CANADIAN

ARCHITECT AND BUILDER

VOL. XVII.

1904:
THE C. H. MORTIMER PUBLISHING COMPANY OF TORONTO, LIMITED.
TORONTO, CANADA.

INDEX

ILLUSTRATIONS.

PAGES

MISSING

The Canadian Architect and Builder

Vol. XVII.—No. 193. JANUARY, 1904.

ILLUSTRATIONS ON SHEETS.

From an Old Chair—A Good Model for a Simple Dining Room Chair.
Old Chair from Hatherly's Life Class Studio, London.
Old Chair at Hampton Court, London.
(a) Adams, about 1870, Mahogany Inlaid. (b) Heppelwhite, about 1780, Painted. (c) Chippendale, about 1760, Walnut.
Settee, Walnut and Veneer, English, 1760-1780, Owned by South Kensington Museum.
Ancient Mosaic, Ravenna.
The Percy Shrine, Beverley Minster.
Ospedale Maggiore, Milano.

ILLUSTRATIONS IN TEXT.

Illustrations Accompanying Article on Plaster Decoration Modelled and Handwrought by Prof. Percy E. Nobbs.
Illustrations Accompanying an Article on L'Art Nouveau, by Mr. W. A. Langton.
Portraits of Officers of National Association of Master Painters and Decorators.

CONTENTS

SPECIAL CONTRIBUTORS.

MR. W. A. LANGTON, Architect, London, Eng.
" EDMUND BURKE, " Toronto.
" S. H. TOWNSEND, " "
" Prof. Percy E. Nobbs, Montreal.
" FREDERICK G. TODD, Landscape Architect, Montreal
" W. H. ELLIOTT, Toronto.
" A. F. DUNLOP, R.C.A., Architect, Montreal.
" FRED. T. HODGSON, Architect, Collingwood, Ont.

Students' Competition.

A large number of students have submitted designs in the competition for a public library building announced in our November issue. The merits of these designs will be considered by a committee appointed for the purpose by the O.A.A. and the Toronto Architectural Eighteen Club, whose criticisms and award we hope to publish in our February number.

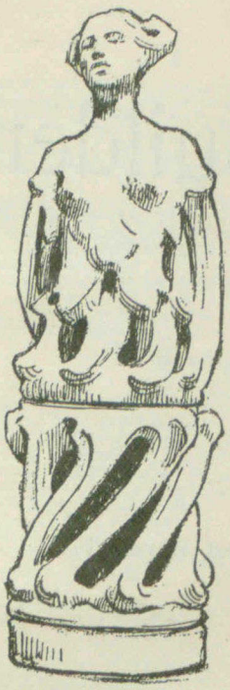
Ontario Association of Architects.

We are only able in the present number to make brief mention of the annual convention of the O.A.A. held in Toronto on the 12th and 13th inst. Next month we hope to publish a more extended account of the proceedings, which were of a very interesting and instructive character. The excellence of the papers may be judged by the one by Prof. R. C. Carpenter, printed in this number. The address of the President, Mr. W. L. Symons, while comprehensive in its scope, dealt at most length with means whereby friction between employers and employees in the building trades might be lessened and strikes avoided. The suggestion was again made that the annual conventions should be held alternately in the leading cities of Ontario. The difficulty experienced in securing a large attendance even in Toronto offers little encouragement to make trial of the idea, which if found feasible, would be likely to widen interest in the Association and its work. The exhibition of drawings and photographs contributed by architects in all parts of Canada added greatly to the interest of the occasion. In common with our readers we are indebted to Prof. Nobbs, of McGill University, for the notes on this exhibition appearing in another column. The proceedings terminated with an enjoyable dinner at the King Edward Hotel, at which several interesting addresses were delivered by Mr. W. E. Doran, of the Province of Quebec Association of Architects, Prof. Mavor, of Toronto University, Prof. Nobbs and others.

Decorating and Furnishing.

As a natural accompaniment to the rapid increase in wealth in Canada during the last decade has come a larger expenditure on buildings for domestic use. This is particularly true as regards the interior decoration and furnishing of the house. In view of its growing importance the present number is specially devoted to decoration and furnishing. Our illustration pages show some interesting examples, while the specially written articles by well known authorities treating of various phases of the subject should add to the knowledge already possessed by our readers.

TENDENCIES OF WALL PAPER DESIGN.



French Chimney Top.

Before attempting to outline the tendencies of wall paper design at the present time I should like to earnestly direct the attention of architects especially to a kindred subject, one at least inseparably connected with the decorator's work. I think I can say without exaggeration that decorators approach the work of covering the plaster walls of houses and other buildings erected of late years with trepidation amounting almost to terror as to the results. To see one's best laid plans and most cherished schemes completely frustrated by the treacherous under surface is more than disappointing. The "skin or putty coat" so much in use to impart that beautiful snowy smooth surface which so strongly appeals to some people has usually no actual adhesion to the coat beneath it and only waits the application of some material to sever its very weak connection and destroy the decorator's work. The so-called sand finish of many plasterers is almost as great a delusion. On walls thus treated many patches will be found into which no sand and very little plaster of Paris has entered—nothing but lime. Plasterers freely admit these imperfections and also that it is possible to get as good results as were obtained in houses a generation ago but they claim that current prices do not admit of the use of sufficient plaster nor of sufficient time being given to the work. Surely it is a false economy to cheapen a material which is admittedly imperfect at best, which covers so much surface and which places a stamp of dilapidation on the house out of all proportion to its relative cost to the total cost of the building. I feel satisfied that this work does not receive the attention it deserves at the hands of the architect, and that not only would the problem of decoration be greatly simplified but that the life of the plastering would be materially lengthened if honest work were insisted upon.

Another feature in the preparatory work of ceilings and walls for decoration deserves more than passing notice. I refer to the obtaining of true perpendicular and horizontal lines in the angles of the room. It is no uncommon thing to see the ceiling run from one to one and one half inches out of true in a wall of twelve or fifteen feet. The upright angles of the room are frequently as much out and in many cases meander in and out of line as they climb to the ceiling. Many rooms are two or three inches wider at one end than at the other. It can be easily understood how difficult it becomes under these circumstances to apply pattern of any sort so that it shall not appear to be leaning one way or the other. These defects are not by any means confined to cheap buildings but may be seen in some of our most pretentious structures. In almost every other trade if the work proves defective in itself it has to be made good. Why should not a guarantee be required from the contractor for plastering that his work shall successfully meet the demands made upon it in the decoration which may subsequently be applied to it ?

And while I am on this portion of my subject I should like to point out what is always to the decorator at least the unexplainable practice of many architects, of carrying doors and windows in the room to two, three or more different heights. My own dining room has five such openings and every one is of a different height, varying from the others by several inches. There was no reason why the three doors at least should not have been of the same height.

The foregoing are some of the difficulties in the path of the decorator, whose remedy lies in the province of the architect. And their connection with my subject is in this. When the standard of design and the value of materials in wall coverings have advanced as they have done of late years it becomes increasingly necessary that the remedy should be applied and more perfect results obtained. The various canvasses, burlaps, denims, buckrams, etc., now manufactured solely for decorative purposes are undoubtedly great acquisitions to the resources of the decorator and are all perfectly practical on properly plastered walls. But the risk and labour of applying them to the ordinary conglomeration of sand, lime and plaster is so great as to greatly restrict their use.

Pattern has been sparingly applied to these materials partly because their own texture and coloring is quite satisfying and partly because the ordinary printing process necessitates too frequent repetition and the consequent wall-papery appearance. Block or hand printing has not been so used to any great extent though I can see no reason why excellent results might not be obtained by block printing or stencilling.

Book cloths, that is cloths used in book binding, the process of manufacture being slightly altered to adapt them to the purposes of wall covering, are sold under the trade name of Holliston cloths. The dyed burlaps and denims are too well known to need description. A Japanese material called grass-cloth woven of raw flax and dyed in beautiful tones has all the appearance of raw silk on the wall. It comes in rolls of eight yards, thirty-six inches wide. A plain paper of English manufacture called silk fibre comes in a variety of excellent colorings and has a texture much superior to the ordinary ingrain papers. These various plain materials form an important group showing a tendency to return to plain wall surfaces but with the relief of texture of one sort or another. They also call for something in the nature of a frieze to relieve the absolute plainness of the wall and although the frieze in wall paper has not yet reappeared among us, the demand has been met in England in the work of two or three men, notably Bailie Scott and Shand Kydd, the latter of whom has produced some very beautiful friezes both in design and coloring, quite individual in character and which are being extensively appropriated by other designers. On account of the amount of hand treatment in them they are themselves rather expensive. In actual progress the English designers are undoubtedly to the front. Much attention is being given in their work to the purpose for which the material is to be used. Many of the designs therefore are flat stencil effects in two tones of one color. Where varied color is used, green and blues are laid together, or greens, blues and purples, or again browns,

greens and yellows, giving a pleasing relief to the eye while preserving the flat wall surface. The German designers have worked on these lines as well and their color is good but their designs are much in the extreme "new style" —so extreme, indeed, that to an ordinary mortal they are anything but beautiful. To add to their undesirability they are easily copied and have been widely copied by American manufacturers, and as is usual in such cases, the glaring faults have been accentuated under the mistaken impression that they formed the main attractiveness of the designs. The English designs are not so much in favor with the great American public and are thus saved this degradation.

To what are known as the sample-book houses and the departmental stores is due much of the cheapening of design and materials in wallpaper as in so many other lines. Something with a semblance of merit but spiced up with touches of color to catch the popular taste has to be provided at a price which will insure large sales. Thus it becomes increasingly difficult year by year to purchase designs sufficiently distinct from these meretricious vamped up piracies. Apparently the only safe course is to confine oneself to flat quiet effects in two or three tones of analogous colors and yet there are some glorious walls to be had in strong color from the collections of the leading British makers.

The French designers adhere pretty closely to their traditions in the direction of marvellous reproductions of the effect of silk, leather, tapestry, &c. As I pointed out in a former paper there is no pretense in these creations, that they are the actual material themselves, and it is therefore prefectly legitimate in such an intrinsically valueless material as wallpaper to produce any effect that will make a good wall. No objections of this sort, however, can be raised against the beautiful flocks or velvet papers in which the French excel and which have come in with the new styles or revived styles in architecture. Nothing can quite take their place in the white and gold rooms of the Empire or the Colonial of New England and Virginia.

Of the best American lines it can only be said that they are good in so far as they so closely follow the European makers as to be almost indistinguishable from them except to the trade expert. When originality is attempted it is not of an order to commend itself to a cultured taste. The craze for much display at little cost has controlled the output of a majority of the American factories.

Our own manufacturers have not yet reached a stage where the designing and coloring of their wallpapers can be seriously considered from an artistic standpoint. This condition of affairs is likely to continue for some time to come, those wishing really good design and coloring being ready to pay the difference in price for the imported lines. It is gratifying, however, to note that even in the domestic lines the showy pressed, embossed gilts, glimmers, and other such abominations have disappeared.

Some curious revivals come upon the market at times and enjoy a short run of popularity out of all proportion to their merit. An old house in Boston was pulled down the other day and on the walls of one room was exposed a panel treatment in old Chinese hand painting on small square silk sheets, the subjects reminding one of the old tea chest pictures. At once there was a demand for subjects of this sort and an enterprising importer engaged Japanese artists to produce hand painted wall hangings fifty yards long without repeat by any required width up to five or six feet. The painting was done on fine muslin with a backing of strong thin paper. Of course this revival of Japanese design is merely a fad and yet it indicates how keen is the pursuit of novelty in the decorating field.

W. H. Elliott.

PLANTS IN DECORATION.

By C. Mangold.

Who can imagine decorative art without plants? or estimate what it owes to the vast resources of the vegetable kingdom? They are so inexhaustible and so varied that they must always be its chief inspiration, and yet it has made only a very restricted choice from the wealth at its disposal. Why is this, and why at different periods have artists resorted to different plants, and why in some cases have plant-forms consituted the main feature of a design and in others played merely a subordinate part?

Te be available for decorative work a plant must not be too small, and must have a charateristic growth or a lively colour. In the earliest art-epochs of any country those plants naturally appear in decoration which are indigenous to the country, and the palm tree is thus the first plant we know to have been used, lending itself readily to the purpose, and being a native of the land which has given us the earliest examples of decoration. An artist must be familiar with the appearance and life of the plants he uses in his art, and this is only possible in the case of plants which are constantly before his eyes.

The size of a plant and its separate parts is of importance, because there are artistic limits to the representation of very small plants on a scale larger than that of nature.

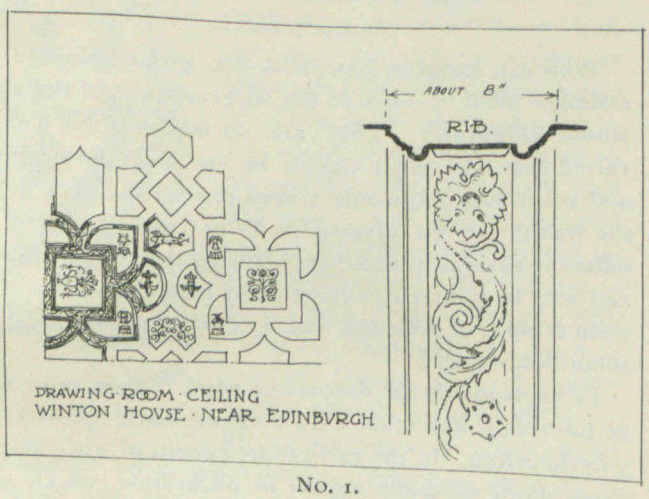
The durability of a plant is not without its weight. Not only should portions of it keep unwithered long enough to be copied, but also to make wreaths and other natural decorations. These, too, can be copied, and have at all times furnished important motives to decorative artists. In the time of the Renaissance, the use of natural floral decorations and wreaths were even commoner than now. The Italians in particular are greatly addicted to this form of decoration, and possess a large number of different evergreen plants suitable for the purpose, such as the laurel, the evergreen oak, the olive, the myrtle, and the cypress.

The choice of plants for decoration depends on the character of the nation at the time, and the fashion is always changing. We see that well in the flower representations of the present day. The vast demand for such designs for carpets, wallpapers and womens' clothes, has caused the artist to seek for inspiration from a very much greater number of plants than he has ever done before.

In many cases it is still possible to point out the particular plant from which the artist has taken his motive, but it is much more common to see fancy plants in which the mixing of types has been carried so far that the origin of the separate parts cannot be distinguished. Decorative art is, in fact, freeing itself from the trammels of precedent and striking out a new path for itself. This is as it should be, and the artist must go to nature for his novelties.—Maler Zeitung.

PLASTER DECORATION—MODELLED AND HANDWROUGHT.

Before considering a special method for the artistic treatment of a material it is as well to come to some definite conclusion as to what may be called its "genius." By the "genius of the material" we mean the characteristic kind of beauty which it possesses per se, without taking into account even the technique —the treatment which is least calculated to diminish



No. 1.

this beauty is the best. In the case of a mantlepiece of highly veined marble every member of moulding added is so much waste labour and in bad taste, for the flat or gently waved surface is alone compatible with a full realization of the beauties of the material. In white marble, on the other hand, the most delicate moulded surface will tell, and the texture of the material, too, suggests clean-cut decisive forms—the semi-transparency and light absorbing quality of white marble requires a definition of actual form which when cast in plaster appears coarse as compared with the original.

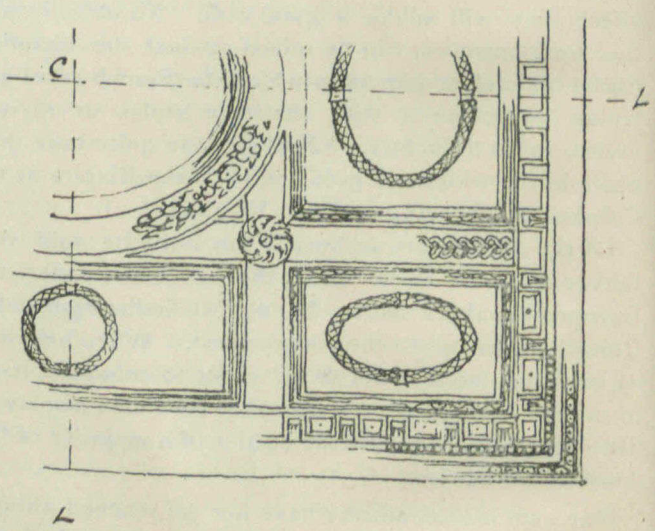
Plaster is as white as marble, but, lacking transparency, we find lights reflected into shadows and vice versa in a way no other material can rival. The most delicate or rather the softest (for delicate is apt to suggest smallness of scale) modelling will therefore produce considerable emphasis, while extreme sharpness or undercutting will show violent contrasts wholly destructive of this tender genius of white plaster. Mr. E. S. Prior has said "Plaster is the most impressionable of all materials which give architectural surface. Its response to the hand of the craftsman is sympathetic and immediate. It has not to be chiselled like stone or wood or have ideas hammered out of it like iron : a touch of the finger gives it life." Thus both the material and the technique suggest a tender treatment. We are here impelled to lodge a word of protest against the practice of painting plasterwork any colour but white and preferably lime white. To paint a cornice chocolate and pick out enrichments in gold is at once to stultify the purpose of plaster and ruin all the beauty of texture with which it is naturally so highly endowed—Where are the lights and shadows fled ?

Now, considering the beginning of plaster work in England under "bluff King Hal," it was we find to Italian craftsmen that the earlier works must be attributed, but a characteristically English school soon developed. It is worth noting that much of this XVI Century work is far more plastery than what came later, though it is only within the last century that this trade has really fallen from its high place among the arts. And realizing this, there is a considerable movement among architects at home to lead the plasterer once more above the commonplaces of enriched stucco mouldings with mutules, consoles, dentils, egg and dart and all the rest of the sharp edged truck with which many a modern classic building is besmeared.

The type of these earlier ceilings is shown in our illustration from Wintoun House—the rib with moulded edges and enriched soffit divides the ceiling into geometrical panels in which occur a collection of ornamental motives of all sorts— heraldic devices, masks of mythical kings, conventional floral designs, initials, etc.

This type gradually gave place to the more formal corniced and coffered arrangements with the great circular garlands in which Inigo Jones and Wren delighted. In the earlier work the mouldings are more true to the "genius of the material," while in the later efforts the modelling reaches a very high standard though over inclined to naturalism.

In your Elizabethan ceiling the rib enrichment is usually cast, some running pattern of vine "with bunch and berry and flower through and through," while as often as not the panel motives are modelled "in situ." In the Georgian work also the great garlands are very often hand wrought "in situ." It is in the intervening debased period (and there is a world of inspiration in the work of debased periods) that we find a technique in vogue which combines the cast with



1/4 PLAN OF CEILING OVER STAIR.
AT COLESHILL HOUSE BERKS.
BY INIGO JONES
AD 1650.

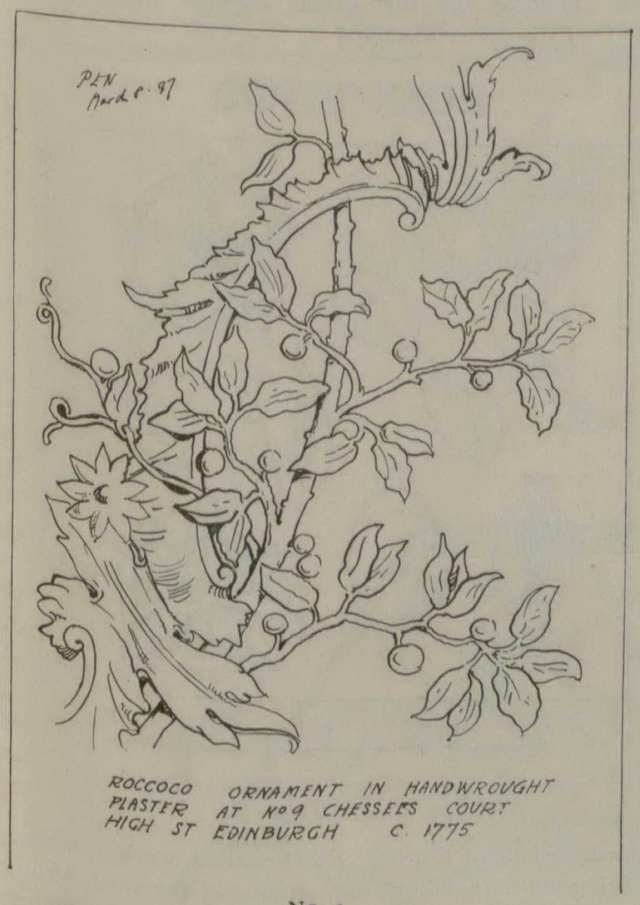
No. 2.

the hand wrought methods and which has this to commend it to a commercial age, that no other kind of ceiling decoration will give so fine an effect for a given outlay of skill and labor.

Before considering the mixed process which is our subject, a few words on the relative advantages of hand wrought and cast work may be of use.

It is the great advantage of hand wrought work that it can be done "in situ." Lighting is an all important question in plaster modelling, while the only way to

get a decoration the right size is to execute it in its place. To execute hand wrought plaster in the shop and then fix it is a very futile proceeding. In hand-wrought work we get the additional value which attaches to the unique. Though a good thing wil stand repetition while a bad thing is none the better for



No. 3.

being the only case in point, still it is nicer not to have the stereotyped ornament we know exists in the shop round the corner and in the house where we dined last night, right in our own parlor. Moreover in hand-wrought work balance takes the place of repetition and between the value of balance as an ornamental basis and repetition there is a great gulf.

Handwrought work can never be so perfect as cast work owing firstly to the speed with which it has to be modelled while the material is setting, and secondly to the impossibility of using wood tools or fingers. To the former the lime or cement adheres while the latter are burnt. The use of metal tools is the reason why one does not see modern handwrought plaster with a truly modelled surface; it looks like sketchy carving. The men of old time used to slake their lime for years and mix it with all manner of strange ingredients to render it plastic and slow, and we can only regret that this is not now commercially possible.

Now the dreary monotony of themes of plaster decoration depending on quantities of cast detail is patent to all who give the matter a thought, though for enrichments of the right sort and running repeats, etc., casting can never be dispensed with.

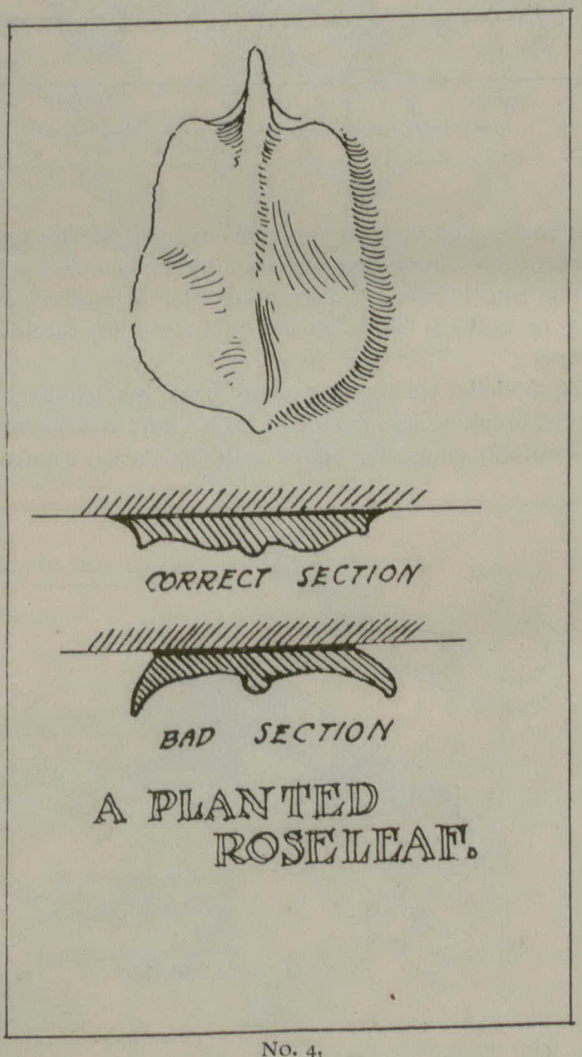
From the above we think it might be inferred that an ideal kind of floral plaster decoration would consist in having parts modelled in clay and cast and parts modelled in situ, thus ensuring a delicacy in the leaf, flower and fruit work while admitting of the utmost freedom of arrangement and stem modelling with regard to lighting and variation. Such a process we find in use in the latter half of the XVI century, and it seems quite to have fallen out of favor till some domestic architects at home by making measured drawings of old plaster work discovered that leaves and fruits supposed to be hand modelled were all of a pattern, a fact that would never be guessed from tl.e ground, because each leaf taking its light at a different angle presents a different aspect. This little deception is the only "trick" in the particular branch of the trade.

This method lends itself particularly to the covering of large surfaces such as ceilings, coves or domes with a varied enrichment of surface, breadth being well assured by the family resemblance of the items modelled and cast, while any degree of richness can be attained by a closer or wider spacing of parts.

I have seen a vine treated happily enough with only one type of bunch and leaf, but in my own experience several types varied in size have been used.

It is worth while to note what the section of plaster leaves should be with regard to the surface of the ceiling or cove. The illustration shows this and I need only say that the section advocated will make the ornament look a part of the ceiling,not something to be knocked off.

Now to describe the process of doing a ceiling

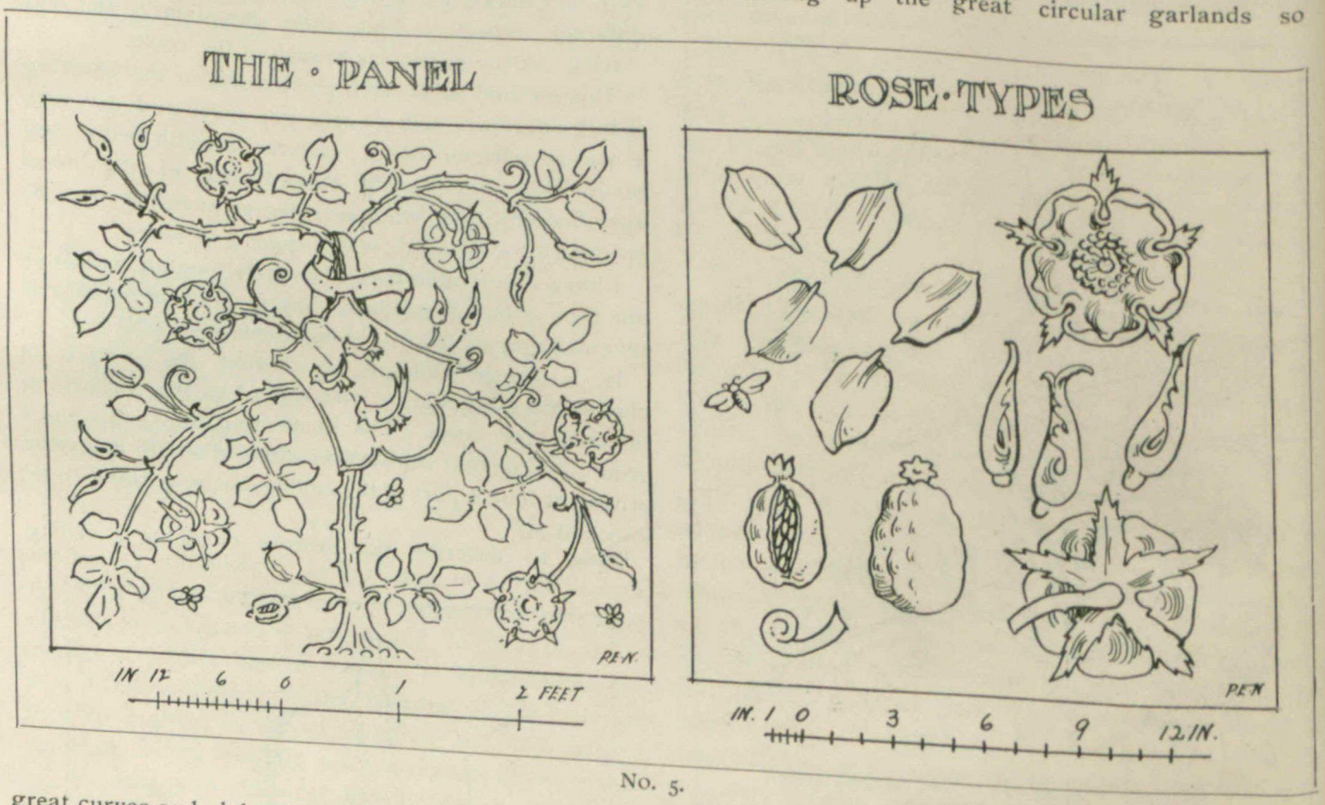


No. 4.

in this way. Let us suppose our types or items have been modelled, and the number of each that will be wanted having been calculated, they are cast and ready in baskets. They may be for vine, or rose, or lily, or oak, or maple; they may be stiffly conventional, severely correct to some recognized style or free to the verge of naturalism. In a word they may be as their designer

fancies. Next the scaffold is mounted and the dispositions set out in blue pencil on the plaster. Stems, wreaths, ribbands to be hand wrought being carefully thought out, while the positions for leaves, fruits, shields, or inset subject panels may be marked and numbered.

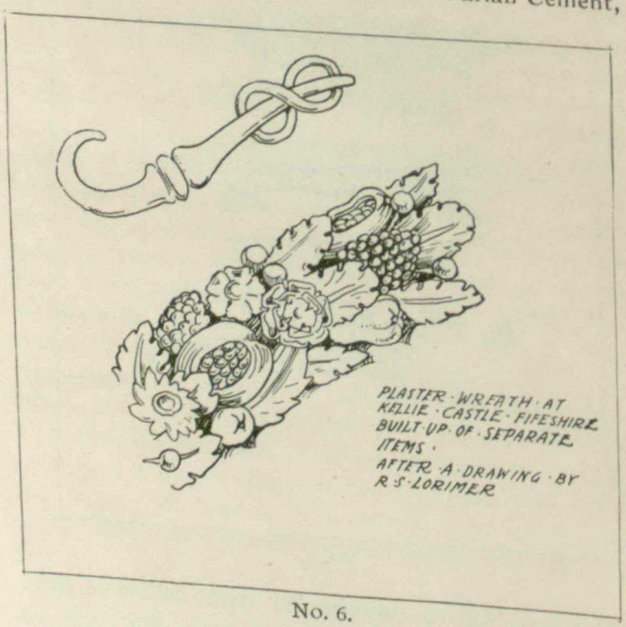
In disposing the stems care should be taken to avoid



No. 5.

great curves and violently assertive scrolls, as this type of decoration aims rather at enriching surface in a subordinate spirit than at distracting the attention, and there is nothing like a strong bold curve for catching the eye.

The modeller then goes up and fixes his leaves and flowers, breaking the ground to form a key, and flushing up smoothly round the edges with his Parian Cement,



No. 6.

in which material slowed down with lime, he will also execute the stems, &c. Give him a bit of vine branch or a thorny rose stem and try for a good conventionalization of it. The twist of the vine and the thorns of the briar are easy characteristics to grasp.

When subject ornament is cast on the flat for insertion it is well to run a bead round the joint or to recess the plate in the ceiling. Plaster of paris and lime are not quite homogeneous in texture and the joint on a flat side-lit surface will show unpleasantly unless frankly acknowledged.

In making up the great circular garlands so characteristic of English XVII century work a process analagous to the above was often used. Berries and fruits are attached with string to nails driven into the hollow bed while soft, larger fruit and leaves being pegged or merely cemented on. In garlands so made up there is often a certain crudeness of composition, but they are far more likely to be rightly conceived as to scale and proportion than when the garland is cast in lengths to repeat while this last attribute is happily lacking. Compared with garlands hand wrought, in parian cement, these have the advantage already pointed out of lacking the carved out and sketchy feeling natural to quick modelling in a hard setting medium.

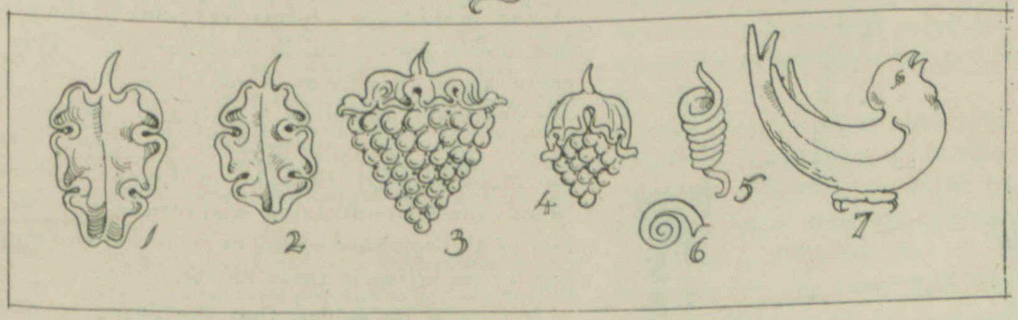
As an example we publish a design for a small coved ceiling with details and notes which may be of interest as an attempt to revive old methods.

To sum up the advantage of this old method of plaster decoration, we have seen that the amount of highly skilled modelling required is not very great. Half a dozen types will do for a large job. The stem modelling can be easily taught an intelligent workman. Any degree of conventionality or naturalism can be obtained which is desired and also any degree of richness or simplicity. The decorations are designed "in situ," an advantage quite as important as their being so executed.

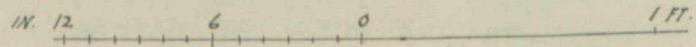
With regard to plaster ceilings in general we would say that this is preeminently one of the cases where restful enrichment is called for and it is time we ceased securing this by the employment of forms which only fail to distract on account of their wearysome familiarity or conspicuous lack of beauty. Nothing in a ceiling should assert itself at the expense of objects on the walls or the furniture, but a ceiling need not on that account be wholly dull and lifeless.

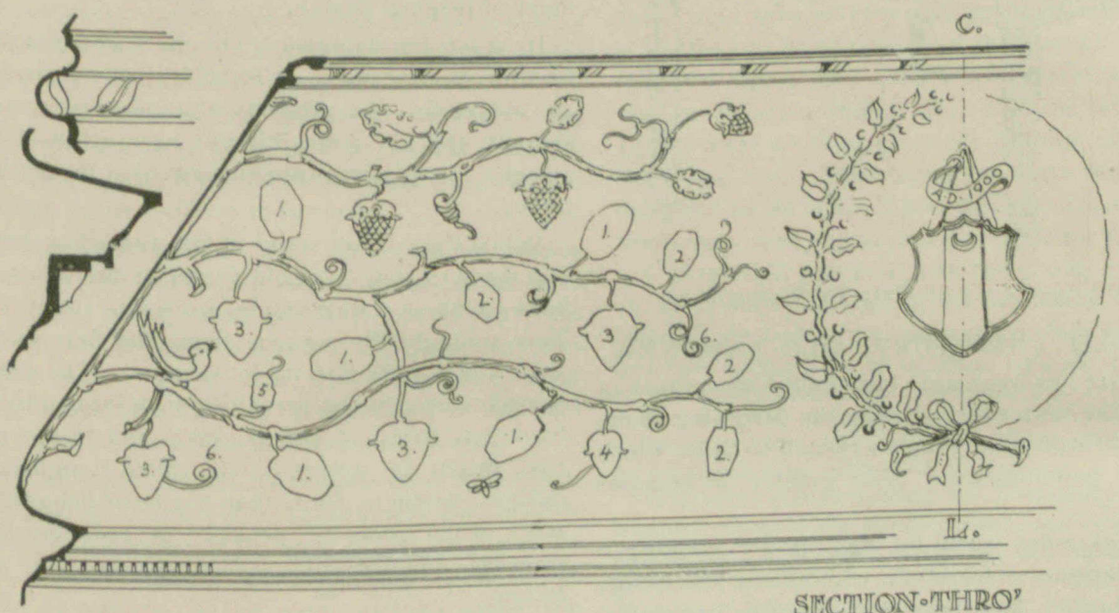
PERCY E. NOBBS.

The Hall Ceiling in Hand Wrought Plaster.

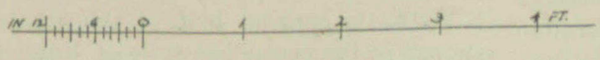


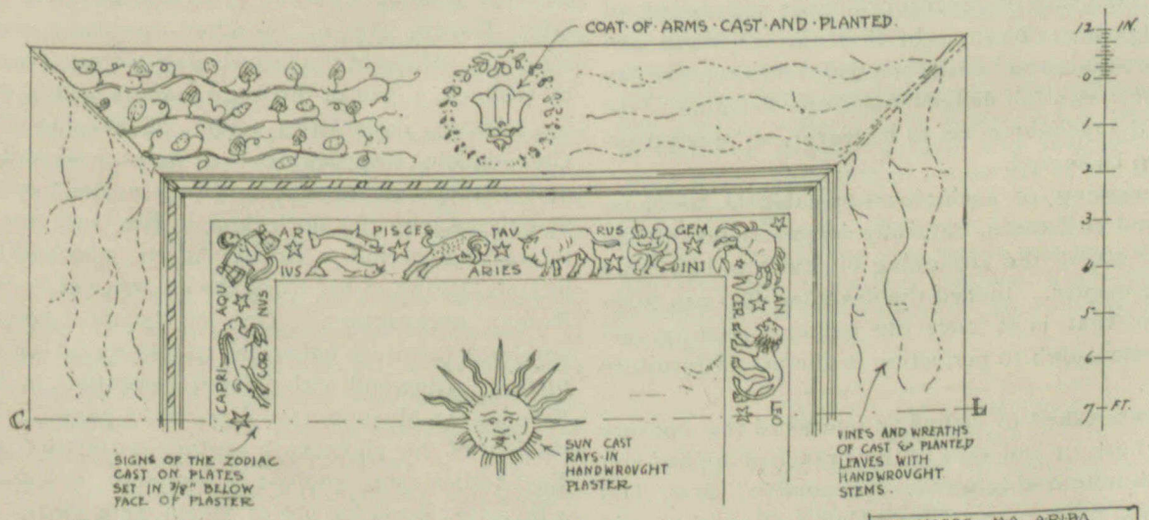
THE TYPES





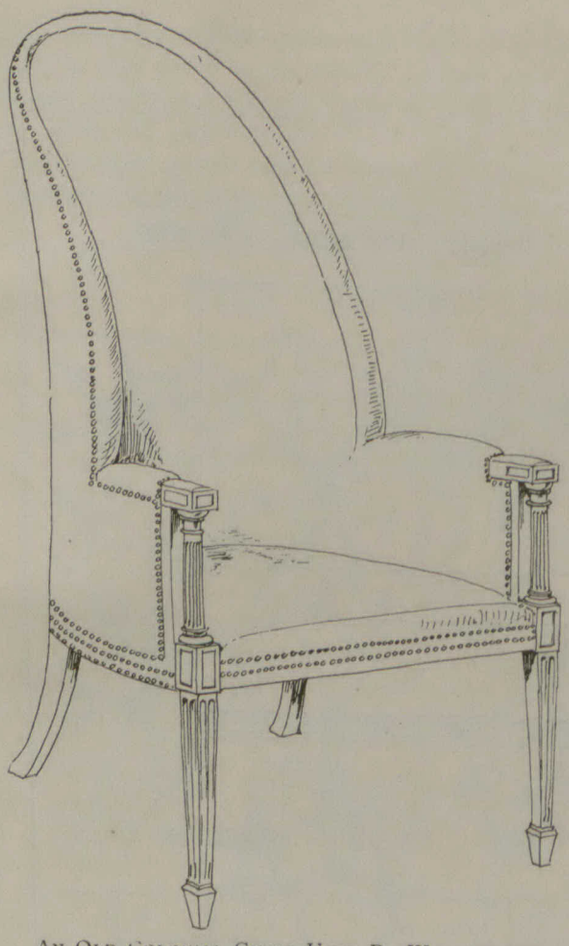
SECTION · THRO' PART · OF · COVE.





HALF · PLAN

P. E. NOBBS MA ARIBA
ARCHITECT
10 PHILIPS PLACE, MONTREAL
OCT 1903



AN OLD COLONIAL CHAIR USED BY WASHINGTON.

HOUSEHOLD FURNITURE, OLD AND NEW.

Architecture has frequently been called the mother of the arts. The laws which govern the designing of decoration and furniture are closely related to those which govern the building art. The greater art encloses the lesser.

In the work-a-day world we can hardly imagine a successful designer of furniture, without any knowledge of architecture. And those who have this knowledge primarily, before taking up the designing of decoration and furniture have an immense advantage over their fellows in the grasp of general principles and sense of fitness. Let it not be thought that the architect can drop his architectural work one day, and the next day blossom out as a full fledged furniture designer. In every art the technique has to be learnt, an apprenticeship has to be served.

The designing of such pieces as cabinets, bureaus, drawers and bookcases, naturally comes easiest to the architect, whilst the designing of chairs will be more difficult to master. Indeed the designer who can turn-out a chair that is at once the acme of beauty and utility, comes nigh to perfection in the art of furniture designing.

If we were asked to define in one word the measure of the highest art and skill in this branch of applied art, we should unhesitatingly say, "proportion" first, last and always, proportion. The balance of solid to void of curved forms with straight forms, and so on all through the gamut of form, and color also, if varied color is employed on the object.

Twenty years ago, the writer, having served an apprenticeship of twenty years to the art of architecture, entered upon another apprenticeship to the art of furniture designing, in which he still continues. These notes are largely the cumulative result of his experience during that time.

In the year 1883, Richardson the architect of Boston, was in the zenith of his power. The influence of his style pervaded furniture also to some extent. A revival of "colonial" work had also then set in. To-day Richardson's influence is dead, but the "colonial" revival has grown and broadened. The art of England of the eighteenth century is to-day in the ascendency and almost paramount in its influence. This has not come about wholly as a mere fashion, such as affects our dress, but rather as a matter of selection; we have sought those old types because we found they suited our mood and the thought of the day. Moreover we found them comfortable and pleasing to the eye, and last of all they have saved us the trouble of much thinking for ourselves in these hurried times.

It cannot be denied that the desire to possess old furniture as home furnishing or to copy direct from old examples has been inimical to the progress and development of original design.

It must be dampening to the ardor of a designer, brimful of new ideas, to be told by one patron to copy an old chair, the property of another patron. Occasionally this is done without as much as asking the owner's permission, amounting to a barefaced act of piracy.

While the current trend of late years has been more and more to copy from old examples there has recently been evolved a freer style known as L'Art Nouveau. This undoubtedly sprang from the first work of the Arts and Crafts Society in London. The French and Germans caught the prevailing new ideas until now we have travesties of the originals and things produced that might be appropriately called "nightmares" of design, worse in form than the most debased rococco work of the Louis XV period. A reaction from this towards simpler and severed forms will assuredly follow.

With the second half of the eighteenth century a change in the prevailing style of English furniture set in. Sir William Chambers, R.A., an architect, and later Robert Adam, another architect, designed furniture. Many of the latter's designs were carried out by Gillows, a firm of furniture makers still in existence in London under the name of Waring Brothers. Chippendale, Hepplewhite and Sheraton were designers and makers of furniture, whose names have become associated with the work done in England during this interesting period. Robert Adam, who had travelled in Italy, shows in his work the influence of Pompeii and Roman architecture. One of the most beautiful examples of furniture belonging to this period is a dressing table of satinwood with painted decoration, in the South Kensington Museum (see illustration pages). Towards the end of the eighteenth century satinwood from the East Indies came into use in England. It soon became a favorite wood for pieces which were decorated with color.

There were several artists who had come to England from Italy who were employed in decorative painting on panels of walls and ceilings, and who also painted decoratively cabinets, tables and chairs. Sometimes a darker colored wood was used for oval medallions, on which were painted figure subjects classical in charac-

ter. This contrasted well with the surrounding yellow color of the satinwood.

Pergolesi, Cipriani and Angelica Kauffman were employed by Robert Adam, the architect, in decorative work. The painting on both of the dressing tables illustrated is the work of the last named artist, who was one of the two lady members of the Royal Academny at its inception.

The satinwood chairs of this period are particularly fine, being comparatively simple in form and free from much molding or carving as objects decorated with color should be. The time is known as that of Sheraton and Hepplewhite, although there were many other makers of furniture who worked in the same style. Both of these noted makers published books with designs for furniture.

For drawing rooms, boudoirs and bedrooms where enrichment is desired, this treatment of color decoration on satinwood or mahogany seems particularly appropriate. Other woods besides those named may be used provided they have a beautiful figure or grain ; for painted decoration needs this by way of contrast, as a background, which should have enough glossy polish to bring out all the natural beauty of the wood.

In our workshops we have not as yet exhausted the possibilities and variety of colors to be obtained by staining woods, which is a perfectly legitimate method of obtaining artistic effects in furniture.

The proper treatment of such fine grained woods as Mahogany and Satinwood is to leave broad surfaces to display their beauty when polished just as we treat marble, and not to introduce much carving. On the other hand such woods as oak which are of coarser fibre lend themselves to more ornamentation and are suitable mediums for a liberal amount of carving.

Oak should never be left its natural color in the process of finishing. There is no reason why the mellow colors which oak assumes through age should not be imitated, in order that a more pleasing harmony of color may be obtained in the room, and to avoid the rawness of natural color. Some of the best effects are the result of staining only, with little or no shellac, leaving an unpolished surface. The process of staining oak by fumigating with ammonia is much practiced in England, and often fine effects of rich brown colors are obtained by this process.

The wood known as English Brown Oak is sometimes used along with the ordinary Red or White American oak in panels. The variegated figure of the brown oak contrasts well with the native oak which is stained to match it in color.

Prima Vera, generally known as White Mahogany. is sometimes used as a substitute for Satinwood. It has not the same beauty of surface, but it takes a stain well, and can be finished the same color as satinwood.

The woods most in favor at the present time for fnrniture making are mahogany and oak.

The difference in quality of workmanship and design, between the ordinary work of our day, and that of, say a century and a half ago, is largely due to a lack of special artistic interest in furniture generally and the extensive use of machinery.

The wholesale multiplication of elaborate pieces, nearly all machine made, robs the work of its individuality and takes the very soul out of it.

The whole traditions of the craftsman which were formerly handed down from father to son are lost. The thing produced has no longer any human interest for us. Machinery has its uses but it can never take the place of human thought and human feeling. Not infrequently it happens in these days of rampant commercialism that an excellent design for a piece of furniture is simply killed by altering the artist's working drawing so that the handwork is wholly eliminated. The machine does every part, the result being a machine product which may serve its purpose but never can be wholly satisfying to our artistic sense which craves beauty.

How then are we to obtain the highest and the best results in the making of furniture? I am inclined to think we will have to return to some at least of the good old ways, when the cabinet maker was more of an artist and a craftsman than he is now. We must not let machinery run away with us, and think we can turn out satisfying work by making a gross of pieces at a time. Chippendale and his immediate successors when they set about making chairs, did not consider how they could save seventy five cents on each, by getting a machine to do the work of the carver. If they had followed such a plan their work would not have lived ten years after them. No, it is the human artistic quality after all that gives the lasting value to everything we use. Therefore I say have things specially designed by an artist if you can afford it and made by a craftsman, and pay each a just price for their work.

I have often observed how the young architect when about to marry sets about the furnishing of his house. Most likely during the engaged period or before, he has been picking up at random, odd old pieces in his rambles here and there. Perhaps a four post Colonial bed, a bureau, some mirrors and a few chairs will be in his collection, and it is astonishing how easy it is to furnish rooms with such things.

Whatever else is needed he frequently designs for himself, often of the simplest form (as befits his slender purse) such as a clean carpenter can make. Instinctively he avoids the furniture "slaughter houses." Whatever things modern he may buy, he exercises with good judgment the spirit of selection.

In selecting or designing furniture for his clients the architect will be safe in following out generally a somewhat similar plan, modified and governed of course by the money available for the housefurnishing. The best results are not always attained in those houses where money has been lavishly spent. To design richly, to use costly materials, is often more trying to the architect or designer's skill and judgment, than in work where very limited means are at his disposal.

There is no doubt whatever that, with the rapid growth of Canada, with the Dominion's increase in wealth, a time in the near future will soon come when Art—and that of the very highest kind—will be discriminatiny called into service to beautify the homes throughont the land.

ROBERT BROWN.

ODE TO AN ARCHITECT (?)

(CONTRIBUTED.)

When 'Omer smote 'is bloomin' lyre,
He'd 'eard men sing by land and sea ;
An' what he thought 'e might require,
'E went an' took—the same as me !

The market-girls an' fishermen,
The shepherds an' the sailors, too,
They 'eard old songs turn up again,
But kep' it quiet—same as you !

They knew 'e stole ; 'e knew they knowed.
They didn't tell, nor make a fuss,
But winked at 'Omer down the road,
An' 'e winked back—the same as us !

—Kipling.

L'ART NOUVEAU.

A new movement in art is worth looking at with respect in the first instance. It is usually a reaction from some artificial state that wants reformation, and the new movement may be regarded as a protest. L'Art Nouveau seems to be a phase of this kind.

As far as can be made out from occasional illustrations, there is one "feeling" running through it all, and this may be roughly described as a feeling for freedom. Always supposing that art is possible at all under conditions of freedom, what is it they want to be free from? The worst examples appear to want to be free from everything, and would probably be brought by its authors under the sentiment of "art for art's sake," which has a noble sound, but about as much sense as "a stick with one end." It makes one's brain crack to try to think of Art existing by itself and for its own sake. It is impossible to conceive of Art except as concerned in the making of something; and Art consists in making it properly. Over what makes proper making the battle may rage, but it has got to be all

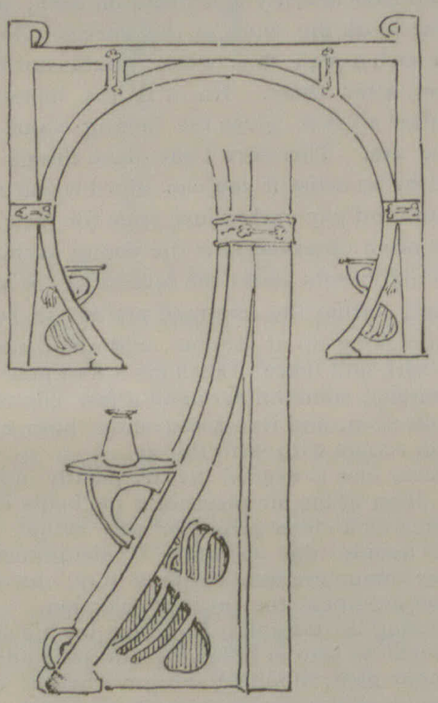


FIG. 1.—ARCHWAY BETWEEN ROOMS.

about making; that is to say an artist's work must represent the purpose for which it was made as exactly as a machinist's; and therefore that part of the new art, that aims first at being unrestrained is not likely to go far towards any purpose the New Art movement is serving in the history of art.

The essential peculiarity seems to be form without reason. The designer in all probability thinks that beauty of form is an abstract quailty. Is there not a "Line of Beauty" over which Hogarth took a lot of trouble? There is; but it does not appear anywhere in a Greek temple. There are evidently circumstances which modify the application of abstract curvature to building. It does not require much reasoning to know that the worst manifestations of the New Art are wrong; the eye is sufficient. A room abandoned to its utmost effort (many such are shown in the German journals) is perhaps the most unquiet thing ever yet produced in the way of architectural finish; the whole room is writhing; it is like nothing so much as being at the bottom of the sea amid the sinuous seaweed. Examined in detail the trouble appears to lie in shaped wood—not square stuff but boards. This is always an unpleasant kind of work; enjoying the distinction of being both heavy and trifling, even when it serves a recognizable construction function; so that it is anything but pleasing to find it done for its own sake, unreasonably. An evidence of the unreasonable charac-

FIG. 2.

ter of German Art Nouveau curves is the prevalence of the horse-shoe, the type of the fantastic in architecture; a form which is sure to give a character of superfluousness, even when the opening arched in this way is of brick or stone and the greater part of the form is constructive: when it is shaped out of boards and makes an arched opening between two rooms, as frequently appears in German drawings, the force of Art for Art's sake, can hardly, one would think, go much further. If there is no other reason against it, imagine the danger to which a gentleman would be subjected when,

FIG. 3.

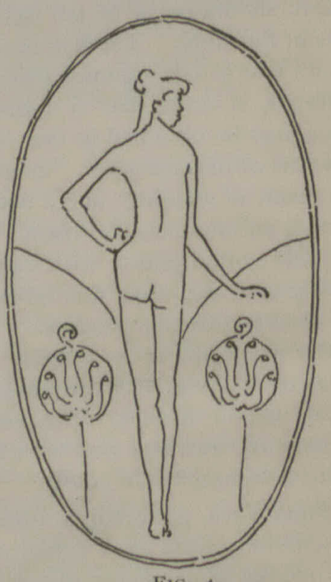


FIG. 4.

giddy with the writhings of the trimming, furniture, and wall decoration of one room, he attempted to pass into the next, through an archway which is 6 feet wide at the level of his eye but only 4 feet 6 inches on the floor.

The door of the cabinet in Fig. 2, is a good illustration of the result of letting the wayward fancy roam. This is an extreme case perhaps, but there is nothing like an extreme case to show the way things are tending, and it is rather interesting that the same volume gives a couple of pieces of wall decoration, which seem to show that the influcnce of freedom and the

jig saw are felt in the conception of the female form. This is truly new art. Representations of women are usually said to be either intellectual or sensuous ; but here are figures which are neither.

In its more moderate form the shaped board style of work is shown in such forms as the door architraves

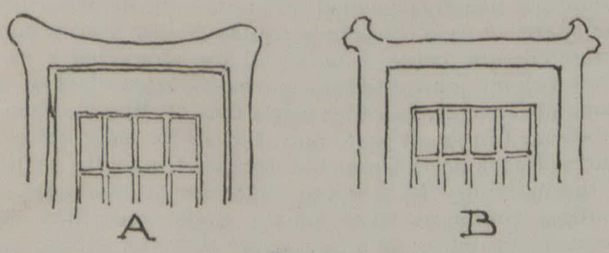


FIG. 5.

in Fig. 5. It is evident that the feebleness of A can only be corrected by the br tality of B.

There is no life in this sort of effort after shape for shape's sake, and when people to whom fashions in art serve the same purpose as a poster—something to attract attention for a while because it is new—find it has served its purpose, this branch of the New Art will fold its tent like the Arabs and silently steal away.

Of the same order as this amorphous shaping of material are the French statues growing out of a crude block of marble, and their unconfined architectural carving and flowing lines of moulding. It is all apparently at bottom a reaction from the conventions of classical architecture, and the mistake made is in confusing with the conventions of style conventions which are essential to satisfactory expression in all building ; in rejecting both the prevailing horizontality of classical architecture and the use of the mouldings by which it is expressed ; in avoiding right lines altogether or making them run the other way. Mr. Voysey, whose own work is allied to reactionary ideas, complains in an article of the excess of verticality.

Gothic architecture may be vertical in feeling but there is nothing sits so well upon the ground; its masses take care of that both in plan and structure; in fact, as a school of design which was essentially structural, it could not do otherwise than express, by the facts of its construction, the law of gravity which is the basis of building. The conventions of classic architecture express the same thing in an abstract manner, emphasizing for the greater satisfaction of the eye its repose under a law of which we are always unconsciously conscious. If the New Art wants a change, it must devise a new convention on the same lines, or else a new law.

It is quite otherwise when it comes to movable furniture. Here the freedom of the New Art scores over Michael Angelo ; for such furniture is not building but joinery. Its conditions of stability are not vertical pressure. Its tenons are fox wedged or pinned, which give its joints tensional strength ; or glued, so that their strength comes from suction, due to the pressure of the atmosphere, which follows the law of fluids, pressing every way. Furniture is made to be both lifted and loaded, and its construction has various tensions to express as well as vertical resistance. The joints are therefore absolutely devoid of expression and to ignore them is the proper policy. The grace of Colonna's furniture, shown in illustrations of the Maison Bing in the Studio and Architectural Record, is mainly due to the vertical and horizontal lines, both of which are severely simple, meeting with a slight curve. This does not at all express the joint, which comes somewhere in the curve ; but it is exactly the right expression to the eye of the perfect union of the work at the joints ; the union of parts in an article which is intended to be moved. The same thing may be expressed by a projecting tenon and pin ; but the "honesty" of this work is not carried far enough ; if it proclaims itself movable it ought to be so, but it usually is not. Colonna's furniture is light and its expressiveness is more delicate than in the furniture of our rude (and strong) forefathers. The joints (to return to them) are emphatic points in his design, like the corners of a picture frame, but no more. He usually emphasizes them still further by knots of carving which are not intended to be read, as it were, in one direction but are worked over the joint.

To sum up, because it is time, not because the subject is fully treated :—l'Art Nouveau has probably arisen as a reaction from the over rigidity of system in classical design. But the reaction is everywhere ; the New Art is but one phase and for the most part not a very good one. There is as much reaction in Mr. Belcher's Institute of Chartered Accountants as in the greatest vagary in Paris ; it is just as much alive as any piece of New Art and likely to remain alive much longer.

W. A. LANGTON.

HEATING AND VENTILATION OF BUILDINGS*

BY R.C. CARPENTER, Professor Experimental Engineering, Cornell University.

In the time which can reasonably be devoted to a consideration of this subject, only a few elements relating to the important art of heating and ventilation can be diseussed. I have selected consequently certain phases of the question which I believe would be of interest to architects and which I thought would lead to a practical and valuable discussion.

TEMPERATURE REQUIRED.

The requirement for heating varies in different countries and under different conditions so that propositions and rules are very rarely of such a general nature that they can be applied without some modification due to surrounding conditions. On the continent of Europe 15° Centigrade, corresponding to about 59° Fah., is considered a comfortable temperature ; in America it is the general practice and custom to maintain a temperature of 70° Fah. in dwellings, offices, stores and most workshops, and a heating apparatus is considered inadequate which will not maintain this temperature under all conditions of weather.

EFFECT OF MOISTURE.

The lack of moisture in the air is in a large measure responsible for the demand for such high temperatures in our inhabited rooms. In buildings warmed without an additional supply of moisture, the relative humidity becomes very low and as a consequence the air develops an excessive greediness for moisture and a capacity for drying out all furniture and removing all moisture from bodies with which it comes in contact. Outside air usually contains from ½ to ⅔ the amount of moisture required for saturation and as a consequence it exerts only a slight influence in evaporating fluids from the body or from other materials. This same air if warmed to any considerable amount develops a great capacity for absorbing or evaporating more moisture and as this evaporating process is one which removes heat from the human body, it no doubt accounts for the demand for a hot room provided it contains dry air. This is well illustrated by a consideration of the capacity for holding moisture by air at different temperatures. Thus, one cubic foot of air at a temperature of zero is saturated by .56 of a grain, while air at 70 degrees temperature requires very nearly 8 grains to saturate one cubic foot. This indicates that if air of zero degrees temperature be drawn into a room and warmed, nearly 7½ grains of moisture per cubic foot must be added to maintain it in a saturated condition, or about 3¾ grains would be required to maintain its relative humidity at about 50 per cent. of the saturated condition, or say in a comfortable condition. Since 7000 grains make one pound, this calculation would indicate that more than one pound of water must be added for each 2000 cubic feet of air introduced in order to maintain the room in a comfortable condition so far as the degree of humidity is concerned.

In respect to the supply of moisture to our warmed rooms, all our heating systems are deficient and until

*From Heating and Ventilation, N. Y. John Wiley & Son. (4th Edition)
†Paper read at the annual convention of the O.A.A., Jan., 1904.

very recently little attention has been given to the matter. As a result, most of us are accustomed to live in houses which have an atmosphere dryer than the air of the dryest desert, which air tends constantly to draw, by a process of evaporation, moisture from the bodies of the inmates which on the other hand produces a feeling of chilliness and discomfort that can only be overcome by an extremely high temperature. I believe that this fact accounts for the habits already pointed out, viz, that we require higher temperature in order to be comfortable than the inhabitants of Europe. I believe in this respect, too, the residents of Canada will be found to live in even a dryer atmosphere than that common in the States and as a result they require a higher temperature in order to be comfortable. These considerations point out the importance of supplying the proper amount of moisture to our heated rooms. There is little doubt but that a proper degree of humidity would result in a decided saving of fuel and would probably improve our sanitary conditions.

NEED OF VENTILATION.

Systems of warming with and without ventilation exist in large numbers ; those without ventilation being greatly in excess of those with. A system of ventilation is frequently regarded as a luxury which is only applied where sanitary conditions are such as to make it absolutely necessary, but systems of heating are so essential to a comfortable existence and even to life itself that they must be installed in practically all inhabited buildings in these latitudes. Systems of ventilation are not so vitally essential to the human existence especially if the health be disregarded, for it is a fact that people who are unaccustomed to pure air may be very comfortable in air which is charged with organic organisms and various deleterious gases ; the effects, however, of breathing impure air, while not producing sensible uncomfortable sensations, are much more serious than living in cold rooms. It will doubtless require argument and persuasion to induce people to install a proper ventilating apparatus, since such apparatus adds both to the first cost of the construction and the operating expense. It costs money to warm buildings ; it will cost additional money to properly warm the air which is needed for thorough ventilation. Considerations of comfort require the building to be warm, sanitary considerations require the building to be ventilated. If people could be made to feel that the cost of ventilation was a better investment than the cost of a physician, there would be no lack of pure air no more than there is of a high temperature in our present buildings.

The greater part of our buildings are heated by some system of direct heating especially when steam or hot water are employed as the heating medium, and in such cases the only ventilation which we find is that accidental ventilation due to the entrance of air around door and window frames or that which enters when doors may be opened as people pass to and from the room. In dwellings where only a few people live, systems of heating may exist with good sanitary conditions, but where a large number of people use the same room, additional air must be supplied, otherwise the sanitary conditions will be bad and the effect on the health of the inmates will be serious.

HEATING IN CONNECTION WITH VENTILATION.

While large supplies of air may be drawn in to a room by a heated chimney, such a system of heating air is not economical nor is it at the present time very extensively used. When air is required for ventilation it is at the present time generally supplied by a pressure blower which is so arranged as to force the air over a heating surface on its journey to the room so that it will enter the room without causing the inmates any sensation of chilliness. The systems of heating in which the blower is employed for delivering air into the room vary in character; in some of these systems the entire heat required for the rooms is brought in by the the entering air which is forced over a heating surface and warmed sufficiently to accomplish this result; in other systems direct radiation is placed in the rooms to be warmed and the entering air is heated only to a point necessary to remove its chilliness which is usually a few degrees above that of the required temperature of the room. In some instances the entire heating surface for a building is massed in one place and the air is forced from this location to all the rooms; in such cases means are usually provided for by-passing the air around the heater in case the temperature becomes too high, arrangements being introduced for supplying a constant volume for ventilation purposes regardless of the demand for heat; in other cases the heating surface is subdivided in small parts and the air for each room is warmed separately from that for the remaining portion of the building. In carrying out these various systems, heating engineers have shown great versatility and great adaptability; in a few cases they have been prevented from producing the best results because of lack of space in the building and because the architect did not have an intelligent idea of the work necessary. It is perhaps unnecessary to mention that ventilating apparatus requires room in order to meet all the requirements of modern sanitary science and this room should be located with judgment and so as to permit of the proper erection of what are essential features of modern sanitary construction.

RELATIVE ADVANTAGES OF HOT WATER AND STEAM HEATING SYSTEMS.

In systems of heating by hot water circulation, the heated water rises and the cooler water falls by reason of difference in weight; in many respects a system of hot water circulation is an ideal one ; this is especially true with reference to temperature regulation for if the radiators are properly proportioned the temperature of the radiator may be modified or regulated by the supply valve so as to maintain any desired temperature in a room. This advantage is also an economical one when the weather is moderate and as a result it is generally found that hot water heating systems require less coal than steam for an entire season's heating.

Steam heating surfaces can be made much smaller than hot water surfaces for the reason that the temperature of steam can be made considerably in excess of that which is practically possible with hot water radiators. They are open, however, to the objection that the temperature of the radiator cannot be changed by varying the opening of the supply valve, so that in order to regulate the temperature in a steam radiator the steam must be alternately all turned on or all turned off. It is, of course, possible by manipulation of the air valve to render some of the heating surface in a radiator inoperative, and this makes possible a method of regulation which, while effective, is exceedingly troublesome for the reason that it is dependent upon constant manipulation of steam and air valves. Practically, however, the temperature of radiation in an ordinary system of steam heating can only be regulated by turning all the steam on or all the steam off.

Steam heating systems are less costly than hot water heating systems since the radiators are only about five-eighths as large, and the radiators of such systems are less conspicuous and generally more desirable.

VACUUM STEAM HEATING SYSTEMS.

During the last few years many improvements have been made in steam heating systems with the intention of overcoming the defects and of making the system of steam heating in every respect as desirable as that of hot water with the additional advantage of using smaller and less conspicuous radiators. It is a well-known fact that, as the atmospheric pressure is diminished, water will boil at a lower temperature, or, in other words, steam formed under such conditions would have a lower temperature than that formed under atmospheric pressure or one higher than atmospheric. It follows from this, then, that if the pressure in the apparatus used in steam heating can be varied to suit the requirements for a higher or a lower temperature, we can obtain in a steam heating system all the advantages pertaining to the present steam heating apparatus for cold weather and all

those which pertain to the hot water heating apparatus for mild weather. Such a system in order to be successful would be operated when the weather was cold at atmospheric pressure or slightly above, in which case the temperature of the steam might vary from 212 deg. to 220 deg. Fah. With a milder temperature pressures lower than atmospheric could be had provided the atmospheric pressure were nearly removed from the system, in which case we might have a boiling temperature and steam corresponding to the pressure which would vary from 150 deg. upward. In the Paul, in the Webster, and in the Johnson system the vacuum is produced by an independent air pump which removes mechanically all the air from the system. In the Morgan system and several similar ones the air is removed through a mercury trap by applying pressure for a short time to the entire system, arrangements being used which prevent the air from entering after it has once been driven out.

The first three systems referred to are evidently positive in their methods of operation and have proved to be eminently practicable and satisfactory in the heating of large buildings where power is available for removing the air. The Paul and also the Webster system is eminently suited for the use of exhaust steam since each provides practical means of circulating exhaust steam without the addition of back pressure on the engine. The use of exhaust steam for heating very frequently permits the saving of large quantities of coal, for the reason that exhaust steam which would otherwise be wasted may frequently be made to answer every requirement for heating, without the necessity of burning additional coal.

Large buildings which are constructed for office, dwelling or factory use usually contain steam plant for elevators or other power purposes. The exhaust steam from such a plant may frequently be sufficient for warming the building during the cold months and should if possible be utilized for that purpose. The Paul or the Webster systems can be installed without the expense of pipes of extra large size and in this way present an opportunity for great improvement in economy of fuel and in obtaining satisfactory results at much less cost than the older processes.

The vacuum systems without the use of power devices for removing the entrained air require excellent workmanship, but if properly installed are very satisfactory and will produce excellent results.

IMPROVED HOT WATER SYSTEMS.

Some attempts have been made to improve the heat carrying capacity of hot water by adding some substance which would decidedly raise the temperature of the boiling point. While such substances are known, the cost at the present time is too much to preclude any extensive commercial use. If we could raise the temperature of the boiling point of hot water without increasing the pressure, smaller radiators could be used and the objections to that system which now exist would be entirely removed.

Among the chemicals which are found well fitted for use in a hot water heating system, the chloride of calcium is perhaps the most prominent. Its expense would, however, prevent its extensive use. Common salt (chloride of sodium) is entirely unfitted for such a purpose for the reason that it rusts any iron material with which it comes in contact.

Hot water has also proved to be an admirable medium for use in connection with exhaust steam heating ; for such uses the hot water is circulated by a pump and is warmed by passing through a metallic heater so arranged that the exhaust steam comes in contact with the outer surface of a series of tubes and the water to be heated comes in contact with the inner surface. This system has been applied by Evans & Almirall of New York to the heating of large establishments and small towns and has proved admirably adapted for such purposes.

High temperature can be obtained in hot water heating systems by omitting any expansion tank and closing off any connection with the external air; such a system being known as a high pressure system. Such systems have been frequently installed but they are exceedingly dangerous, for the reason that the pressure increases as the temperature is raised, with the result that unless appliances for protecting the apparatus be installed and maintained in perfect order, a pressure sufficient to cause an explosion is likely to be produced. I cannot too strongly argue against the use of a pressure system of hot water heating for the reason that I think it is too dangerous to be seriously considered as a possible means of heating. Happily, I believe that this system has been pretty nearly abandoned both in Canada and in the United States, although I have recently heard that a system of hot water heating has been employed in Canada in which valves were used in the return pipes and located in such a manner that they could be closed during the operation of the heating system and in fact were so closed, the effect being to produce an over pressure and a serious explosion. This calls attention to the need in all hot water heating plants of constructing a circulating system so that it cannot possibly be obstructed either by accident or otherwise.

HEATING WITH HOT AIR.

Heating by hot air circulation or from a furnace which is located so that the air entering the building will pass over a heated surface and thence flow to the various rooms to be warmed, is well adapted for small buildings and gives in many cases excellent satisfaction. A system of furnace heating is not well adapted for carrying air long distances horizontally for the reason that the motive force which induces circulation is extremely small and liable to be overcome by adverse winds. Systems of furnace heating are frequently illy designed and poorly erected and as a result this method of heating has gone into considerable disrepute. In many cases extremely small furnaces have been used and in order to obtain sufficient heat, the heating surfaces have been kept extremely hot, thus overheating a limited amount of small air; this comes from an attempt to make small volume of air heated to an extremely high temperature do the work which should be done by a large volume heated to a moderately low temperature. A hot air furnace with ample heating surface in proportion to grate and installed with well proportioned hot air flues and with exhaust flues leading from each room into the attic can be made an extremely satisfactory and desirable method of warming a 10 or 12-roomed house. The furnace should be installed as closely as possible to the windward side of the house so as to utilize as far as possible the natural air circulation to aid in the distribution of heat ; it will generally be found much more satisfactory to co-operate with natural forces than to oppose them.

CONCLUSION.

In conclusion I would say that I have in this short address intended to call attention only to desirable and undesirable features in several of the most prominent systems of heating and ventilation. I have carefully avoided the discussion of detailed methods of design and the methods of proportioning the various parts of a heating and ventilating system for the reason that such methods are fully and exhaustively treated in well known text books on the subject and moreover could hardly be considered in the limited time at our command. I have myself endeavored to discuss the various questions of such design in a book on the subject of Heating and Ventilation, which I believe is accessible to all the members of your Association.

I am much pleased at the interest taken in this important branch of building construction by the members of your Association as I am thoroughly convinced that comfortable and healthy buildings are of equal importance with noble and artistic ones. There is no reason, however, why buildings should not possess all of these attributes and I am pleased to learn that the members of your Society have done so much towards solving the questions relating to the construction of both sanitary and beautiful structures. The architects of Ontario already occupy an honored position in the reputation of the world because of the artistic, noble and useful structures which they have produced; let us

hope they will not neglect to provide for all the elements which tend to comfort and healthy living, and that they will in the future as in the past continue to apply the most perfect systems in heating and ventilation.

DISCUSSION.

The President: Gentlemen, as I said before, we wish a full discussion on this paper of Prof. Carpenter's. We have with us this afternoon men who are quite capable of discussing and asking questions that may be pertinent to its subject; it is perhaps the most important subject we, as architects, have to deal with, for after all it matters not how beautifully we design a man's dining room or how artistically it is decorated and furnished, if he comes down in the morning and cannot get the room up above 60 degrees. Therefore I think Prof. Carpenter's paper is upon a subject we cannot pass lightly. As we have him with us it is possible he will forgive us for asking him a few questions on the subject.

Mr. S. G. Curry: Mr. President and Gentlemen, I have much pleasure in moving a vote of thanks to Prof. Carpenter for the very instructive paper he was kind enough to read to us. I do not know whether there is much room for discussion, because I agree with nearly everything he said. I think where there is a disagreement there is usually more discussion than where there is an agreement. There is only one point raised that I should be inclined to question, and that may be theoretically correct. It is with regard to the variation of hot water and steam surface. I find it is necessary to have 2 to 2½ times as much surface for steam in our climate; it may be due to the fact that I am in the habit of not using more than a pound pressure. In lieu of the gravity system a system arranged for working practically with little or no pressure, we have a system with little or no force in it running up four or five pounds of steam. Under these conditions possibly the proportions Prof. Carpenter states are practically correct, more theoretically correct than in fact, because like all these things it is a question how you consider the matter. I have been in the habit of figuring steam by the pound or less; and as far as I know I find my arrangement has answered every purpose satisfactorily. The address has been most satisfactory; in fact it has taken up all the different points in a thoroughly practical and sensible manner. It has gone over the history of heating pretty thoroughly and it is put in a very plain and comprehensive light. I do not know as I am in a position to do any criticising. As I said before, I agree with nearly everything that has been said, and I wish to compliment the Professor on his paper being most thorough in every point, and satisfactory; and I am quite satisfied it will be of great benefit to the members of the Association.

Mr. Burke: I have very much pleasure in seconding Mr. Curry's motion. I must express my surprise at the improvement in heating that is displayed in the "vacuum" system; the small water power is certainly astonishing compared with the amount of power required where they are depending on pressure to force the heat through the pipes. I have a system today in use where it is almost ridiculous to see the amount of water power that is used for the large quantity of surface to be heated; and yet the building is being heated. In regard to the exhausts I did not understand whether those were exhausts which where taken back to the furnace or taken back to the outside. I had a little experience in my own house with regard to the exhausts; I could not imagine why one of the flues would not heat and I went to the one built connected with the chimney and I found a great amount of cold air coming into the flue and passing from that down to the furnace, making it impossible to heat the room.

The President: I see we have several well known representatives of the trade here, and some of them may have had practical experience in those systems. Can we not hear from one of them?

Mr. Purdy: Mr. Gurney, Mr. Mansell or Mr. Armstrong.

Mr. Armstrong: I have had no practical experience in the use of any vacuum system, but I am interested in the description of the Morgan system, and I would like to ask what is the height of the column of mercury that they employ. I also notice he takes the air pipes and returns them to the boilers. I am very much interested in that, and if Professor Carpenter will give us that information I am sure every member would be delighted to hear him. Another point, the proportion of 1 to ⅔, I would like to ask if that is hot water at 212 degrees and steam at 212?

Professor Carpenter: In regard to the question asked by Mr. Armstrong, first, in respect to the apportioning of the radiating surface of hot water and steam, it is rather interesting in the way it came out. I figured it out on a theoretical basis that the proportion ought to be about 100 to 164; and the American Society of Boiler Makers, from an entirely different system of figuring, concluded that 166 would be the equivalent of 100 of steam. I got at it in an entirely different way from that but the results were the same I think from a theoretical and practical standpoint. We are now putting in radiators in that proportion, that is, giving the one and two-thirds square foot of hot water radiators where we put in one of steam. The whole thing depends on the temperature you run your hot water radiator at. This calculation is based on hot water about 180, as you will find if you calculate it through. If you run them at a lower temperature the radiators would have to be larger. That has got to be an almost standard practice; it was adopted almost unanimously after a long discussion by the American Boiler Makers; I was present and took part in the discussion at the meeting at which they adopted it. Regarding exhaust flues in the hot air furnace. I had in mind what I have often done in the hot air systems, that is, carrying exhaust flues up into the attic, not putting them outside because that leaves them in a position by which we can draw the cold air down into the room. But I have found in nearly every case that if these flues are simply carried to the attic they are certain to keep the system in equilibrium without bringing in cold air; but the hot air system is subject to vagaries; one sometimes finds the hot air going out through the cold air box, and the cold air coming out through the warm air flues.

Mr. Armstrong: I would like to know if the temperature the steam gets to at 120 is equal to the steam raised to 212 degrees in the vacuum? I understood that, you raise some hot water at a temperature of 120 degrees in the vacuum system. I would like to know if the steam is the same temperature as that raised from hot water at 212 degrees.

Prof. Carpenter: That depends. Steam is at an absolute pressure of two pounds per square inch. The atmosphere gives us fifteen pounds per square inch; if you pump up thirteen pounds that water will boil at 126 degrees; the steam would be abont that temperature 120 degrees; with the whole atmospheric pressure of 14 2/16 pounds steam is formed at 212 degrees. Steam at two pounds pressure would be formed at a temperature of 216 degrees. So that you see if we can reduce the pressure we can get almost any temperature we desire with the steam. And that was the intention with these systems.

Mr. Gurney: Do you consider the system of hot water heating, where the water is super-heated under pressure, getting the water so much hotter, an economical way of heating it?

Prof. Carpenter: The pressure system of hot water heating was given up because it was believed to be dangerous. I have never felt that it was safe; there are so many things which might happen, especially when you consider how the water is managed in the ordinary domestic heating. It seems to me it is almost suicidal on the part of people to use it; and for that reason I have never felt safe to recommend it. I would recommend it if we could raise the boiling point of water without increasing the pressure, by putting in glycerine or something of that kind: but the objection to that is the expense.

Mr. Gurney: In using glycerine is the circulation as perfect as without it?

Prof. Carpenter: Yes, it is perfect. We have been

conducting experiments with glycerine, and it does very nicely.

Mr. Gurney : May I ask what percentage if calcium chloride would be required ?

Prof. Carpenter : I could not tell you that exactly, but it is a two-thirds diluted solution. Practically that won't do because it acts very actively upon the iron, rusts it. The chloride calcium does very well, but we found it damaged brass very slightly. Glycerine is the best ; it don't attack any of the metals and gives practically exce lent results ; but it costs too much money.

Mr. Mansell : Is it possible to make any attachment to a hot water system to put more humidity in the atmosphere or in the air of the room. We understand that a certain amount of moisture produced the requirements, in the temperature, in the atmosphere. Is it possible to make any artificial attachment to a hot water system to give us a proper degree of humidity in the air

Prof. Carpenter : Perhaps I am not well prepared to answer that question, but I do know that an article of that kind has been put on the market by the Johnson Electric Company people, who furnished the automatic controlling device for regulating temperature, and it is claimed by them to operate very successfully. But I have had practically no experience with it. It consists of a device which is operated by a cat-gut which is very susceptible to a change in the humidity of the room ; it will shrink very quickly with the dry air, and stretch with wet and let out steam or water until the cat-gut goes back to its proper form. That is the principle of the device, and it is claimed to work very perfectly, but I am not prepared to say how much of a success it is practically.

Mr. Gurney : There has been a radiator invented by one of the Ontario Society of Architects in which the top portion holds water, and it is evaporated by a heating device inside but it is not controlled in any way that I know of.

Mr. Mansell : How do you fix the radiating surface ?

Prof. Carpenter : The method of calculating the radiating surface there is a formula that has been worked up from some experiments which I think is in this form. (Writes on blackboard)

$$\frac{\frac{70}{280}}{114} \qquad \left(B \times \tfrac{1}{4} W \times \frac{NC}{50}\right)$$

$$100 = 1$$
$$166 = 1\tfrac{2}{3}$$
$$\frac{25}{40}$$

The radiating surface depends on three things, the amount of glass exposure and wall exposure and the amount of cubic feet of air which is heated. This formula has proved to be very serviceable and practicable. The coefficient which we have put down at ¼ is subject to change in different climates. In that formula the coefficient of ¼ gives very satisfactory results in perhaps New York; it is not enough for Massachusetts ; it should be about 15 per cent. more, and it should perhaps be about 10 per cent. more for Detroit. I presume for this place it should be something like 20 per cent. more. The formula is worked up on the principle that the difference in the degree of temperature between the inside and the outside air is 70 ; I think here it might run to 80. The difference between 70 and 80 would in this particular case make a difference of about 10 per cent. The reason it makes a difference of 10 per cent. is, in mathematics, you have 70 divided by 250, and it would be changed to 80 divided by 250; so that something like 10 to 15 per cent. more would probably be required here than with us because our extreme we usually consider zero; but we have colder sometimes than that; last week it was 17 below zero.

Mr. Armstrong : Taken from steam at 230 degrees and a factor of ¼ would it make any material difference whether it was in New York or Toronto if you took an outside temperature at zero and 70 degrees inside?

Prof. Carpenter : No. If you run your steam up two or three pounds that would compensate for the whole difference and then you could get along with that formula ; I don't see why in extremely cold weather people would not be willing to carry alitt[illegible] steam provided they did not run it up more than three, four or five pounds.

Mr. Denison : They do not like it above one pound.

Mr. Armstrong : It is not a formula for the first floor alone. Would you change it for the second floor?

Prof. Carpenter : Yes, in this formula I have here it was for the different floors and the hall; for instance for the hall and the first floor we have always taken "N" as three ; on the first floor rooms and other than the hall "N" as two ; and on the upper story rooms "N" as one ; the rule being the N represents the number of changes which would take place every hour, which is premising, but it appears to act pretty closely with residence practice. I like to have a hall very well warmed and this formula throws in each hall a good amount of radiating surface.

Mr. Helliwell : What are the quantities for N and C in the formula ?

Prof. Carpenter : C is the cubic contents of the room. N is supposed to be the number of changes of air which occur in the room in an hour. It would be scientifically correct if N were positively known.

Mr. Helliwell : There is one other point I would like to get some information on and that is the efficiency of running cold water through coils with the idea of cooling the air in the summer time with the use of the fan system.

Prof. Carpenter : The converse question of heating is one which has cost a good many people a good deal of trouble. It is perfectly feasible to cool air by passing it over a cold surface in the summer time. For instance, passing cold water through a coil of pipe and then blowing the air over it. That has been tried and been done and is being done in a number of New York theatres during the hot season. The first time the practice was undertaken I think quite a serious mistake was made, that of cooling the room too much. It has been found that it is not safe to lower the temperature lower than the air outside only a few degrees, possibly not more than five or six degrees, because it the air be cooled too much people who go in get chilled in a short time and the effect on the system is dangerous. It is easy to cool the air but it is not safe, for people going into a cool room from the outside are liable to be chilled, consequently this system has not found the favor that was expected, that is, it is not safe to cool the room but very little. If you have 100 degrees outside they have to keep a pretty high temperature inside. If you went went from 100 degrees to 90 degrees inside it might in a little while become chilly. The results have not been as satisfactory as they were expected.

Mr. Burke : Is the humidity in the building an object to a great extent in the fan system ?

Prof. Carpenter : In most of the systems where the system is in charge of a janitor—some of the large systems—they require a janitor to take the humidity by means of a wet and dry bulb thermometer, but in a good many of them they don't ; although in the last few years there has been a decided tendency to look to the moisture. The whole thing is the supply of the moisture ; it has been brought out more possibly during the last few years than before.

Mr. Burke : Has not it been done automatically ?

Prof. Carpenter : Only to a limited extent.

Moved by Mr. Curry, seconded by Mr. Burke, that the thanks of this Association be tendered to Professor Carpenter for his very interesting paper and his kindness in answering the questions asked him in reference thereto. Carried.

The President : I do not know whether you customarily find such an inquisitive audience but certainly the questions and answers have been of the greatest service to us.

Prof. Carpenter : It gives me the greatest pleasure

to give any information which I happen to have which you do not. I am also getting a great deal of information from you and thank you very much for your expression in your vote of thanks.

About the system I would put in I would say that I have never been tied down to any particular system. I have frequently installed hot water systems and then steam systems and there would be perhaps no very good reason except I find people prefer one or the other and usually they wanted a system particularly bad. In that case I have had no special reason to recommmend one or the other. I was thinking this afternoon of what I considered the advantages and disadvantages of each system; as to its advantages and then as to its disadvantages I see no reason why we should not be prepared to supply anything that is required especially if we give the people such information as we have on the subject. I have favored steam heating perhaps more than hot water simply for the reason that our steam fitters are not very good workmen ; they are getting much better however and during the last few years the objections we used to find in our hot water jobs have pretty nearly disappeared. About eight or ten years ago it was almost impossible to get a hot water job that worked perfectly. The pipes would not be well put up, not aligned nicely. The pipes would not be rimed ; but that was due to the carelessness of the workmen. But now we are getting better work and we can put in every kind of system. In large buildings, where it is possible, I believe in the vacuum such as the Paul & Webster people put on. I think it pays to put them on because it adds nothing to the first cost. Your circulating pipes can be kept smaller to pay any extra cost due to putting in their system, so that the owner will have no extra charge and he will have a system that is satisfactory. In small buildings or residences I prefer the Morgan system, although I am not prepared to say I would recommend that very universally ; it might not prove to be very good. But from what I have lately seen in it I think ti is a very excellent system. I stand without any prejudice in the matter.

Mr. Gurney : Which do you consider the more satisfactory, the one or two pipe system in regard to operation and economyr ?

Prof. Carpente : That seems to be a question of locality. The steam fitters in New York build a two pipe system ; they do not know the one pipe system ; they do not believe it will work. On the other hand the steam fitters of Chicago don't know anything about the two pipe system ; and there is the same prejudice against it; they do not think it will work; as you come out of New York State and Boston you won't find anything but the one pipe system used. It must be a matter of education with the steam fitters. The New York steam fitters tell me it is practically impossible to put up a one pipe system ; they will not put it up, their men will beat them ; and as a rule they do not try to put it up. So far as economy and efficiency is concerned I do not think there is any difference one is as good as the other, both work perfectly ; the one pipe system it seems to me is the only one that ought to exist because there is no use having two pipes when one will to the business.

THE O. A. A. EXHIBITION.

The president and office bearers of the O.A.A. are to be heartily congratulated on the interesting exhibition of architectural drawings and photographs which they were able to get together for the annual convention. The exhibits fall under three heads : Domestic Work, City Buildings, and Decoration. It was a rather noticeable point about the exhibition that there was practically no churchwork. By far the best and most interesting exhibits were of a domestic character—for the most part simple work in brick and stone and shingle. There was a general tendency in cottage buildings to use too many materials and textures for the size of the job to carry, and in some cases a rather strained delight in clapping on colonial adjuncts ; but, laying carping criticism aside, what one can appreciate in the Toronto domestic work is the sincere attempt to solve the problem of building not wholly uninteresting houses which shall in their main characteristics evince as good an English pedigree as that of the people who build them. It is a little surprising not to find the sterner traditions of Scottish domestic work more in evidence—a touch of the severity and restraint which reigned north of the Tweed till a century ago would do no harm in such a suburb as Rosedale. Where so much that was really charming was exhibited it is almost invidious to mention names. The mullioned-windowed house at Rosedale for Mr. Baillie by Messrs. Spoatt & Rolf cannot be passed by, however ; it is a beautiful and scholarly piece of work of very English character. Mr. Gouinlock's design for a straggling cottage country club at Lambton, while striking a more purely Canadian note, is equally charming. We trust that the virulent green shingles of which we see too much was not here proposed to be used. The drawing did not make this point very clear. Messrs. Chadwick & Beckett show a more distinctly American influence in their exhibits which are none the less charming on that account. Both Mr. Gemmel and Mr. Baker evince a prediliction for English work in two very pleasing drawings at the platform end of the long room, while the photographs contributed by Messrs. Burke & Horwood, Messrs. Symons & Rae and Messrs. Gordon & Helliwell, show us much careful and thoughtful work, thoroughly modern, yet happily not tainted by the virulence of the "Art Nouveau' movement.

Among the city buildings there are quite a number of examples of that modern deformity, the building with its foundation at the first floor level. When will the self respect of architects and the taste of tradesmen combine to stop the silly practice of hoisting five hundred tons of piers and cornices on the edge of a plate glass window 100 feet wide ? When two tiny piers are left at each end of the site this anomaly of design to which steel construction has lent itself is only made the more apparent.

In the series of elevations in competition for the Metropolitan Bank at Montreal we have an interesting contribution to the narrow street front problem. It is the treatment of the lowest story that has given most trouble. Messrs. Darling & Pearson have certainly struck on the happiest arrangement. We have large city buildings illustrated by beautiful wash drawings from this firm, and also from Messrs. Sproatt & Rolph. Both evince a thoroughly sound type of Franco-American architecture, such as is usually found in the better class of sky-scraper ; both evince the drawbacks inherent in this type of building. A comparison is made none the easier by the fact that the illustrations are from the same hand and about as good as wash drawings can be. When architects begin to exhibit their working drawings instead of special productions criticism will become easier and our art will not be a sufferer.

In the decorative work of Mr. Challener there is much lyrical genius for colour and a true feeling for drawing. Decoration, however, is an epic art and requires a bigger, broader kind of design and a simpler, grander scale of colour than is known to that school which finds its highest sphere in the decoration of the ceilings of Paris cafes. Mr. Challener is yet young and the work of the great men is still with us to study. In these two facts there may possibly lurk a great deal that concerns the future of native Canadian decorative art.

Mr. Reid shows some less ambitious decorative schemes and in a tenderer key, but, nevertheless, broad in conception and execution. There is some dainty illuminated work by Mr. A. H. Howard—in this field colour cannot sing too clearly ; to the illuminator it is allowed to rival the peacock's necks with blues and greens ; the poppy's red, the rainbow's graded hues ; the irridescence of the pearl and beads of burnished gold are his to play with.

PERCY E. NOBBS.

THE COLORED INTERIOR DECORATION OF ARCHITECTURE.*

When so large a subject has to be dealt with in so short a time, it is necessary to select some one section or principle to which particular attention may be called, and in looking round to make such selection I find one upon which I have often laid stress before, and which cannot be too often insisted on with regard to decoration. I mean its subservient relation to architecture; its duty of respect to the architecture it is to adorn.

Let us for a time put aside the average dwelling room with no features that can be classed as architecture. Color can do much for it—can give it character, can give it proportion, and can make it lovely or unlovely; but the result after all is a matter which concerns only the owner and the decorator. They can try what experiments they are inclined to, or what fads they fancy, and they do no man wrong. If the result pleases their friends, they have their reward, and if it does not, they will be satisfied that this is due to want of culture in their friends.

But it is quite another matter if the building under treatment has other than domestic functions, or has received from its author some definite architectural expression; that is to say, bears some stamp of another man's thought.

When this is the case, it becomes the decorator's business to study that evidence of thought, and to endeavor to enhance its value. In pursuit of this intention, he has first to try to ascertain what lines or what features are really of the first importance in expressing structure and proportion. If he can find these, he must never lose sight of them, for these are the features or lines with which nothing else must interfere.

However varied or however rich the decorative detail of the whole may be, the final result of colored decoration of architecture should be lucidity of expression. And this is only to be obtained by allowing the due proportion of expression to each feature which has a place in the ideal scheme of structure.

If such expression is really in due proportion, repose —that great element of beauty in all art, but most of all in architecture—is produced. For what is it that produces "repose" in art? It is the immediate satisfying of the mind's instinctive search for something; and in architecture that something is stability. Now, this stability which the eye and mind demand is not one of which scientific or practical evidence need be forthcoming. It is that of which an instantaneous conviction is borne to the mind by the continuity of suggested lines of strength in reasonable proportion to each other. And it is these lines of suggested strength which color may do so much to explain or confuse. Nor is the explanation altogether so simple a matter. It is as harmful to over-accentuate any of them as to confuse them. The expression of each part must be relative. To exceed the due proportion of expression in any part is to disturb the balance. Blatant expression in color is like shouting one's own language in the ear of a foreigner; it does not make things clear, and probably gives offence.

Another point which it is desirable to mention, because it is the subject of frequent misconception, is that lucidity of expression does not depend on the use or the use or omission of detail. The most elaborate and delicate detail is compatible with perfect lucidity.

The one necessary thing in using ornamental detail is to take care that it does not interfere with the main science. Used with proper skill and knowledge, it should be able to assist materially in its development. On the one hand, it should assist to explain surface or to accentuate line; on the other it is invaluable as a means of lowering tone and softening effect, without sacrificing purity of the individual colors. Further, it facilitates harmony by giving the opportunity of small "recalls" of colour—of importing, as it were, fragments of one colour into the field of another—one of the most essential conditions of complete success in harmony. This should be carefully noticed by students in examining the pictures of the best masters.

I have said just now that it is the first function of color, when used in architecture to assist in producing that "repose" which results from an instantaneous impression of stability. This means that the eye must be encouraged to recognize at a glance such features and proportions as indicate or suggest well balanced structures, whether that be expressed in the architecture or not; for it must and in fact does, often happen that structure is not outwardly expressed—at any rate not to the extent that allows instantaneous conviction of its sufficiency. A flat ceiling is one example. In such cases color steps in and suggests constructive lines of some sort, which, though they have possibly no relation to the actual invisible structure, suffice to satisfy the eye in a moment as to the balance and stability of the surface on which it must otherwise have hesitated in doubt. Moreover lines of some kind are indispensable to assist the eye and mind to travel over the surface of the building; and whether by moulding or by color, it is the disposition of these lines upon which depends the impression of "repose." If simple and suggesting the relation of one part to another, the eye grasps the meaning quickly and is at rest. But if the lines expressed (whether by mouldings or colors) are inconsequent, purposeless and without proportion, the eye becomes puzzled, restless and dissatisfied. The eye demands a clear path, not a broken wilderness.

To touch on another branch of decoration, and a most important one, the use of pictorial art, in connection with architecture. We are accustomed to hear the most transcendental talk over the idealism or symbolism of the subjects to be painted in this or that building. I am far from under-rating the value of this quality of art. What I want to point out is that it is the building as a whole, if it be a worthy building, which first has to be considered; and that is the form, the tone, and the treatment or style that affect the building, not the "subject". For the harmony of the building it would not matter a jot whether the subject were "Cupid and Psyche" or "Moses in the Bulrushes." But it may ruin the whole effect, if the picture is in a badly proportioned panel, painted in too cold a key or executed in a style too crude or too complicated for its surroundings. Not one in fifty of even very able English painters has been trained to look at art from this side—or to consider the necessity of keeping the whole tone of his own work in relation to the decorative result in the whole building. Look at the paintings in the Royal Exchange. Not one, or perhaps but one, is in tone with its surroundings; not any two in tone with each

*A paper read before the Architectural Association in London.

other. I regret this the more because I first suggested in a report to the Gresham Committee, dated Oct. 9, 1890, that these panels should be painted historically.

Undoubtedly painting in the studio instead of on the wall itself tends to enlarge the risk of want of harmony with the whole surroundings, though it certainly presents some advantages. To take one disadvantage alone, the difference of light. This is almost certain to be different in degree and quality, and more than likely to differ in direction. This being the case, there is only too much probability of a general difference of tone between the picture and its surroundings when finally brought together. Even the design or cartoon of the picture—color apart—will often need some change, when tried on the spot, from what seemed satisfactory when viewed in the studio.

The colored bands or margins which in colored decoration are so valuable, are more than ever useful when pictorial treatment is adopted in the panels. They afford the means of connecting the more forcible coloring of the picture panels with the rest of the work, and so preventing them from appearing as detached patches. Apart from this function, they greatly facilitate and direct the passage of the spectator's eye over the whole work and aid that prompt grasp of form and surface which I have already spoken of as inducing the sense of repose.

The matters which I have mentioned are practically "axioms" which are absolutely independent of style or fashion. The building may be ecclesiastical or secular, classic or gothic, simple or elaborate, it matters not.

The general principles which should guide decoration are true for all. And it is this main point which it seems useful now to insist upon, because we find so many persons ready to substitute particular arrangements of color or pattern for any real knowledge of art or principles.

Be sure of this, that just as sound principles are independent of style or fashion, of any special harmonies of color, or of any character of design, so no design, no arrangement of color, no excellence of skill can really enhance the value of the architect's work if the decorator does not carefully think out and follow those immutable principles which, whilst they allow of an infinite variety of treatment, have for their base the expression of the repose and stability of the architecture.

J. D. CRACE.

SAND FOR BUILDING.

TORONTO, December 21st, 1903.

To the Editor of the CANADIAN ARCHITECT AND BUILDER.

SIR,—In your editorial notes, November issue, you state that "a Company who are carrying out dredging contracts in Toronto are sending out circulars re Water Washed Sand (whatever that may mean) and are asking a higher price for their material, which is a waste product, etc.

As there are three misstatements of facts in your article and as the conclusions you draw are based on these misstatements we wish to have them corrected.

1st.—Our sand is not the waste product of a dredging contract but we have spent $20,000 to build special plant, including a twin screw steam barge to bring our material to Toronto docks and it is dredged solely for the purpose of the building and contracting trade.

2.—A higher price is not asked "for this material with the high sounding name." Experiments show that 1% of clay or loam in sand decreases the strength of mortar or concrete made with it 10%, and as most pit sands have from 2% to 6% of clay, loam or vegetable matter in it, the value of the cement or lime is decreased accordingly. Our water washing consists of pumping two thousand gallons of water per minute and discharging it over and through the sand so that any loam, vegetable matter or clay is washed overboard and the pure, clean, waterwashed sand only is retained.

It is uniform in quality, the grains being graded from fine to coarse. Tests made at the City Hall, Toronto, shew that cement made with it in three months time is 57% stronger than pit sand. Toronto is the only city on the Great Lakes that has not been using dredged sand for from ten to fifteen years past. Nothing else is used in Chicago, Fort William, Port Arthur, the Canadian Soo, Detroit, Windsor, Toledo, Cleveland, Buffalo, Hamilton, Montreal, Kingston and Ottawa.

Toronto architects have complained for years about the poor quality of some sands that have been brought on work executed by them, but there being no fixed standard they found it hard to get just exactly what they required.

Last year we fixed a standard by washing out all fine material and screening out all coarse material so that we get an even quality of goods every day, pure and clean.

Architects and many builders have been quick to see the merits of our standard sand and our trade has increased 350% for 1903 over 1902 or from 6000 cubit yards in 1902 to over 25,000 cubic yards in 1903,

Trusting that you will give this letter equal prominence to the article containing the misstatements.

Yours sincerely,

SAND AND DREDGING, LIMITED.

FIREPROOFING METHODS.

"A lie which is all a lie may be met and fought with outright;
'But a lie which is part a truth is a harder matter to fight."

To the Editor of the CANADIAN ARCHITECT AND BUILDER.

SIR,—In your December issue appears a letter from Mr. F. W. Barrett, Agent of the Expanded Metal Company, in which he purposes to print cuts showing the effect of fires in buildings of terra cotta arches, and of buildings of concrete construction.

Your correspondent starts out on his crusade by referring to the fire in Pittsburg, Pa., of May 1st, 1897, and selects for his demonstration the Horne Department Store, while ignoring all reference to the Horne Office building adjoining; the floors of the former being of dense tiles, the latter of porous material.

He states :—"The fire burnt out the woodwork and contents but was NOT HOT enough to destroy the stone work on the front; it WAS HOT enough to destroy the terra cotta floors throughout a great part of the building" (the capitals are mine).

When one considers that the building in question wns a Department Store—6 stories and basement, filled with the usual stock of such stores, i.e., packing, crockery in crates, dry goods, etc., which were completely consumed; the intensity of the fire may readily be inferred.

In reply to your correspondent's assertion that the fire destroyed the terra cotta floors, I would refer him to the report of Mr. S. Albert Reed, manager of the New York Tariff Association, an authority, presumably unbiased; he says—"The collapse of the roof involved in more or less damage almost the entire half of the building east of the large wall"—"Now although FOUR-FIFTHS of the arches were standing after the fire, AND ONE COULD SAFELY WALK OVER THEM (if "Fireproof" of Chicago is right, it does not seem safe to do that on concrete floors even before a fire) there is nevertheless a damage throughout the building to the under side of these arches by the breaking and dropping out of the lower webs."

It has long been contended, that dense tile are not as good as tiles of porous material; and reference to the Horne Office building, wherein the floors were of the latter material and which came out with flying colours, again proves the claim good.

I await with interest Mr. Barrett's instances of concrete floors under fire: but in the meantime beg to call his attention to some very recent collapses of concrete floors, which probably deeming discretion the better part of valor, on being tested for strength, forthwith fell in, killing several workmen :—J. L. Mott Iron Works, Trenton, N. J., Ferro-Concrete, December 8th; Bellefield Apartments, Pittsburg, Expanded Metal, December 5th; Will & Bauman Building, Greenpoint, October, and several others as enumerated in the Fireproof Magazine.

Yours truly,

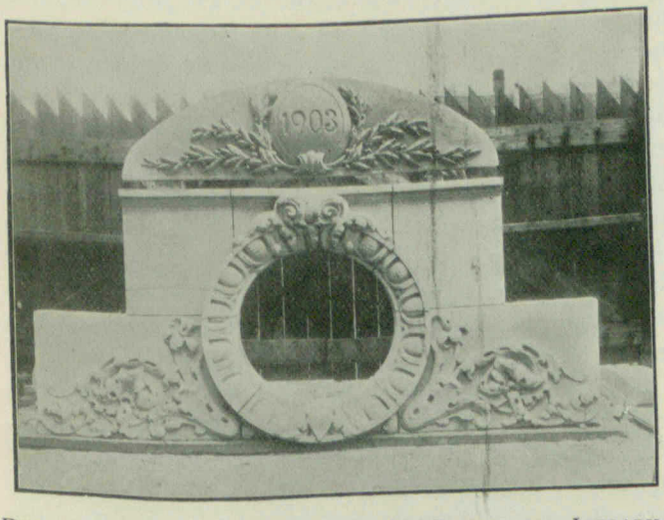
A. MULLER.

628 Carlton Ave., BROOKLYN, DEC. 29, 1903.

DECORATIVE CEMENT PRODUCTS.

By Charles D. Watson.*

In the history of the development and use of building material the nineteenth century might well be termed the experimental age of Portland cement, but the beginning of the twentieth will surely mark the age of cement construction. Bridges, foundations, pavements, viaducts, tunnels, breakwaters, piers, reservoirs and houses are now being built of cement



Details on Ivey Warehouse and St. Catharines Library.

and its rapid advancement bids fair to fulfill what once seemed a marvellous prediction that "the house of the future will be poured or moulded in forms and the average man will select his house from standard designs as he now selects his furniture." What has long been called the building material of the future has become the material of the present.

No small portion of this rapid development of uses of Portland cement for building has been the advancement made in the manufacture of plain and ornamental cement stone.

That stone was manufactured long before the records of history is shown by the discovery of artificial stone vessels in the ancient ruins of the prehistoric mound builders. Their stoneware is supposed to have been made by pulverizing lime rock which when moistened with water, was moulded into the desired shape, set in the sun and being continually sprinkled with water the chemical action took place, the vessel became hard and at last formed a stone which has stood the test of ages and remains to-day as a striking example of the durability of cement products.

We have plenty of evidence that the Romans knew the value of concrete and wherever they have employed it in building it has demonstrated its superiority over natural stone under similar conditions. The whole of the dome of the Pantheon with its 142 ft. span is of cement concrete. The inside lining of one of the Grecian temples is of cement concrete, while the facing was of stone ; the latter has long since given up its struggle with the elements, but the concrete which was intended to play the minor part stands as smooth and solid as when made. A Roman aqueduct lined with cement built in the first century has been preserved in perfect condition for the past twenty centuries.

We have reason to believe that even the pyramids which have so long stood as an example of the marvelous work of a race who could perform feats in engineering that no man is able to explain, are made merely of separate blocks of concrete.

From the fall of Rome until the dawn of the nineteenth century the use of cement was apparently little known except for cement mortars. With the discovery of Portland cement a material was again produced which made satisfactory concrete and from that time to the present day cement stone has made rapid progress, especially in Europe, where it has reached a high stage of perfection and takes high rank among the industries of England, Germany, France, and Belgium. In the year 1902 one firm alone in Germany manufactured $1,080,000 worth of cement products including plain and ornamental building stone, sewer pipe, statuary, park ornaments, etc. The company have four large plants and employ an average of 2,500 men per year. In many parts of England cement stone is extensively used and large plants are now engaged in its manufacture.

The use of cement stone in America has until recent years been less marked, due in great part to the abundance of other cheaper building material. The last decade has shown a remarkable advancement in the manufacture of stone. One of the oldest examples of this construction is the house of W. E. Ward at Port Chester, N. Y., built a quarter of a century ago and which stands in perfect preservation today. Perhaps the earliest work of any magnitude were the great hotels of

Warehouse, Wellington Street West, Toronto.

Florida and California and the Pompeiia at Saratoga, N. Y. Many difficulties were met in cement construction in its early stages through ignorance of the use of Portland cement and this class of construction gained for itself the name of being very unreliable. Continued experiments and improvements in methods have to a great extent offset this feeling until now it can safely be said to be a thoroughly established enterprise which is destined to work a revolution in building construction. The business has increased from a few isolated

*Chief Engineer Roman Stone Co., Limited, Toronto, Ont.

factories scattered about the country until now it is almost impossible to find a city of any considerable size without its cement stone factory. Some cities have a plant to every 40,000 inhabitants and judging by the present rate of increase cement stone factories will soon be as plentiful as brick yards.

All of the larger Canadian cities have artificial stone factories of some kind, but undoubtedly the largest and

CARNEGIE PUBLIC LIBRARY, GUELPH, ONT.—BUILT ENTIRELY OF ROMAN STONE.

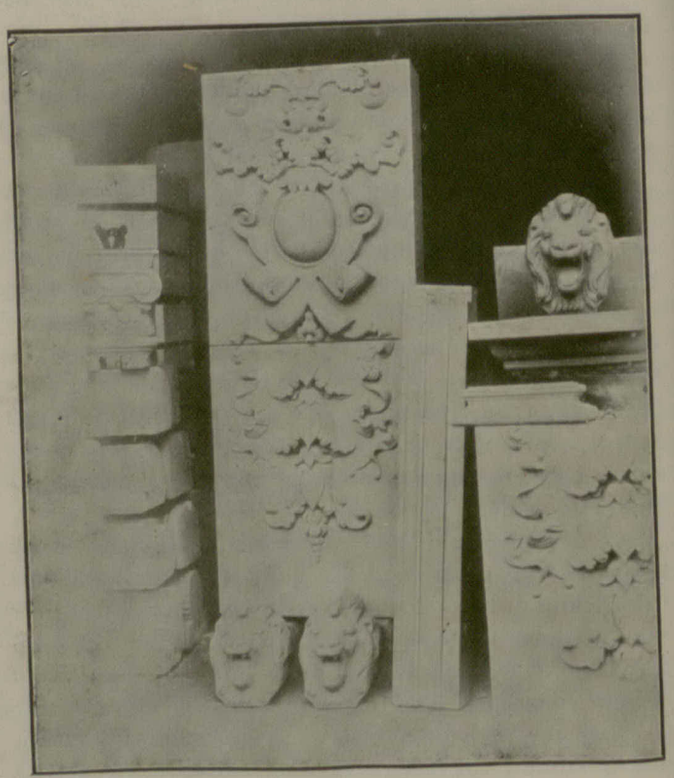
best equipped is that of the Roman Stone Co., of Toronto. This plant has been in operation for a little more than a year and has in that time turned out a considerable quantity of very creditable work. Their plant is a model of its kind being equipped with pattern shop machinery, stone crushers, grinders, and screens, dryer, mixer, traveling cranes, and hot air blast heating.

The company is manufacturing under the patents granted to C. W. Stevens for the cement stone known as Litholite. The patents are broad and cover the manufacture of cement stone by casting concrete in a sand or other absorbent mould. The patent is about five years old. The process while very simple gives the ideal conditions for making cement stone. The concrete mixture made of Portland cement and ground stone of many different sizes is poured in a semi-liquid condition into a sand mould exactly as melted iron is cast in a foundry. The patterns are made the exact shape, size, and finish of the stone required and moulded in the sand, no allowance for shrinkage being required. As soon as the concrete material comes in contact with the sand the water filters off, leaving the cement stone in plastic condition with just enough water to produce perfect crystallization. The process is quite similar to the method of preventing settlement in loose earth fills by puddling with excessive water. No amount of pressure or tamping by hand or machine can make a stone as compact and homogeneous. Proof of its great density is shown by its specific gravity which is about 90% of the stone of which it is made, the loss of 10% being in all probability due to the difference in weight of the cement and stone. The process bears a marked resemblance to the method by which nature has produced our best building stones, i.e. by the depositing of sand in water. Nature has cemented her stone by the action of heat and great pressure, but Portland cement accomplishes in a short time what requires ages by nature's method.

The great feature of the process is the absorption of the water by the sand which surrounds the cast. This sand retains the moisture and acts as a wet blanket to nourish and feed the cement with just sufficient water to produce perfect crystallization. The process produces a stone absolutely uniform in color where heretofore cement stones have always had the drawback of having a dark and spotted appearance of the surface when made in rigid moulds. Most cement stone has to be painted or coated to give it a suitable color for decorative purposes in high class work. The question of methods for obtaining presentable surfaces to concrete work has baffled the engineering profession for years—all cement washes or paints having long since been discarded as only temporary improvements. Stevens' process has solved the mystery and produces a stone so closely resembling nature's product as to deceive the experienced eye upon the closest examination. It enables one to reproduce any desired finish that can be obtained in fine cut stone and at considerable less expense. It has a much finer appearance than terra cotta, and unlike it or any other cement stone admits of fine hand carving ; being of so uniform a texture and without cleavage it is impossible to distinguish the hand worked from the cast faces.

The stone used by the Toronto company is nothing but the best selected building stone. For white stone Niagara lime-stone and pure white marble are used ; for gray, brown, red, and olive similar colored sand stones are used, thus avoiding the difficulty heretofore found in the fading of the colors used in making cement stone.

The stone upon the arrival at the plant is carefully inspected and all unsound material rejected ; if found to be dirty it is thoroughly washed and then dried in a large rotary drier. It then passes through the crusher



EXAMPLES OF ORNAMENT.

and grinder from which it is carried by the conveyor and elevator to the rotary screen on the second floor. This screen is provided with three different sizes of mesh which separates the crushed stone into three different sizes, each of which is deposited into an individual bin; these bins together with a cement bin are located on the first floor directly over the mixer. When making a

mix of cement and stone a definite amount is taken from each of these bins, the quantity depending upon the purpose for which the stone is intended to serve and governed by certain rules determined by continued and careful experiment to obtain the best results. This grading of the crushed stone is, beside the careful selection of the cement, one of the most important factors in the manufacture of stone. It has long been recognized that great care should be taken in this particular. Many concrete and cement stones are made by merely mixing a little sand and gravel or crushed stone with cement in certain proportions, no attention being paid to the size of the grains of the sand or gravel. Such work combined with lack of knowledge in selecting and

FACTORY OF ROMAN STONE COMPANY, LIMITED. TORONTO, ONT.

handling cement has caused cement products to be regarded with undue suspicion.

After the cement and stone have been thoroughly mixed dry in a mechanical concrete mixer the water is added, not by the usual method in mixing concrete, but water which is kept at a constant temperature and the quantity automatically measured. In this way absolutely uniform results are obtained.

The ingredients are then thoroughly mixed wet for five minutes and run off into the agitator or ladle. This agitator is a large tub or barrel fitted with spiral paddles which are continuously revolved to keep the mix uniform. The agitator is carried about the foundry by a travelling crane of which the plant has three all equipped with two ton triplex hoist. The cement mixture is poured into the moulds through a funnel and T pipe to keep it from cutting through the sand moulds. After the casts are made the stone is allowed to remain in the sand from three to four days when it is removed to the storage shed and carefully finished, all necessary precautions being taken to insure perfect results.

While the proper munipulation of the cement and careful observance of certain laws are necessary for producing the best product, yet by far the most important factor in manufacture is the selection of the proper cement. While nearly all architects and engineers realize the importance of proper testing, yet it does not seem to be universally known that a cement may satisfy one or several conditions yet fail in the special use for which it is intended; thus cement has been selected for use in making stone that stands the highest test and was universally recommended by professional men experienced in the handling of cement, yet imperfections have resulted that caused distrust on the part of the user and no end of annoyance to the manufacturer. It does not follow that any cement will give satisfaction for the manufacture of stone. However cement casts for building purposes have been manufactured in Europe for years and we find that these difficulties in manufacture have, by the aid and research due in a large part to the Association of Portland cement manufacturers, been successully overcome, where satisfaction is guaranteed and the industry can safely be said to have passed the experimental stage and stone is produced which in many ways excels the natural product.

The crushing strength of Roman Stone at the age of 6 months has been found to be from 2000 lbs. to 4000 lbs. per square inch depending upon the material used. All stone subject to tensile stress is carefully reinforced with steel. Stones as long as twenty feet have been made in one piece at the Roman Stone Company's plant and single piece columns are sold at a price little in excess of what the same would cost in wood.

The officers of the company are well known Toronto men who have been prominent in the promotion of some of Canada's most promising industries: Lt. Col. H.M. Pellatt is President, Hugh Blain, Vice-Pres; A. E. Ames and Col. James Mason are Directors with G. P. Ames as Manager.

—THE—

CANADIAN ARCHITECT AND BUILDER

A Monthly Journal of Modern Constructive Methods,

(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD).

PUBLISHED ON THE THIRD WEDNESDAY IN EACH MONTH IN THE INTEREST OF

ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS DECORATORS, BUILDERS, CONTRACTORS, MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.

The C. H. MORTIMER PUBLISHING CO. of Toronto, Limited.

Publishers,

Confederation Life Building, - TORONTO, CANADA.

Telephone Main, 2362.

Branch Offices:

IMPERIAL LIFE INSURANCE BUILDING, MONTREAL.
Bell Telephone 2299.

22 GREAT ST. HELEN'S, LONDON, E.C.

SUBSCRIPTIONS.

THE CANADIAN ARCHITECT AND BUILDER will be mailed to any address in Canada or the United States on the following terms: Architects' Edition, $3.00 per year; Regular Edition, $2.00 per year. The price to foreign subscribers is: Architects' Edition, 16 shillings; Regular Edition, 12 shillings. Subscriptions are payable in advance. The Journal will be discontinued at expiration of term paid for, if so stipulated by the subscriber; but where no such understanding exists, will be continued until instructions to discontinue are received and all arrears of subscription paid.

ADVERTISEMENTS.

Prices for advertisements will be sent promptly on application. Orders for advertisements should reach the office of publication not later than the 12th, and changes of advertisements not later than the 5th day of the month.

EDITOR'S ANNOUNCEMENTS.

Contributions of value to the persons in whose interest this journal is published are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

Subscribers who may change their address should give prompt notice of same. In doing so, give both old and new address. Notify the publishers of any irregularity in delivery.

ONTARIO ASSOCIATION OF ARCHITECTS.

OFFICERS FOR 1904.

PRESIDENT	JOHN GEMMELL,	Toronto
1ST VICE-PRESIDENT	J. W. SIDDALL,	,,
2ND VICE-PRESIDENT	A. R. DENISON,	,,
TREASURER	HENRY SIMPSON,	,,

COUNCIL:

JOHN GEMMELL	Toronto
HENRY SIMPSON	,,
J. W. SIDDALL	,,
W. R. GREGG	,,
S. G. CURRY	,,
JOHN E. BELCHER	Peterborough

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

OFFICERS FOR 1904.

PRESIDENT	W. E. DORAN, Montreal.
1ST VICE-PRESIDENT	J. P. OUELLET, Quebec.
2ND VICE-PRESIDENT	J. S. ARCHIBALD, Montreal.
SECRETARY	PROF. S. H. CAPPER, Montreal.
TREASURER	A. H. LAPIERRE, Montreal.

COUNCIL.

JOS. VENNE	Montreal.
H. STAVELY	Quebec.
A. RAZA	Montreal.
D. R. BROWN	Montreal.
J. W. CARMICHAEL	Montreal.
J. E. VANIER	Montreal.

AUDITORS—L. A. AMOS AND JOS. SAWYER.

TORONTO BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

JOSEPH RUSSELL, President.
R. G. KIRBY, 1st Vice-President.
JOHN HODGE, 2nd Vice-President.
DAVID WILLIAMS, Treasurer.
MESSRS. CLAY AND HOLMES, Auditors.
JOHN SCOTT.
MESSRS. NELSON WELLER. CRANG MARTIN SMALLWOOD. LOGAN.
JOHN M. GANDER, Representative on Technical School Board.
JAMES B. THOMSON, Representative on Exhibition Board.

LONDON BUILDERS' EXCHANGE

BOARD OF DIRECTORS:

J. C. Simpson, President.
JOHN NUTKINS, 1st Vice-President.
JOHN WHITTAKER, 2nd Vice-President.
GEO. S. GOULD, Secretary-Treasurer.
WM. TYTLER.
THOS. JONES.
ED. MARTYN.
GEO. YOUNG
S. STEVELY.

VANCOUVER BUILDERS' EXCHANGE.

BOARD OF DIRECTORS

E. COOK, President.
A. E. CARTER, Secretary.
H. A. BELL, Treasurer.
T. BRADLEY
C. P. SHINDLER
K. M. FRASER.
E. G. AYNES.
D. SAULT.

WINNIPEG MASTER CARPENTERS' ASSOCIATION

BOARD OF DIRECTORS

A. MACDONALD, President.
A. G. AKIN, 1st Vice-President.
A. SUTHERLAND, 2nd Vice-President.
A. MCCORMICK, Secretary.
J. G. LATIMER, Treasurer.

MASON BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

D. D. WOOD, President.
W. F. LEE, 2nd Vice-President.
EDWARD CASS, Treasurer.
D. T. JACKSON.
J. MALCOM.
A. N. MCCUTCHEON, 1st Vice-President.
A. T DAVIDSON, Secretary.
WILLIAM ALSIP.
ANGUS BROWN.

MONTREAL BUILDERS' EXCHANGE.

BOARD OF DIRECTORS:

C. T. WILLIAMS, President.
C.W. HUGHES, Vice-President.
G. J. SHEPARD, Secretary-Treasurer.
JOHN WIGHTON.
H. R. IVES.
JAMES PATON.
N. T. GAGNON.
JOSEPH LAMARCHE

CHAMBRE SYNDICATE DE LA CONSTRUCTION.

(French Builders' Exchange.)

8, St. James Street, Montreal.

BOARD OF DIRECTORS.

J. B. GRATTON, President.
G. MENARD, 1st Vice-President
T. CHAPENTIER, JR., 2nd Vice-President.
ALCIDE CHAUSSE Treasurer.
N. T. GAGNON, Secretary.
FELIX SAURAGEAU.
L. Z. MATHIEU.
H. CONTANT.
E. Z. COTE
LOUIS PAYETTE.

VICTORIA BUILDERS' EXCHANGE, VICTORIA, B. C.

BOARD OF DIRECTORS:

W. D. MCKILLICAN	Chairman
E. W. WHITTINGTON	Secretary
THOS. CATTERALL	Treasurer

NOTES.

We may well ponder over the fact says the London Builders Journal, that Sweden sends us yearly £300,000 worth of setts and kerbs, manufactured goods, duty free. We may well think over the significance of this, and bear in mind, as an example, that the Dartmoor quarries have lost a considerable portion of their trade in these setts and kerbs because Norwegian quarry-owners can pay their workmen less money and send their finished material into our ports without paying any duty on it.

THE LATE MR. J. F. PEACHY.

Mr. Peachy, who died at Quebec, his native city, on the 31st December last, aged 73, was first a pupil of the late P. Gauvreau, local Government Architect for many years, and then studied for some time under, and was partner of Mr. Chas. Baillarge, Architect.

During his professional career he erected, after its destruction by fire in 1882, the Parish Church of St. Jean Baptiste, of which Mr. Baillarge had fathered the first edition in 1854. Prof. Haire, of New York, considered that the interior of this edifice, due to its height and light and the elegance of its proportions, compared favourably with the New York churches.

Mr. Peachy was the architect of the RR. gentlemen of the Seminary of Quebec, whose chapel he re-built, after its destruction by fire, and also what is called "Le Grand Seminaire," uniting the old Seminary to the University Buildings, erected under Mr. Baillarge in 1854.

The subject of our notice also designed the new Cathedral and the Seminary buildings at Chicoutimi; the interior of the church of N. D. de Ste Anne de Beaupre; the church of N. D. de Lourdes at St. Sauveur, together with numerous buildings, including chambers, presbyteries, school houses, private residences, as well in many of the parishes of the Province of Quebec as throughout the city itself.

Mr. Peachy was, for some 20 consecutive years, a representative of St. John's Ward, Quebec, in the City Council, becoming in time president of the road and then of the Water Works Committees.

He was one of the church wardens for the Parish of St. Jean Baptiste; for some years the president of the school of Arts and Trades, which had its rooms in a very nice building, designed by him, on St. Joachim St. He was a past president of the Province of Quebec Association of Architects.

The late Mr. Peachy was, in every respect, a man of ability and unimpeachable charatcer.

BY THE WAY.

I am pleased to note the protest entered by the Builders' Journal of Baltimore against the proposal to build in New York a six-storey school with accommodation for 4,500 pupils. Emphasis is laid on the danger to which the children assembled in such large numbers would be exposed from fire and disease.

× × ×

The New York Electrical Review has a word to say to architects and builders on the desirability of providing an abundance of outlets when wiring a house for electric light. Dark corners should be avoided, and provision made to light when required every part of the house to which access may be desired without the necessity of resorting to matches and kerosene lamps.

× × ×

The story is told of an Australian missionary in China who was endeavoring to convert one of the natives. "Suppose me Christian, me go to heaven?" remarked Ah Sin. "Yes," replied the missionary. "All right," retorted the heathen, "but what for you no let Chinaman into Australia, when you let him into heaven?" "Ah," said the missionary with fervor, "there's no labor party in heaven."

One brick never built a house, neither will one ad build a business.

The famous leaning tower has changed owners. It seems there was a lien on it.—Toronto World.

The sudden death of Mr. Samuel Coulson, general manager for Messrs. H. R. Ives & Co., Montreal, has occasioned wide spread regret. Mr. Coulson was suddenly stricken by heart failure while visiting at the home of his brother in Toronto.

LEGAL.

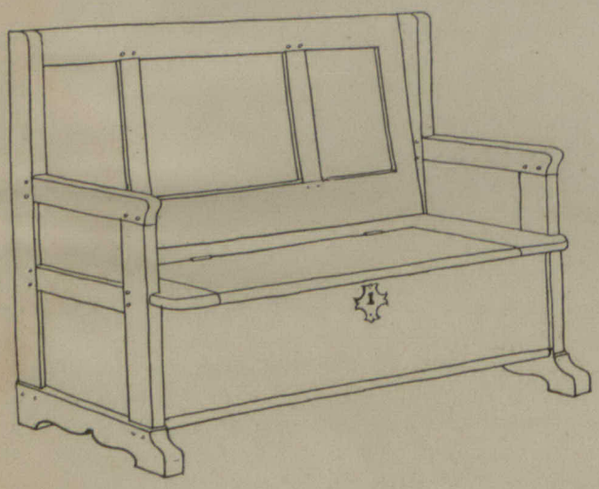
Mr. Legriel, a French architect, being dissatisfied with the manner in which one of his buildings was reproduced from a photograph in a scientific journal, called La Nature, instituted an action, charging that the reproduction was a forgery. The court dismissed the case. It was laid down by the judge that everybody had the right to reproduce a public way, and consequently the houses which were to be found alongside; moreover, a critic of art had the right to give evidence in his article by views which became graphic information and corresponded with literary quotation. Whenever there was an abuse the judge could intervene if called on.

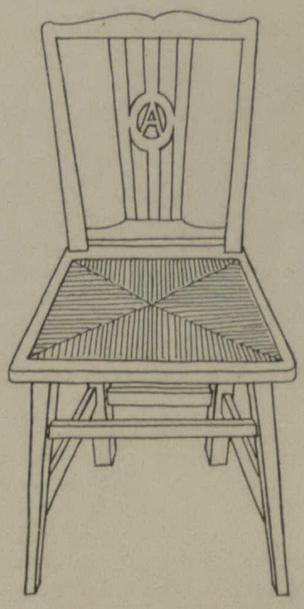
NOTES.

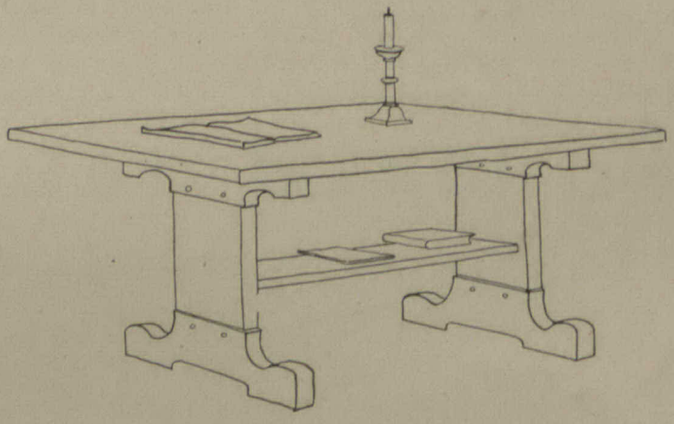
Mr. William Fraser, well known to Toronto architects as a quantity surveyor, has been appointed the representative in Toronto of the Gilmour Door Company, Limited, of Trenton, with office at 49 Yonge Street Arcade.

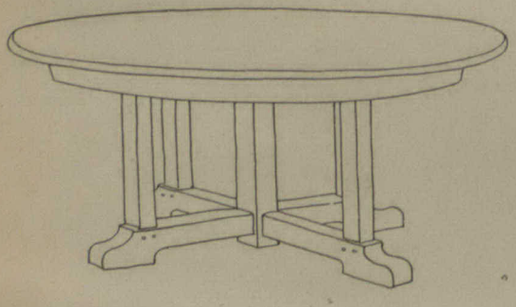
The most beautiful colored sheet-glass is made by the French and Belgian manufacturers, such as sheets composed of two layers or coats of glass, white and colored, and in some instances sheets made of white glass, and covered over with as many as four different layers of colored glass, put on very thin, and equal in thickness on the whole of the surface. For the coloration of this glass, as for all colored glass in general, the oxides of the different metals are used. For blues the oxide cobalt, or zaffer. For the different shades of blue, different proportions of cobalt. For a very light shade of blue for spectacles, a mixture of cobalt and red oxide of iron. London smoke is obtained by a mixture of the oxides of copper, iron, and manganese. A black is produced by increasing the proportions of these three oxides. Purple glass has for coloring element oxide of manganese. A glass so colored and made with soda gives a purple shade, edging on the red, while a potash glass will give a bluish purple. This color is made of a deeper blue by the addition of cobalt. The brown purple is made with a mixture of oxide of manganese and oxide of iron. The purple of the ancients can be perfectly imitated with a mixture of oxide of manganese and red oxide of iron.

FVRNITVRE
FOR
A COVNTRY HOUSE

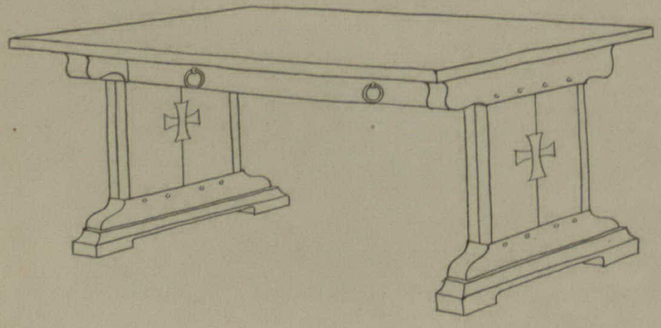




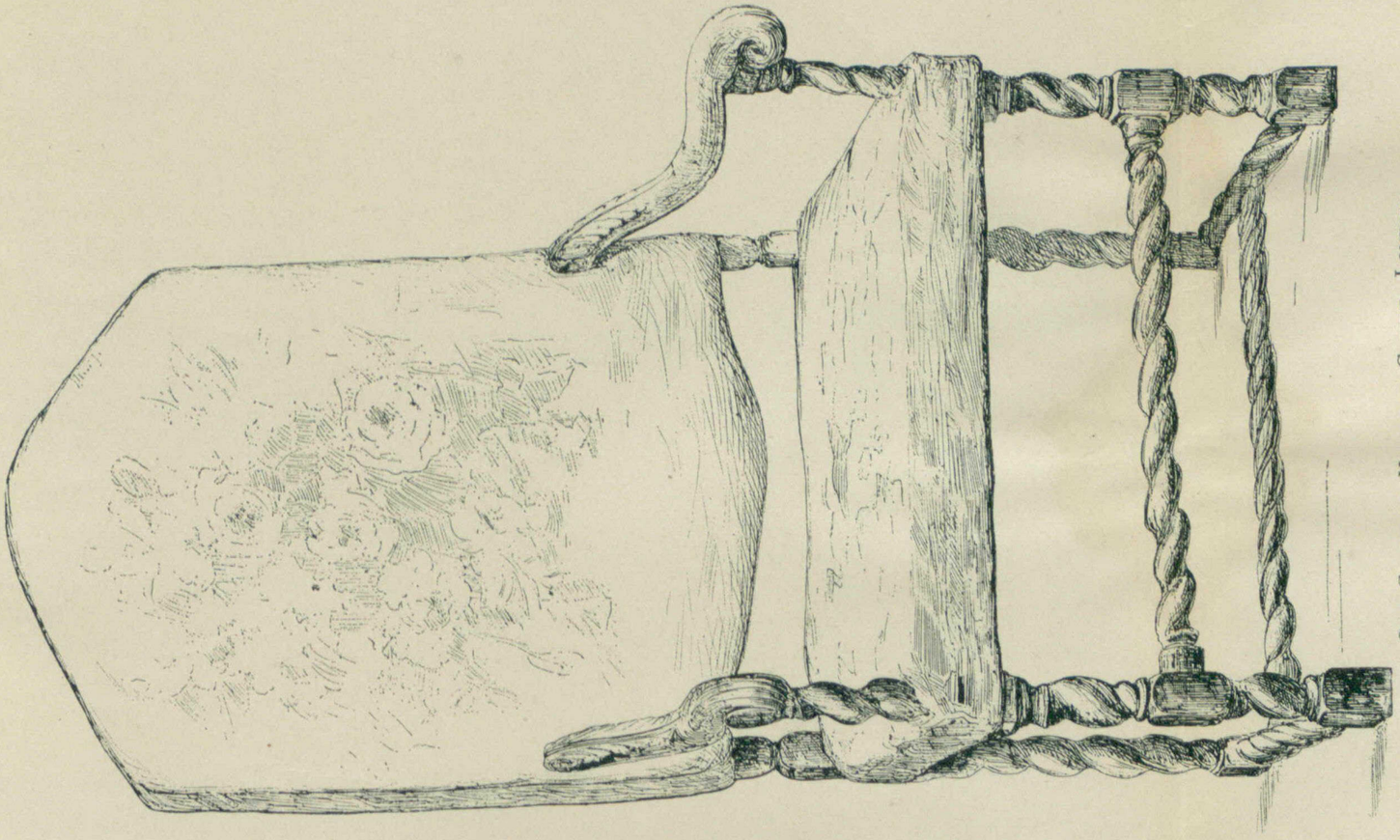




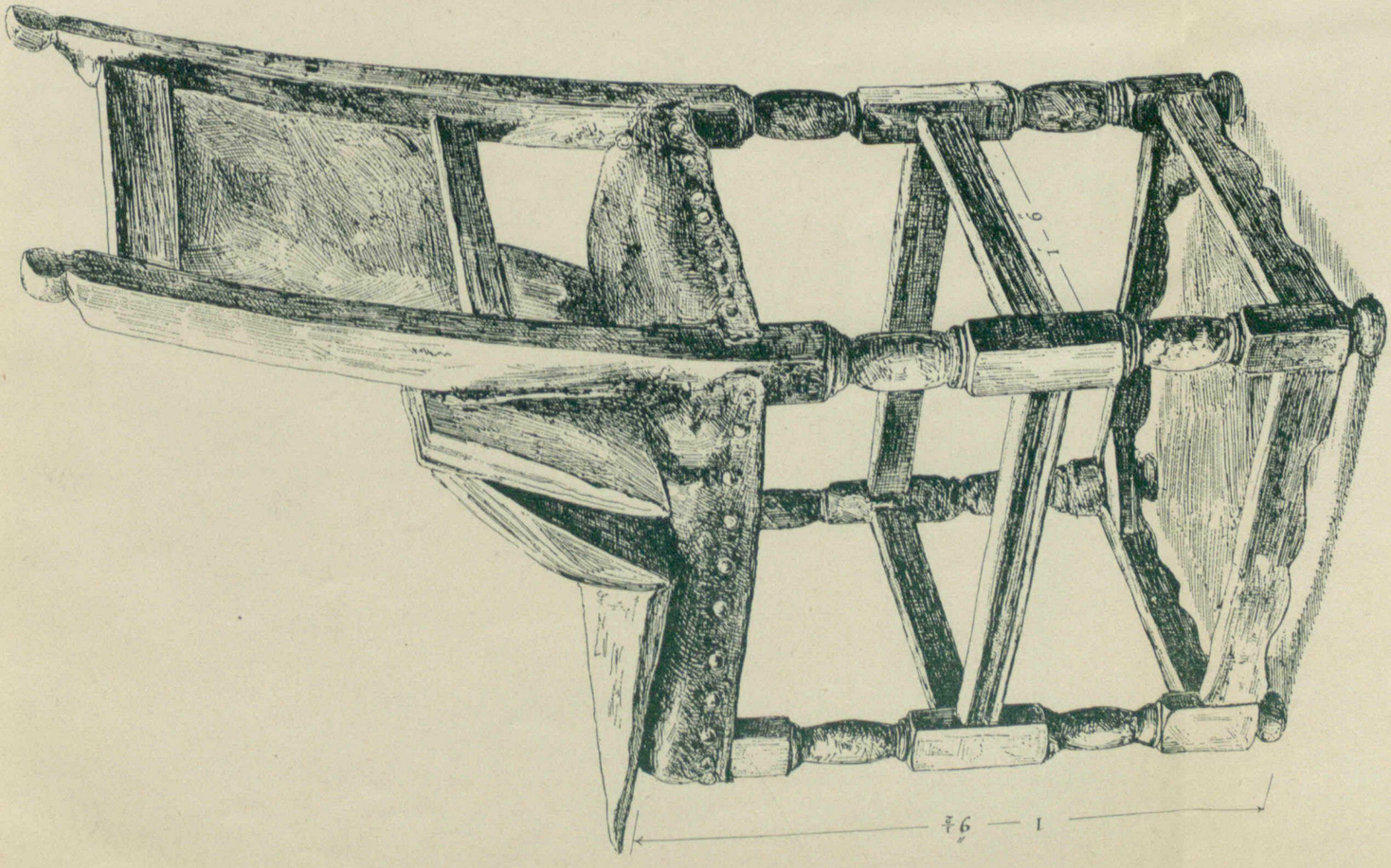
ASH
OR
OAK



R. BROWN
BOSTON
DES ET DEL



OLD CHAIR AT HAMPTON COURT, LONDON

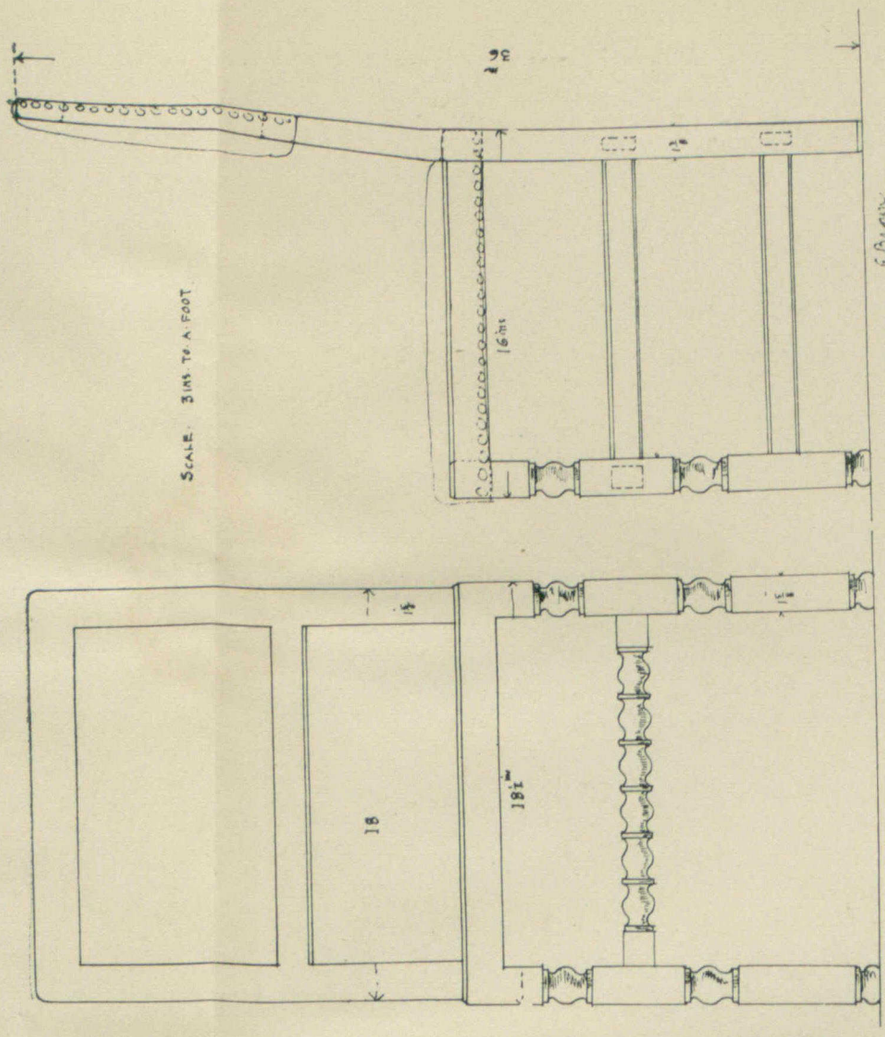


OLD CHAIR FROM HATHERLY'S LIFE CLASS STUDIO, LONDON

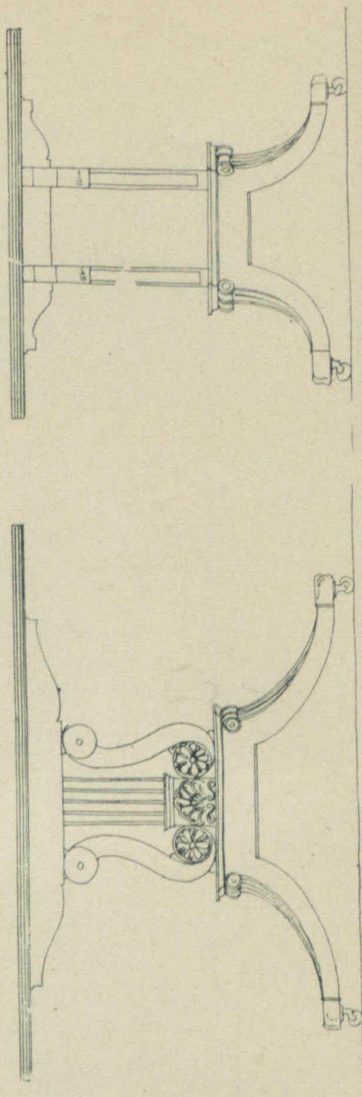
·Front·Elevation·

AN OLD COLONIAL HIGH BAY

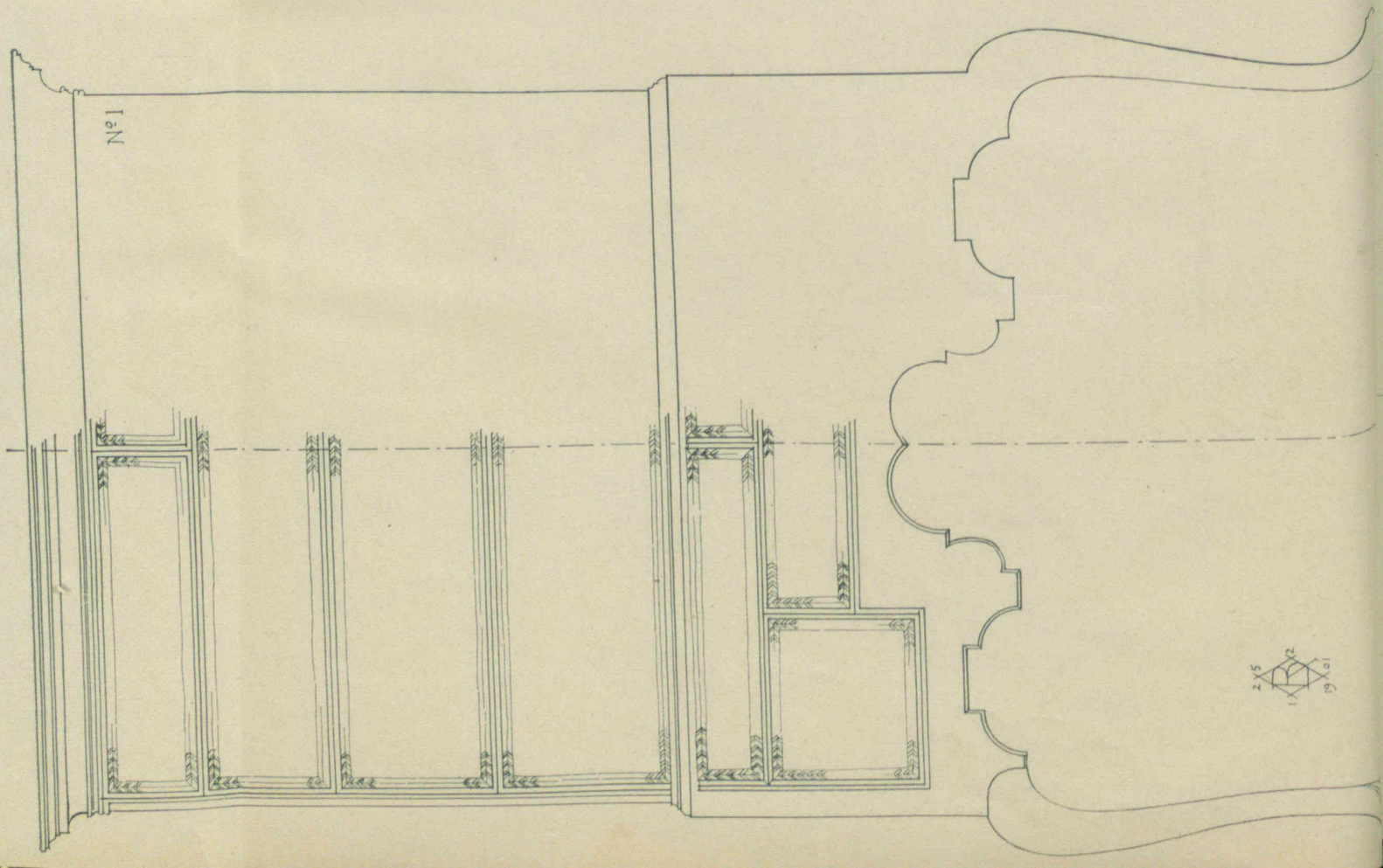
3ins. scale

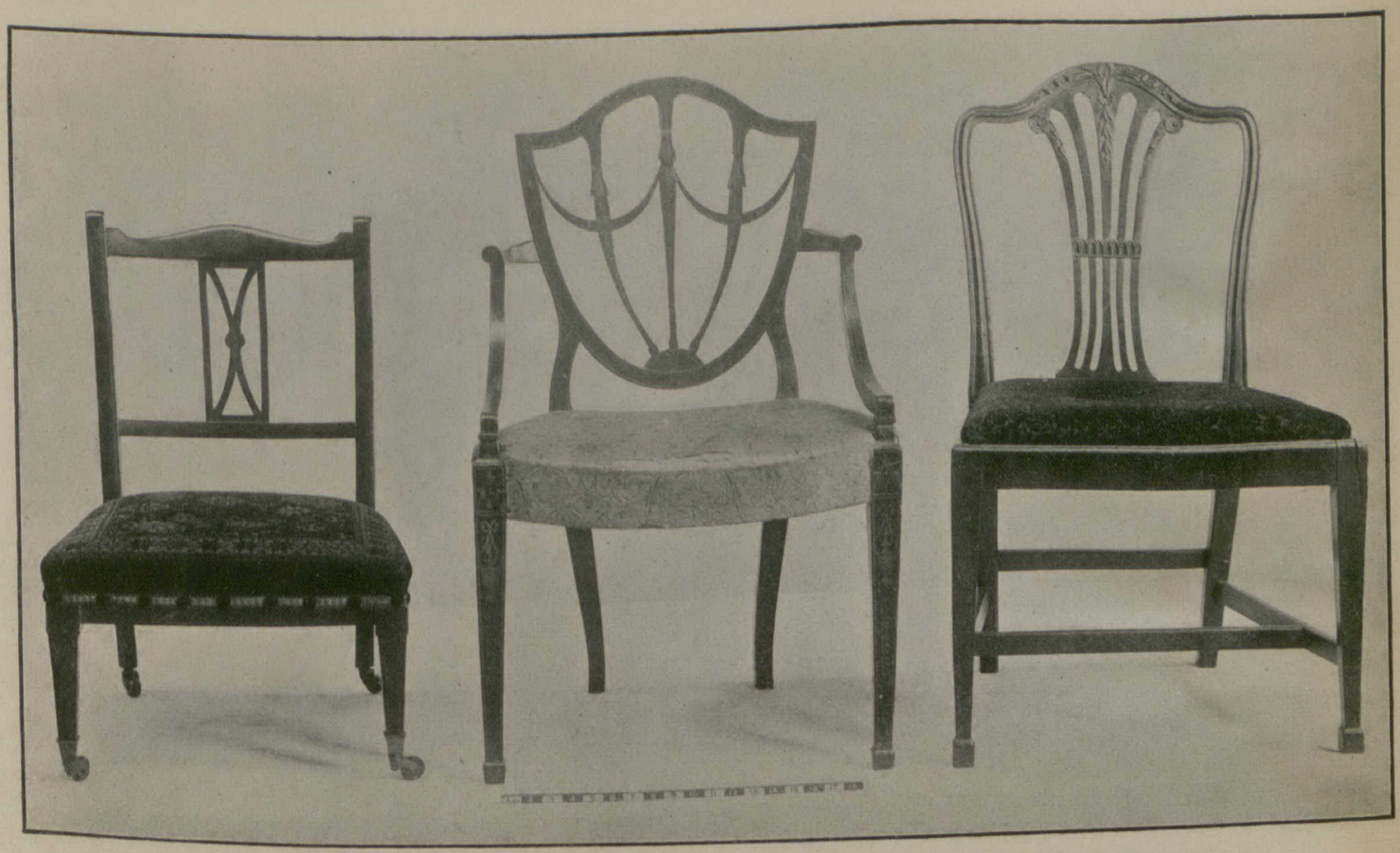


FROM AN OLD CHAIR—A GOOD MODEL FOR A SIMPLE DINING ROOM CHAIR



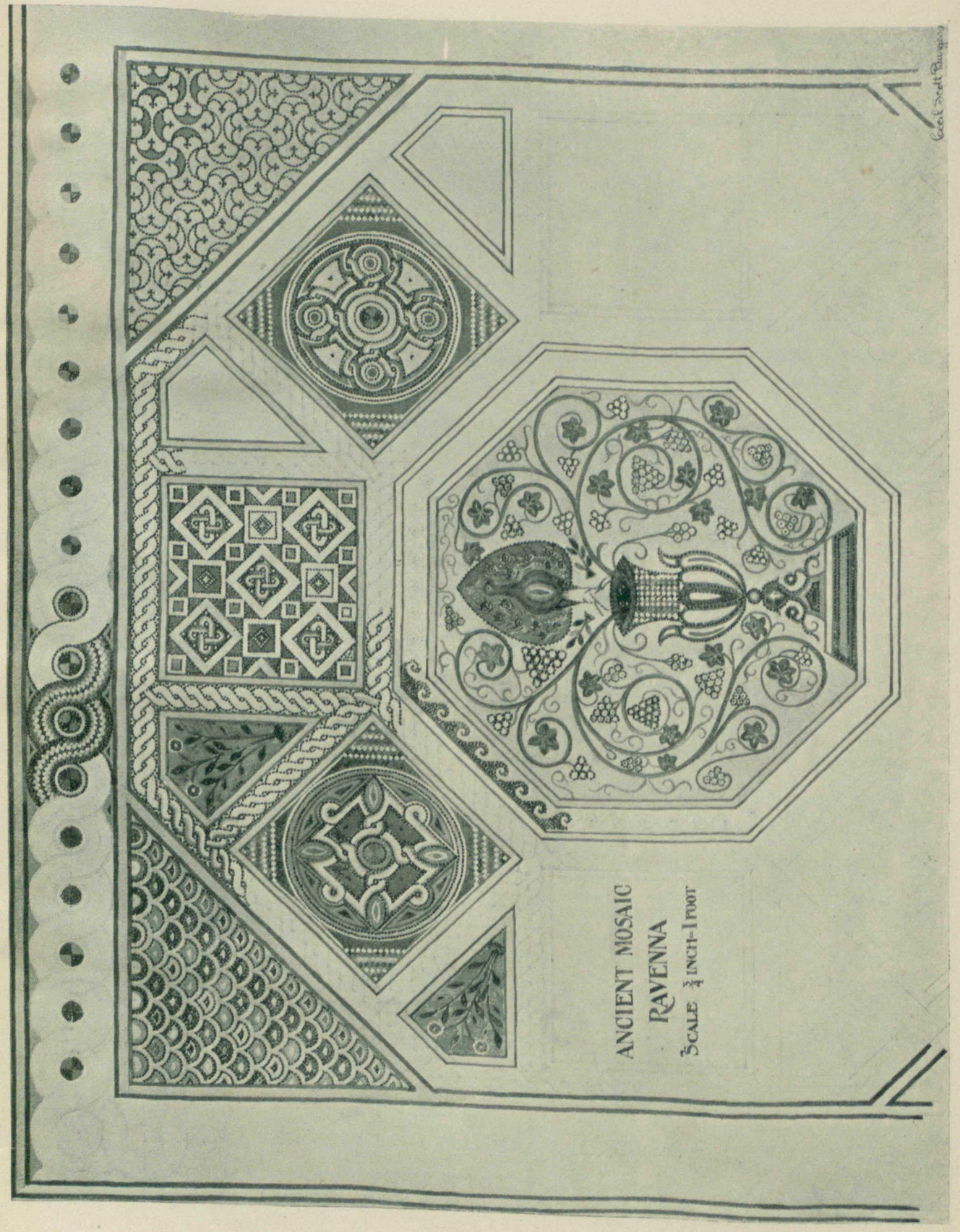
A Colonial Lyre Table.





(*a*) ADAMS, ABOUT 1780, MAHOGANY, INLAID; (*b*) HEPPELWHITE (?) ABOUT 1780, PAINTED;
(*c*) CHIPPENDALE, ABOUT 1760, WALNUT

SETTEE, WALNUT AND VENEER, ENGLISH, 1760-1780



FROM A DRAWING BY CECIL SCOTT BURGESS

SKETCHED BY PROF. PERCY E. NOBBS

SUPPLEMENT TO
CANADIAN ARCHITECT AND E
JANUARY, 1904

OSPEDALE MAGGIORE, MILANO
FROM A DRAWING BY PROF. PERCY E. NOBBS

SUPPLEMENT TO
CANADIAN ARCHITECT AND BUILDER
JANUARY, 1904

PAGES

MISSING