, according to the *Kölnische Volkszeitung*, have been much excited by the sound of the three bells of the new Protestant church in Jerusalem. For several centuries the use of bells by the Christians in Palestine, or elsewhere within the Ottoman Empire, had been prohibited by the Great Turk, who has conceded it now, however, to his friend and ally, the Evangelical German Kaiser. In the *Théâtre de la Turquie*, published in 1688, it is said, "The Turks hate bells, as a symbol of Christianity, and do not permit even the Christians to use them. Only in a few remote mountain convents, or in lonely islands, where there are no resident Mohammedans, is the use of a bell tolerated." — *Westminster Gazette*.

GERMAN RAILWAY-STATIONS. — The German railway authorities have of late years shown much energy in improving everything connected with the German system, and to no part of the service does that praise apply with greater right than to the stations. Any number of railway-stations have, during the last five or ten years, been either extended, or completely rebuilt, the centralization of the railway traffic and an endeavor to interfere as little as possible with other traffic having apparently been the leading principles. Not only are the German railway-stations, as a rule, commodious and well-arranged throughout, but large sums have also been expended upon their exterior, and even a number of medium-sized towns now boast railway-stations of considerable architectural beauty. Level crossings have, wherever possible, been done away with, and this has generally been brought about by elevating the railway, so that at many stations the platforms are at a comparatively high elevation, on a level with the first floor of the stations. Some of the large new German railway-stations are simply models of excellence; for instance, Cologne and Frankfurt, and several other large railway-stations are being transformed at a very heavy expenditure. The Wiesbaden railway-station will, for instance, cost some 1,200,000, and two of the Berlin railway-stations, the Stettin and the Silesia stations, will each cost close upon 500,000. Also at Essen, Crefeld, and Coblenz new railway-stations are being built or old ones altered, the expenditure averaging some 300,000 for each town. The most expensive railway-station is the one at Dresden, where the calculated expenditure of some 1,700,000, in all probability will be exceeded by some 60 or 70 per cent before the whole installation is completed. Also several other railway-stations have entailed heavy expenditure; the Frankfurt railway-station has, for instance, cost 1,750,000, the one at Cologne over 1,200,000, the one at Hanover 1,000,000, the Mayence railway-station 900,000, and those at Düsseldorf and Munich 800,000 each. The dimensions of some of these railway-stations are quite out of the common. At Frankfurt there are 18 platforms, covered over a length of over 600 feet by a three-arched roof structure, their aggregate width being about 600 feet. At Munich there are 16 platforms, or rather lines of rails, covered-in by four arches, the length and aggregate width of which are respectively about 460 feet and 500 feet. At Mayence the station is long and narrow, and at Düsseldorf there are 10 lines, the hall being over 550 feet long and about half as wide. Work at present in course of progress on the Prussian State railways amounts to close upon 7,000,000. — *Engineering*.

A TALE OF ATTEMPTED BRIBERY. — Colonel Ludlow, of the United States Engineers, an expert in engineering work, was at one time chief of the Philadelphia Water Department. Along in the eighties the Philadelphia Water Works got in such bad shape that the authorities were in despair. The Secretary of War was asked to assign a member of the Engineer Corps to take charge of the works. He did so and managed them for two years with great success. Philadelphia's politics were evidently not free then from the rottenness which distinguishes them to-day, and the following incident while the Colonel was in charge of the water bureau is said to have been an actual occurrence: On one occasion a citizen whose large establishment consumed a great deal of water, and who had frequent favors to ask of the Water Department, visited the chief's office and found Colonel Ludlow, as usual, very polite. This man, before preferring all his requests, took a \$50 bank-bill from his pocket and tossed it over to the chief, who examined it curiously for a second and then spread it upon the desk before him. He did not utter a word at the moment, but, when his visitor was about to go away, said: —

"Now, my dear sir, what is this for?" holding up the bill.

"Oho, that's to buy cigars for the boys," was the careful reply.

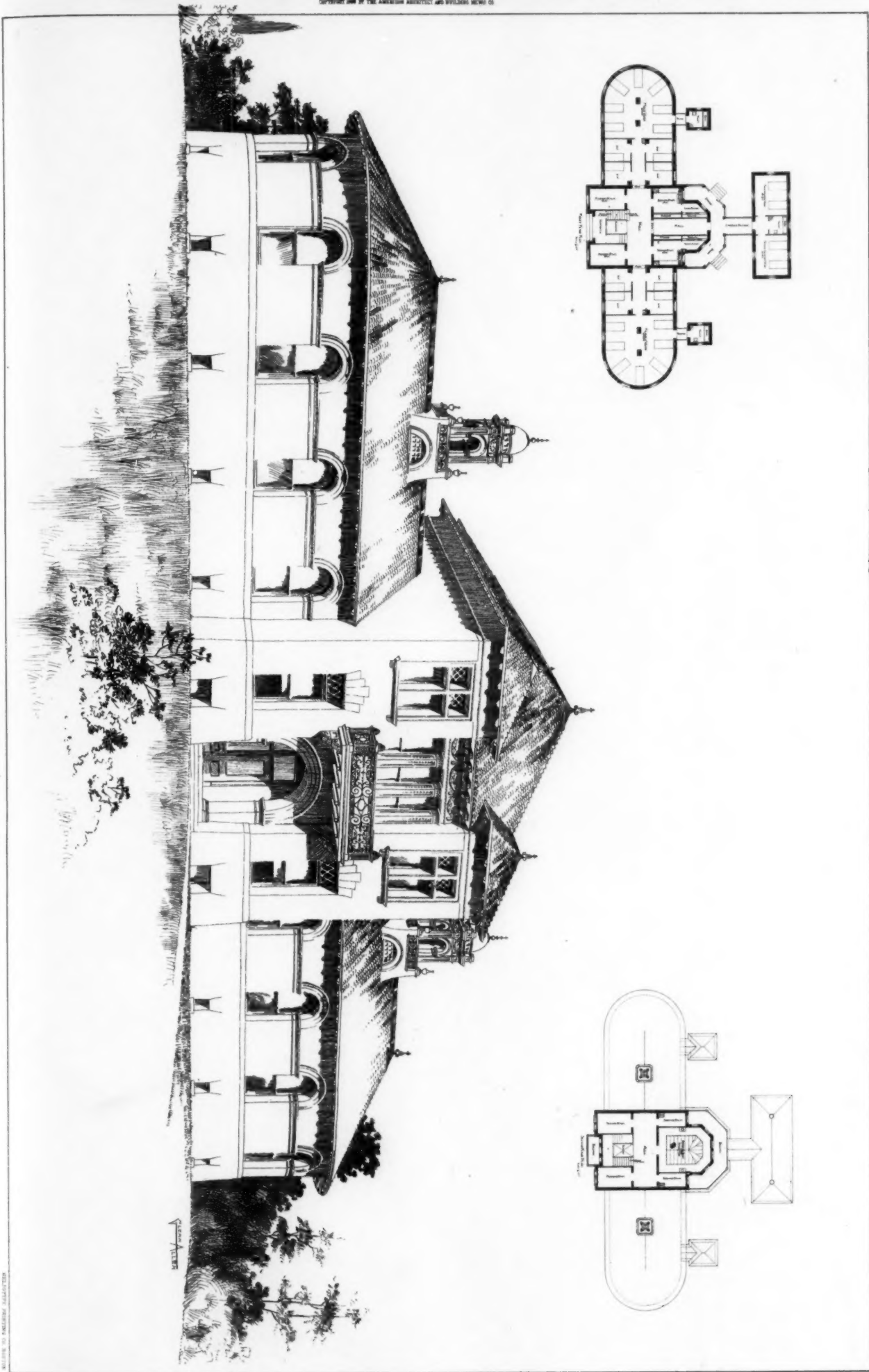
"Yes," said Colonel Ludlow; "then I suppose that you are fond of the weed yourself?"

The man said that he enjoyed nothing better than a good cigar.

"Then allow me," said the colonel, suavely, "to insist upon your trying one of these," moving to a secretary and taking down a box of Henry Clay specials.

Each gentleman took a cigar and bit off the end. Then, with a careless gesture, Colonel Ludlow rolled up the fifty-dollar bill into a paper lighter, reached up to the gas, allowed it to become thoroughly ignited, and slowly lit his own cigar. Every one knows that to light your own weed first is a good test of politeness. It comes from the French, who very sagely reason that whatever fumes or gases are generated in lighting will be absorbed into the first cigar. This done, the colonel turned with an easy and polite motion and said, "Permit me," and held the blazing bill under the nose and up to the cigar of his amazed and startled visitor, whose eyes had now become almost as big as dinner-plates. With two or three gasping inhalations he managed to get a light. He kept his eyes upon the bill until it had burned to the very fingers which held it. Colonel Ludlow watched its last expiring spark, as he idly allowed the smoke of his cigar to escape from his lips. When the bank-note had been completely reduced to ashes the colonel turned to his visitor and said, carelessly, "How do you like your cigar?" The gentleman admitted its excellence and took his departure, attended to the door by the chief, who, with the utmost courtesy, shook him by the hand, and then closed the door to resume his work at his desk. — *Fire and Water*.

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HOSPITAL FOR STATE ORPHAN ASYLUM, CORSICANA, TEX.

F. S. GLOVER AND G. ALLEN, ARCHITECTS.

RELIQUARY, PRINTING CO. BOSTON.

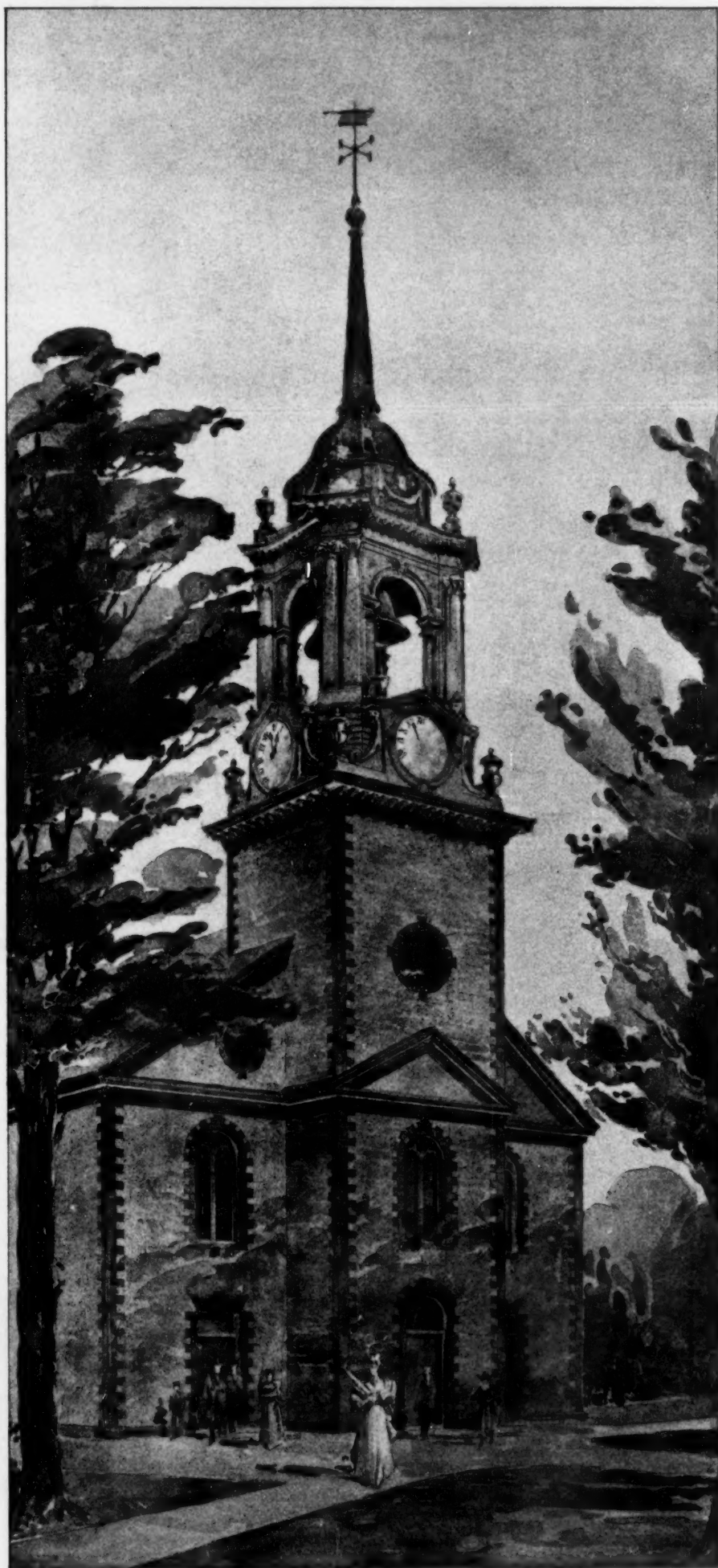


NEW FRONT: CENTRAL METHODIST EPISCOPAL CHURCH, NEW YORK CITY.

WILLIAM B. BIGELOW, ARCHITECT.

ELLIOTT, FORTSON & BROS.

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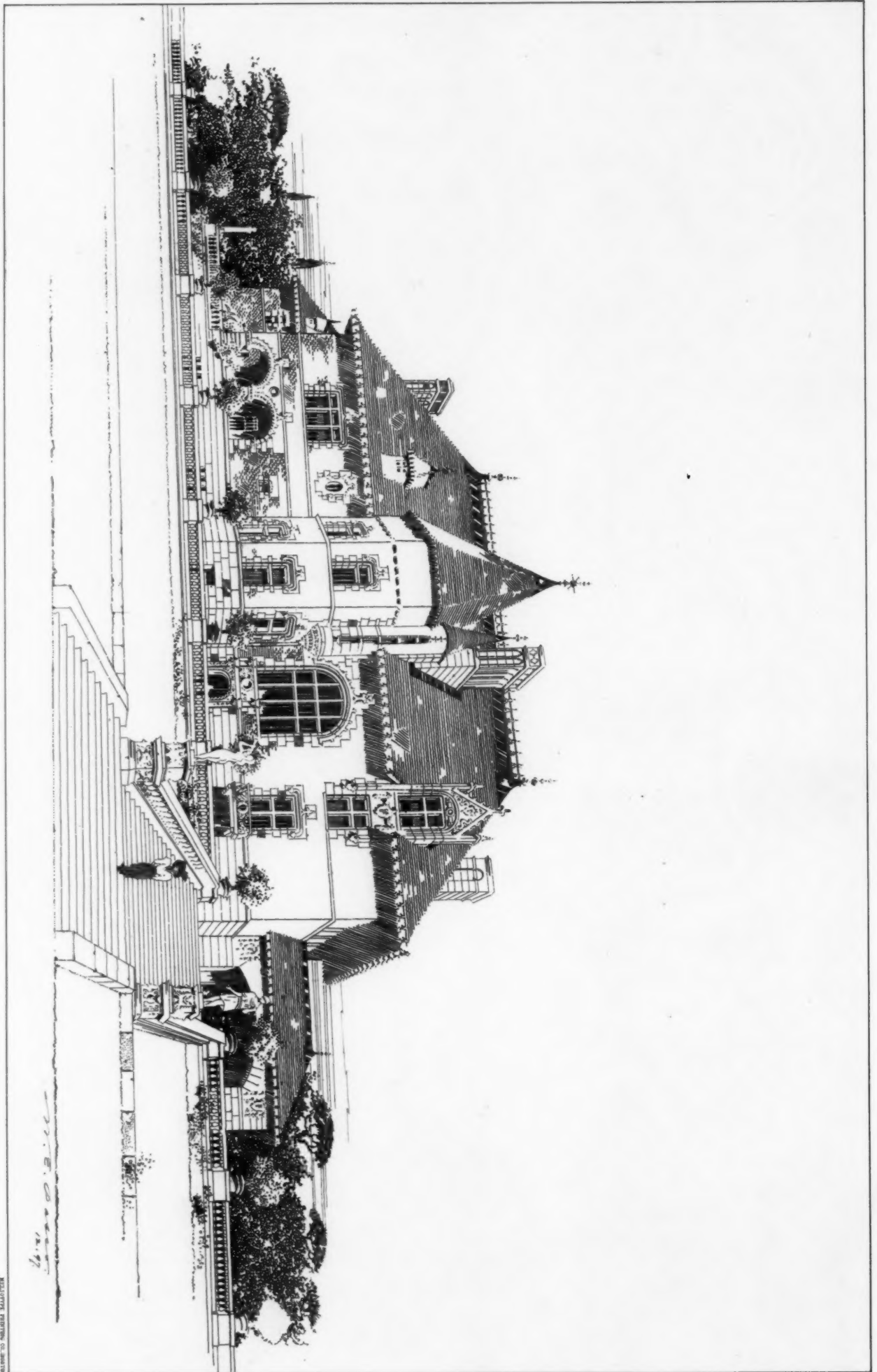


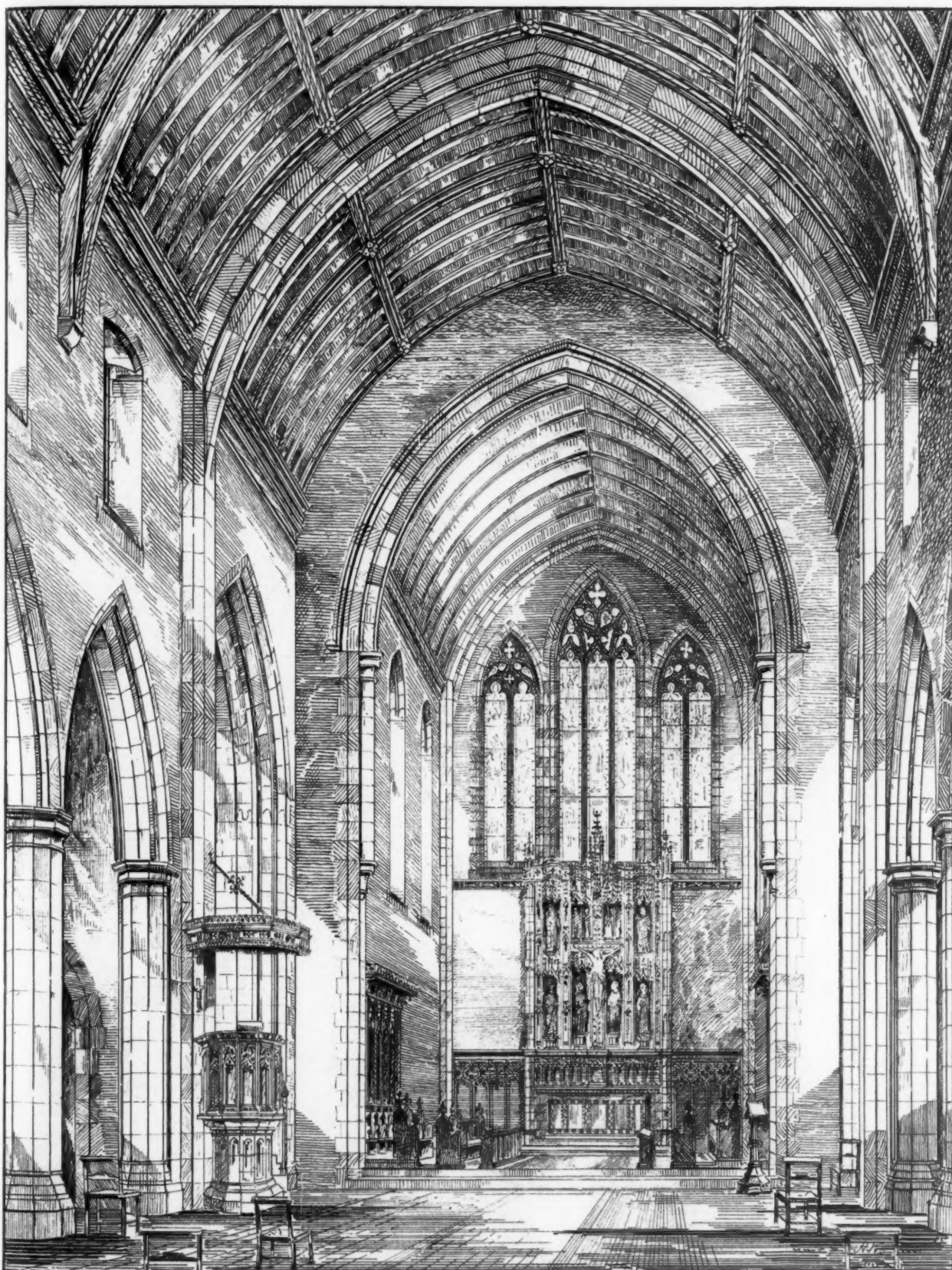
A CHURCH TOWER.

HELIOTYPE PRINTING BY BASTON

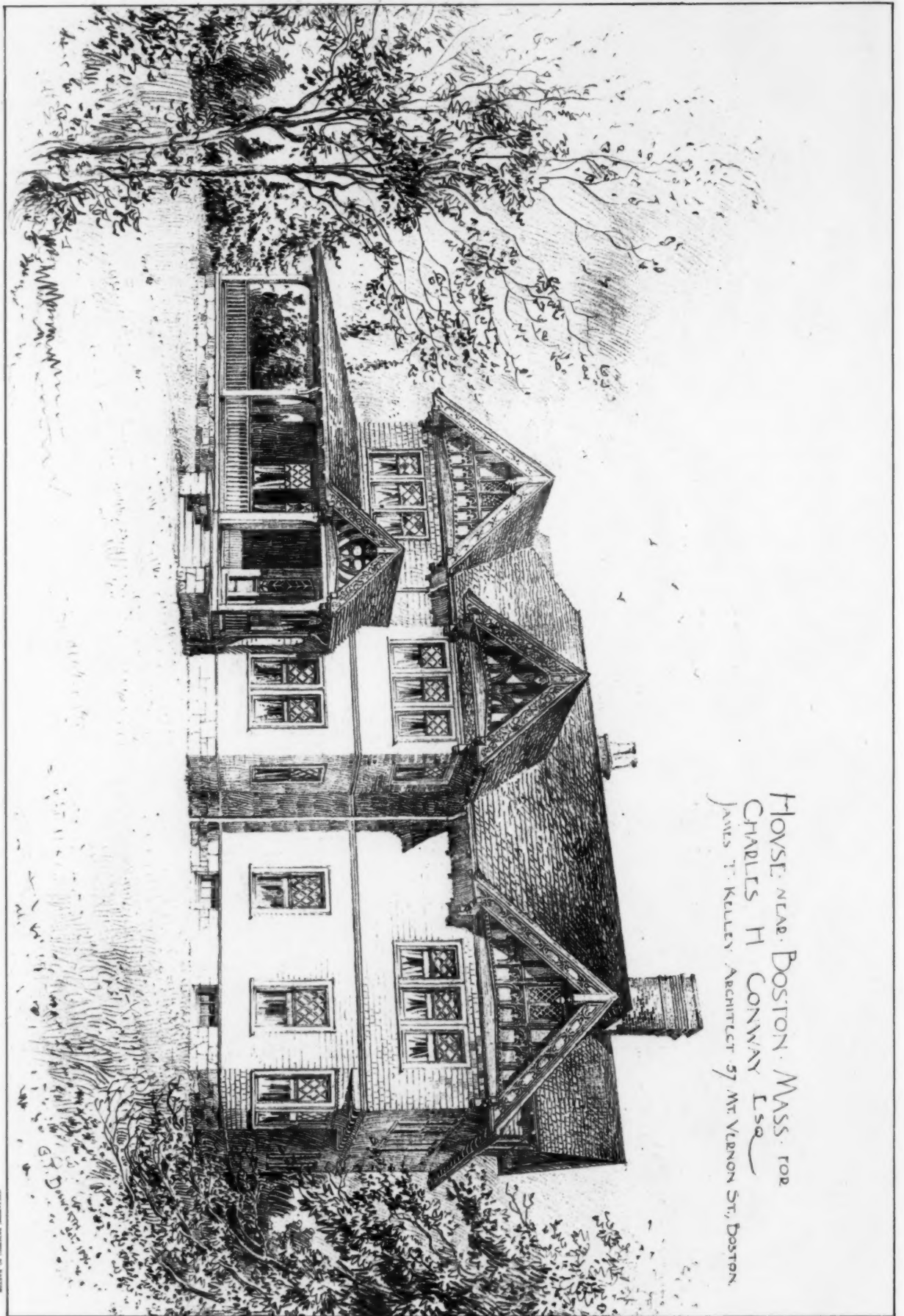
FRANK E. WALLIS, ARCHITECT.

RESIDENCE. W. E. PASCO, ARCHITECT, HARTFORD, CONN.





INTERIOR OF CHRIST CHURCH - NEW HAVEN - CONN. - HENRY VAUGHAN ARCHITECT -



HOUSE, NEAR BOSTON, MASS. FOR
CHARLES H. CONWAY ESQ.
JAMES T. KILLEY, ARCHITECT, 37 MT. VERNON ST., BOSTON.

THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT.

No. 192.

SATURDAY, MAY 7, 1898.

VOLUME LX.
No. 1167.

ELECTRIC ELEVATORS.

IN accordance with the tendency of the modern machine design toward utility, durability and simplicity, the Warner Elevator Mfg. Co., of Cincinnati, O., has recently placed upon the market a new line of electric elevators. Heretofore the difficulty with electric elevators has been their complexity, and their requirement, therefore, of considerable intelligence to keep them in good running order. But from our observation we believe that the new Warner machines are the plainest and simplest of modern elevator engines, and we think this company has made a big step in the advancement of electric-elevators in bringing out these new designs.

While these machines have been greatly

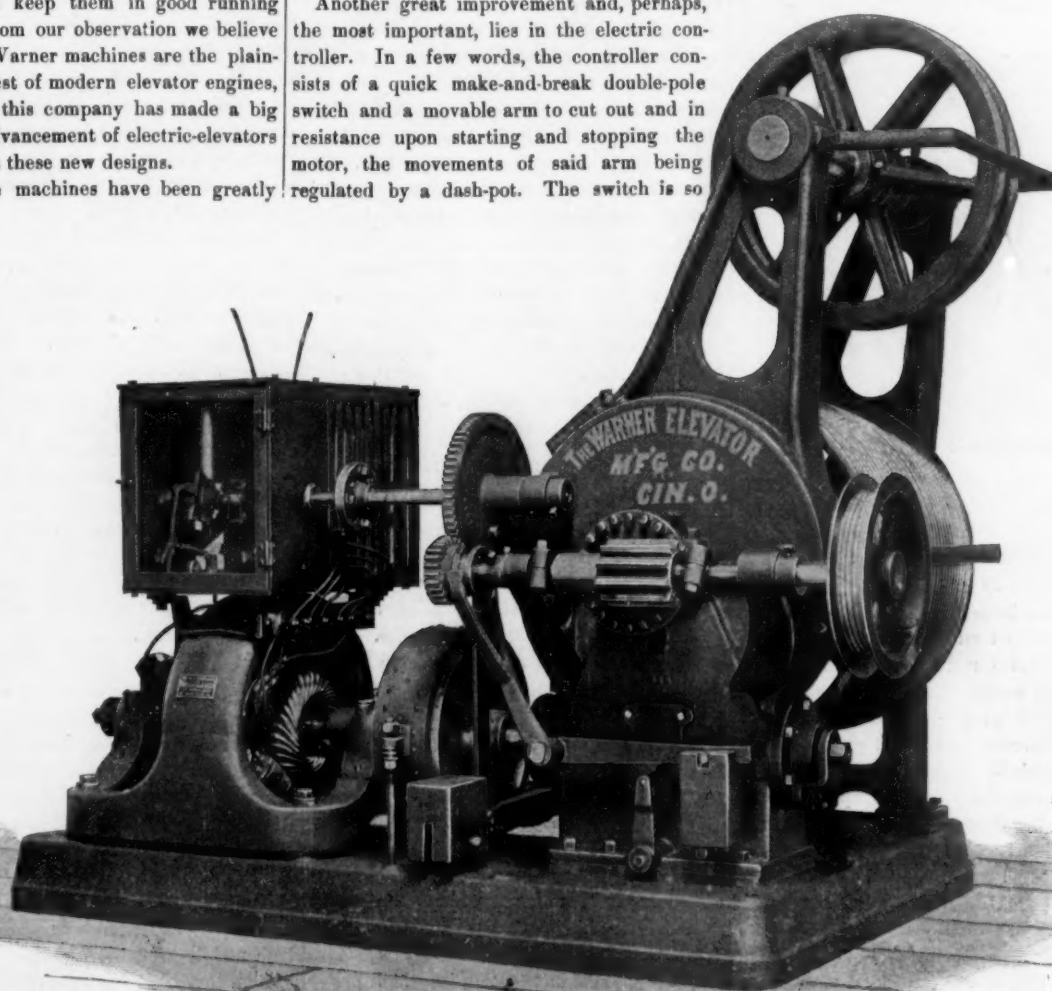
weight cables become slack by the car or counterweight meeting any obstruction while descending is certain and efficient, preventing the ropes from unwinding from the drum and being injured by getting entangled in the machinery.

The braking device is extremely simple, yet positive and strong, and brings the car to a prompt stop without the least jar.

Another great improvement and, perhaps, the most important, lies in the electric controller. In a few words, the controller consists of a quick make-and-break double-pole switch and a movable arm to cut out and in resistance upon starting and stopping the motor, the movements of said arm being regulated by a dash-pot. The switch is so

overload or of failure of the power supply, thus protecting the motor from any danger of a burn-out and the machinery from undue strains.

This circuit-breaker has no action whatever, except, as stated, in cases of under or over load; and as these are usually of very rare occurrence, the only moving parts controlling the electric circuit are the



Warner No. 2, Style "B" Engine.

simplified, nothing has been sacrificed in regard to their safety; for they contain all the automatic and safety appliances that have always been considered necessary.

The arrangement of the device for limiting the travel of the car at the top and bottom of the building is unique. It is very simple, and its arrangement and adjustment are at once evident.

Likewise the arrangement for stopping the engine in case either the lifting or the counter-

arranged that when open, although the motor is cut off entirely from the power supply, the circuit of the highly inductive shunt field winding is never opened and the discharge is allowed to take place through the armature; thus the insulation is relieved from any abnormal strain and all danger of a break-down from this source averted.

Also, with every controller is furnished an under-and-over-load circuit-breaker, which opens a switch in the main circuit in case of

main switch and rheostat arm of the controller.

As a whole, this controller has fewer moving parts than any other controller on the market embodying the same features, and, in addition, all the parts are very simple and readily interchangeable. It handles the current in a practically sparkless manner.

We illustrate herewith the Warner No. 2, style "B" engine, which is our medium size machine and the size and capacity in greatest demand. It has a lifting capacity up to 2,500

pounds, at a speed of 100 to 150 feet per minute, and can be operated by lever, pilot-wheel or hand-ropes.

The same company manufactures belt-connected electric-elevators for freight and passenger service, and also a direct connected engine for slow speed—50 to 75 feet per minute.

For high-grade passenger service we build an engine for 200 to 300 feet per minute, controlled by a lever in the car.

The Warner Elevator Mfg. Co., having been in existence for over thirty-five years, is well known to the elevator trade. We are the pioneers in America in hydraulic-elevator building, and intend to be foremost also in the electrical line.

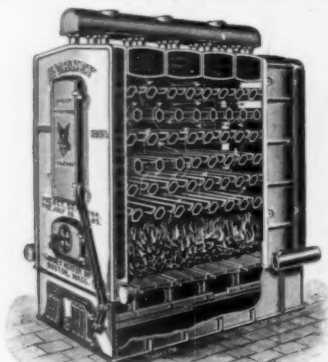
WARNER ELEVATOR MFG. CO.,
CINCINNATI, O.

BRIGHT IDEA SAFETY WATER-TUBE BOILERS.

(Patented October 30, 1894; July 16, 1895.)

WE have pleasure in calling attention to our square fire-box boiler for heating by hot water or steam, which we believe will commend itself upon sight to any one familiar with the requirements of the house-heating trade.

We have succeeded, in this construction, in securing an area of direct fire-surface fully equivalent to the best practice as related to



Gurney Bright Idea Steam-boiler.

the grate-surface, and have not found it necessary, in order to extract the required amount of heat from the products of combustion, to provide any return draught flues; thus in this heater, even in its largest sizes, we provide a direct-burning heater free from all complexity, as easily understood as the simplest small heating-apparatus manufactured. All joints are made by means of screwed nipples, and are outside of all fire-lines. It will be observed that the front and back sections of the boiler are made in single cored castings, while the centre sections are made up of halves, nipped to the drums. It will be perceived that under this arrangement repairs may be readily made without disturbing any part of the boiler other than that which it is required to remove. The quality of the fire-surface applied in this construction is well understood, especially by those who have used the Gurney steam-boiler, in which it has been the leading feature. We can say in relation to this that the circulation is perfectly free, the water-line being maintained as steadily as in a flue-boiler. The grate supplied with the heater is of the finger-bar rocking and dumping type, which has been so successful in house-heating work; and, in case repairs are needed, any grate-bar can be removed and replaced through the fire-door without disturbing the entire grate.

The fire-box is large and generous, easily approached and readily cleaned, while the

surfaces above the fire may be reached from either the front or rear for the purpose of cleaning, and the surfaces being directly above the fire, the movement of heat products is so rapid when the dampers are open that the surfaces are almost, if not quite, self-cleaning. It will be observed that by the use of a series of webs cast upon the tubes which constitute the heating-surface, deflecting flues have been created, one near the top of the boiler at back, and another at the front, near the centre. The deflecting plates keep the fire from pursuing a direct line from the grate to the exit flue. The fire comes in contact and acts directly upon a large number of water-tube surfaces, more or less staggered, until it reaches the last series but one, where it is compelled to pass to the front of the boiler into the flue described, and thence along parallel lines amidst a series of other surfaces of similar character to the exit at the smoke-pipe. We have aimed in this construction to secure a very large boiler within comparatively small limits, and we have succeeded. We have, moreover, endeavored to provide a simple, efficient, economical boiler without return flues, and in this, also, we have succeeded; and inasmuch as we have done all this consistently with providing the apparatus at a reasonable cost to the purchaser, we feel sure that we may ask for your cooperation in placing these goods in the hands of the public.

This boiler has in it every essential element of value contained in the Gurney steam-boiler, which has had a success unexcelled by any similar product placed upon the market, by either our competitors or ourselves. In this structure we have, for obvious reasons, carried the same generic principle into a square fire-box boiler, our reasons, of course, being the necessity for meeting requirements of larger work, as well as the prejudice of some people in favor of the square fire-box.

Almost any kind of fuel of good quality can be used in these boilers. They are also convertible, and can be used for either steam or hot-water heating.

CAST-IRON AS A MATERIAL FOR BOILERS.

The arguments in favor of cast-iron as a material for hot-water heaters and steam-boilers, are:—

That the transmission of heat through plates of an equal thickness of cast or wrought iron is in favor of the former.

That in point of durability it excels wrought-iron, for the following reasons:—

It will resist corrosion better.

It is unaffected by the chemical impurities of feed water or the acids found in the products of combustion.

On account of its granular structure, it is not possible for it to blister when subjected to a high heat in the furnace.

It is not liable to be strained by inequality of temperature.

As the parts must of necessity be small, they are capable of resisting very high pressure, and are not dependent on any system of stays or braces for strength.

Its cost, together with the certainty that any number of parts can be made exact duplicates of each other, and the facility with which new parts can be fitted to replace defective or worn parts at any time.

GURNEY HEATER MANUFACTURING CO.,
BOSTON, MASS.

BALL-BEARING STEEL BUTTS.

Up to the present time the female traveling-man, bagman, drummer, has confined her

efforts to the attempt to sell books that no one really wants to read, or look at after they have been bought; it has been evident, however, that this new trade agent had capacities and uses which could be availed of in other directions. If it is fair to draw an inference from an attractive little catalogue issued by the Stanley Works, of New Britain, Conn., architects may soon be listening to the persuasive eloquence of a young woman whose portrait and vivacious attitudes show that she is fully alive to the fact that there is more than one way of drawing attention to the real merits of the ball-bearing steel butts she is employed to sell. In the manufacture of these butts the manufacturers use only the best quality of cold-rolled steel. The steel is run through a series of rolls while cold, and reduced two or three gauges in thickness. This process hardens it, gives it a bright, smooth surface, greatly increases its tenacity and power of resistance, and enables it to withstand stresses much more uniformly than the ordinary hot-rolled steel. That it is immensely superior to ordinary steel or cast-iron is evident.

They have one of the most extensive plants for cold-rolling steel in the United States, and were the first to use it in the manufacture of hardware. All their butts are made therefrom, and long experience qualifies them to select the best material for the purpose.

The pins and tips are turned from solid steel, and the size of pins and joints so proportioned as to give the greatest wearing surface possible. All loose-pin butts of best grades, $3\frac{1}{2} \times 3\frac{1}{2}$ and larger, have five knuckles, thus giving two bearings in each butt to carry the weight of the door.

They have expended much time and money in attempting to produce an ornamental steel butt which should be satisfactory and at the same time harmonize with artistic door trimmings, and have succeeded. The ornamentation is raised above the surface of the butt, and made still more prominent by the shading of the finish. It is particularly pleasing in an old copper sand finish, and can be obtained in any of the delicate oxidized effects now in vogue, or in bower-barff.

STANLEY WORKS,
NEW BRITAIN, CONN.

KEASBEY.

WEBER, Middlesex County, is no more. Postmaster-general Gary has ordered that the name of the village between New York and Perth Amboy be changed to Keasbey, and this mandate goes into effect July 1. This is the outcome of a bitter fight waged for several years between the Raritan Hollow and Porous Brick Company and the Manhattan Fire Brick and Enamelled Clay Retort Works.

The Raritan Company, with Edward M. Keasbey at the head, has been on the ground for thirty years, and the place was always known as Keasbey's Landing.

Eight years ago Adam Weber established the Manhattan Company and commenced to boom the village by building cottages. The Raritan Company did the same. School sites were offered by both companies, and the township accepted that offered by Keasbey. Weber built a hotel and Keasbey retaliated by establishing a general store, and other improvements were added.

Then Weber applied for a post-office, and Col. C. C. Weber was made postmaster. The name of Weber was given to the post-office. An immediate protest went up from the Keasbey faction, and the rivalry became more

Atlas PORTLAND CEMENT

Guaranteed to be
Superior to any
Imported Cement.

Used Exclusively in the Following New York Buildings:

HAVEMEYER STREET, SINGER BLDG.

ST. PAUL. UNIVERSITY CLUB.

AMERICAN SURETY BLDG. N. Y. LIFE INS. BLDG.

BANK OF COMMERCE. STANDARD OIL BLDG.

JOHNSTON and PRESBYTERIAN BLDGS.

Atlas Cement
Company,

143 LIBERTY STREET,
NEW YORK.

bitter than ever. There is but one street in the village, and each factory owns a side. Huge signs were erected about the village bearing the word "Weber" or "Keasbey," and each side struggled to have its name recognized.

Last year Col. Weber was removed from the post-office, charged with neglecting his duties. Frederick Jepson, the Keasbey storekeeper, was made his successor. Then a petition was sent to the Post-office Department to change the name, and General Gary acted accordingly. — *New York Times*.

PARQUETRY FLOORS.

OUR Parquetry Floors consist of strips and blocks of hardwood, fastened together at edges and on backs, in slabs of convenient size for laying.

They are made a solid part of the floor by being nailed down to the under floor.

They are then finished with wax or parquetry lac, so as to heighten the natural beauty of the wood.

They are made beautiful by the contrasting colors of the different woods employed, and the weaving effects produced by changing the direction of the grain in the perfectly-made joints.

They have been made after this method in Europe for centuries, and are no experiment.

They are established here and have come to stay.

To those interested, we will mail small sample, that they may understand the work we offer.

All prices named are for goods $\frac{5}{8}$ " thick, uncut and measured before laid. Prices for any design in $\frac{7}{8}$ " thick will be given on application.

We make no charge for plans or estimates furnished, if returned to us.

THE INTERIOR HARDWOOD CO.,
INDIANAPOLIS, IND.

LUBRICATION OF GAS ENGINE CYLINDERS.

THE proper lubrication of gas-engine cylinders has been a very difficult problem. The problem, however, seems to have been very successfully solved by an official of the Pennsylvania Railroad Co. He writes as follows:—

"I had a gas-engine at Sharon, Pa., running a pump, and the man that had charge of it allowed the lubricator to run dry and cut the piston, piston-rings and cylinder. The makers of the gas-engine said the cylinder would have to be sent to the shop and bored out and a

new piston put in. It was our busy season and we could not do without water. I had some of Dixon's finely pulverized graphite, and I commenced to feed it into the cylinder through the suction-pipe with the air and gas, with immediate relief. After about two weeks the engine was running smoother and using less gas than ever before.

"I had this same engine apart last Saturday, and every place that was cut is smooth as glass. This one instance saved us about \$75. I have great faith in this graphite and always keep it on hand."

JOSEPH DIXON CRUCIBLE CO.,
JERSEY CITY, N. J.

IMPORTANT REMOVAL.

WITHIN a few years past, Fifth Avenue has become one of the greatest and most splendid business thoroughfares in the world, and the very pick and cream of metropolitan trade is concentrated along its lines between Washington Square and Central Park. Every department of trade is represented, and every now and again some important addition is made to the list of leading firms and companies there located.

A notable addition to the list of representative concerns doing business in the district referred to is that of J. B. Colt & Co., who for many years have been located on Nassau Street, near Ann Street, but who will go by May 1 to Nos. 3, 5 and 7 West Twenty-ninth Street, corner of Fifth Avenue, where they will have considerably more room than heretofore, in a very much better neighborhood, and with very much better facilities of all kinds.

As but few readers of this paper will need to be informed, J. B. Colt & Co. are the leading firm of the United States engaged in the manufacture and sale, at wholesale and retail, of educational and scientific projection-apparatus, electric focussing lamps, etc.

Since acetylene gas became a factor in illuminating work, Messrs. Colt & Co. have made a special feature of acetylene generators, and for such appliances they are now recognized as headquarters also. They have very completely equipped acetylene-gas show-rooms at 125 West Thirty-seventh Street, corner of Broadway, where the capabilities of the new illuminant are being fully set forth to a multitude of visitors every day.

The business of the house was originally founded in 1870, by Mr. James Bennett Colt, the present senior partner. In 1888 Mr. Charles Goodyear became a partner, and

these two gentlemen constitute the present firm. The firm has branches in Chicago and San Francisco and their business extends literally to all parts of the country.

ARC-LAMP REFLECTOR.

A MODIFICATION of its enclosed arc-lamp has recently been perfected by the General Electric Company, which, while preserving the essential features of its well-known direct and alternating current lamps, with enclosed arcs, substitutes a flared porcelain reflector for the outer globe. The mechanism of the lamp is similar to that of the standard enclosed arc-lamps, but the use of the reflector instead



Arc-lamp Reflector.

of the globe allows a large amount of light, which, otherwise, would be absorbed in the outer globe, to be thrown down by the reflector and thus utilized. Calculating this absorption of light at from ten to thirty per cent, the single globe lamp allows of the utilization of just so much of the total light from the arc, as well as that which is reflected. In cases in which the direct light from the arc is not objectionable and a general diffusion of the light not absolutely desirable, such as in cafés; hotels, restaurants, etc., the single globe is peculiarly adapted.

In designing the lower part of the frame, care has been taken to render it both light

ALSEN'S PORTLAND CEMENT

is the strongest and most serviceable Cement made, and will permit the admixture of a larger amount of sand or gravel with less loss of strength than any other brand; it is therefore the most economical. It is the finest ground cement made, and has the largest bulk to the barrel.

The following test, made in actual work, by Col. D. C. Houston, Corps of Engineers, U. S. A., at the sea wall around Governor's Island, New York Harbor, has never been equalled by any other cement. It is as follows: Tensile strength per square inch, one day, 384 pounds; seven days, 600 pounds; thirty days, 818 pounds.

For Sidewalks it gives the best color, and the most durable wearing surface. Most of the prominent Railroad Bridges and the large Office Buildings of the country stand upon a foundation of concrete made of ALSEN'S CEMENT.

Alsen's Portland Cement Works, New York Office, 143 Liberty Street.

AGENTS AT BOSTON: WALDO BROS., 102 Milk Street.

and delicate, and yet sufficiently rigid to withstand ordinary usage, without interfering to any extent with the passage of the light or casting heavy shadows. It is highly nickelled and thus, during the daytime, when the light is not needed, the ornamental appearance of the lamp is not detracted from. The inside of the porcelain shade is highly polished and gives a good reflecting-surface. It is interchangeable and can be used with either direct or alternating globe-enclosed arc-lamps. By an arrangement of the lower rim of the cover of the mechanism, the reflector may be substituted for the outer globe of the double enclosed arc-lamps. As in the direct-current double-globe lamps, a simple adjusting coil allows of the use of 5, 4½ or 4 amperes. By using a reflector instead of the globe, a very satisfactory light may be obtained from this lamp with a current of only four amperes. A reactive coil in the alternating lamps allows of adjustment for any line voltage between 100 and 120 volts, and frequencies of 60 and 125 cycles.

The economy in carbons is the same as that obtained in the double globe lamps, and in addition the lowering of an outer globe is done away with. The globe in which the arc is enclosed is protected by wire netting.

GENERAL ELECTRIC COMPANY,
HARRISON, N. J.

THE RIDER-ERICSSON ENGINES.

THE Rider-Ericsson Engine Company is the successor of De Lamater Iron Works and Rider Engine Company, having bought from both companies their extensive plants and entire stocks of engines and patterns, covering all styles of Rider and Ericsson Hot-air Pumping engines brought out by both of the old companies since 1844, excepting the original Ericsson Engine, the patterns of which were burned in the great fire in our Thirtieth Street works in 1888.

The officers and directors of the Rider-Ericsson Engine Company are the former officers of the Rider Engine Company and De Lamater Iron Works. Our engineers, superintendent, foremen and experts were taken over from the old companies, and though it would be impossible to make stronger claims than any would-be competitor, we will only add to this our well-known motto, "A record is better than a promise."

We feel that both the Ericsson and Rider Hot-air Pumping Engines are too well known to the general public, owing to the many years they have been upon the market, to require any lengthy introduction enumerating their advantages, for the unqualified approval of over 25,000 users of our pumping-engines speaks more forcibly for the merit they possess and the success they have attained than could any argument advanced by us.

As may be inferred from their names, the one is the invention of the late Capt. John Ericsson and the other the invention of the late Mr. Alexander K. Rider. The association of our name with those of the inventors means that the engines are constructed by us and by no one else. Every improvement suggested by either Captain Ericsson or Mr.

Rider, who were both in our employ up to the days of their respective deaths, is embodied in the two engines, and as they stand to-day they are models of scientific construction and perfect workmanship.

The advantages possessed by hot-air engines over all other devices for developing light power are many, and are now recognized by scientists and mechanics who have made this branch of knowledge a special study; and it is an equally well admitted fact that our engines are superior to all other contrivances for pumping water in limited quantities. Both engines are constructed by us solely for pumping operations, and cannot be utilized for any other purpose.

The Ericsson engine was patented in 1880. Since that time the improvements added to the engine, which have also been patented, have increased its pumping capacity nearly fifty per cent, reduced to the minimum the liability and cost of repairs, and made the durability of all its parts and pieces unquestioned.

The Ericsson is the lighter type, and has a capacity less than that of the Rider, but where the amount of water delivered by it is sufficient to meet the requirements of any case we always recommend the Ericsson in preference to the Rider. For supplying water for domestic purposes or for furnishing water for a private dwelling, for which work the Ericsson engines are particularly adapted, they can not be surpassed.

The Rider type is built more heavily in all its parts and pieces than is the Ericsson, and is specially designed to pump water for irrigating large tracts of land or for work where the requirements are so great that the engine will have to be run almost constantly. In such a case the Rider, being more heavily constructed, will last longer than will the Ericsson.

As the conditions of each case differ from another, we prefer to have prospective customers submit such conditions to us, and we will cheerfully give their wants careful consideration, and recommend the proper size and type of engine which, in our judgment, based on many years' experience, seems to us the best.

RIDER-ERICSSON ENGINE CO.,
22 CORTLANDT ST., NEW YORK.

NEWS FROM THE COURTS.

AFTER a trial lasting more than two weeks before Justice Dugro and a jury in the Supreme Court, the complaint has been dismissed in an action brought by the Bell Asbestos Company, owning asbestos mines in Thetford, P. Q., against the H. W. Johns Manufacturing Company of this city, to recover \$75,000 damages for breach of a contract to take from the plaintiff a specified number of tons of asbestos each month, beginning in the summer of 1895. It appeared that in order to comply with the contract it became necessary for the plaintiff to tear down its mill at Thetford and put up a larger one, and it was claimed that the defendant orally waived a literal performance of the contract pending the improvement. A special verdict was asked from the jury on the

issue as to the waiver, but they were unable to agree. — *N. Y. Evening Post.*

NOTES.

HAVING purchased from F. S. Hutchinson Co. their Dumb Waiter and Elevator business, we are now the sole makers of Paragon Dumb Waiters and Hand-power Elevators. We have always considered the Paragon the best of its class, and are pleased to add it to our large line of machines.

The Paragon is so constructed that it will hold the car stationary at any point, without use of brake or clamp-rope. It works easily and with perfect safety, for the moment the operator ceases pulling the hand-rope, either raising or lowering, the clutch will hold the car in its place.

We are also the sole manufacturers of the well-known New York Safety and Manhattan Dumb Waiters, and Humphrey Hand Elevators, of which many thousands are in use all over the world. Also a full line of carriage and basement or sidewalk elevators, invalid lifts, etc.

Freight and passenger, belt power and direct electric-elevators a specialty.

THE STORM MFG. CO.,
FOOT OF CENTRE STREET,
NEWARK, N. J., U. S. A.

THE Berlin Iron Bridge Company, of East Berlin, Conn., have just completed at Grand Avenue, New Haven, Conn., a steel bridge 427 feet in length, 52 feet in width, with one roadway and two sidewalks. The approaches on the bridge consist of two deck plate-girders. The draw-span is 200 feet in length and is operated by electricity; the same means being employed for lighting the bridge throughout. The bridge is of very heavy construction, the roadway being paved with vitrified brick adapted to the heavy city traffic.

LORD & BURNHAM Co., of Irvington-on-Hudson, N. Y., moved their New York office on May 1st to St. James Building, Broadway and Twenty-sixth St. Their new city quarters give them increased office-room besides show-rooms where they will shortly exhibit samples of their greenhouse construction, greenhouse heaters, ventilating machinery and other manufactures.

THE office of the Butcher Polish Co., makers of one of the very best floor polishes for hard-wood floors, is now at 356 Atlantic Ave., Boston, Mass.

WARREN WEBSTER & Co., 322 Broadway, New York City, have recently been awarded a contract for the use of the Webster System in the Hudson Electric Light Co., Hoboken, N. J., to supply steam for eleven model tenement-houses 1,500 feet from power-station. This is the largest of recent contracts.

AFTER May 1, the New York Mastic Works, T. Hugh Boorman, manager, the well-known dealers in Seyssel Rock Asphalt and bituminous products, should be addressed at 32 Broadway, New York City.