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SOME NOTES ON THE ORNAMENTAL  
TREATMENT OF BRICKS  
AND IRON IN NEW SOUTH  
WALES.

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GENERAL.

At the outset it is necessary to fully understand that the author's meaning, as embodied in the word design, is that treatment which at the same time as giving the necessary results in regard to purely constructive efficiency and convenience, will tend to render it beautiful, effective, and pleasing.

Of late years much has been done to improve construction by the economic production of the raw material of brick and iron, and also its scientific use in working up and placing in the building ; and certainly some of our buildings give astonishing results in this respect. Every attention possible has been paid to getting good results in fireproofing, stability, economy in construction, and highest efficiency from after use, but at the same time it must be admitted that the efforts to produce an effective and ornamental result have been weak and ineffectual. The modern building is a structure reared under very different conditions from that of 1800 years ago, not only on account of the difference in domestic, political, religious and commercial circumstances, but also because of the fact that the range of choice in materials, both kind and quantity, then was extremely limited, as compared with our wide field. All

this notwithstanding, it is the habit to work the brick and iron by all possible means, and at times no little ingenuity is used, into ill-advised imitations of the old work. It will surely be conceded by all that the architect or engineer does but little justice to himself and to his work when he hides the elaborately thought out piece of iron and steel work or perhaps brickwork in a modern edifice by a clothing of trumpery deception in imitation of a Greek or Roman temple, the original of which was in marble.

The Grecian development of the orders, which are now so basely copied, commenced at the building of the wooden hut, with its ungainly trunks of trees as support, but the absurdity was not perpetrated by cutting in stone, when such came to be used, a replica of even the bark and knots that hung to the wooden supports; on the other hand accepting the general characteristics of the wooden building as a mere foundation to work on, they rapidly improved and suited the design to the more pliable and suitable, but still very different material stone, and we all know what they produced. The glorious result achieved by them would never have been, had they continued to imitate only.

It is in the production of an harmonious suitability of the design to improved materials and construction wherein lies the future of our buildings as far as the appearance is concerned, and the architect or engineer will have to thoroughly understand the requirements of these materials when working them up to give an ornamental result. On account of iron and brick having such a great deal to do in the general formation and construction of our buildings, and there is every possibility of the use greatly increasing, some attention might with very great advantage be paid to their careful and considerate distribution and treatment.

#### BRICKS.

Brick, unlike iron, is an old building material, evidence existing that they were used in the time of the Egyptians,

though at present little other than traces of Roman work exist. The Egyptians and Greeks used stone in all works of a prominent nature which it was desired should endure, and bricks by them were used more generally for smaller works. The brick of to-day has, however, changed very much both in the method of production and especially in quality, and again, we moderns find it so well suited to grapple with considerations in construction which were never thought of by the ancients ; hence we may fairly consider it a modern article, if not in itself, at least in the manner in which it is constructively treated.

The Romans used the brick to form a body to their walls and then covered the surface with marble or other stone slabs or tiles, and here began the system which is carried to such extremes at present.

Brickwork reached a very satisfactory condition in the sixteenth century and some of the works of that period show that careful consideration was paid to the preparation of suitable designs ; however, neither the treatment adopted by the Egyptians, Romans, nor any of the mediæval work is safe to imitate at the present, because naturally as time goes on, convenience and different requirements in setting out the buildings differ so much.

The abominable practice of covering the exterior faces of the brickwork with a rendering of cement stucco has obtained a great hold, and too much cannot be said in severe condemnation of the practice ; and it is by the aid of this habit that result the cases of wretched deception before referred to. In many buildings it is a common method to cover a really good and thorough brickwork execution with this cement jacket and mark out with all the joints and other attendant features of solid stone, and plant on everywhere possible overdone cast cement ornaments ; and in some cases the deception is enhanced tenfold by painting and sanding in direct imitation of stone. All this, then, tends to debase brickwork, for when the know-

ledge exists that the outside is to be covered and hidden but little attention is given to the facial appearance of the bricks and the method of laying them.

When the general advantages of exposed brick surfaces are considered it is surprising that more attention is not given to their adoption. The impervious and vitrified surface of a hard well burnt brick is very little affected by the acids contained in the smoke and other fumes peculiar to cities and by the wearing effects of the weather, against all of which both ordinary stone and stucco are weak when placed in defence. And again the brick is a material that is eminently suited for construction on account of the facility with which it lends itself to the awkward complications and broken up nature of our modern buildings, and there is no doubt that brick, in conjunction with terra cotta, will be a large factor in the buildings of the future. As far as expense is concerned, bricks exposed are much less costly than stone and very little more than stucco.

It should therefore be the duty of the designer to make the external appearance and the surface suitable to, and in harmony with such construction. Boldness of form in which the brick is collectively considered, should be relied upon rather than a frivolous ornamentation in which the brick is more individually apparent. The builder has at his command such improved methods of economically operating in late years, and there is every chance of its improvement, that there is nothing to deter the designer from exercising more courage in setting out bold features, the economical execution of which in olden times would have been a deterrent consideration.

The Romanesque would seem to be a good model on which to found a design, embracing a more characteristic use of the brick. There is in this style something which is strikingly bold, and by making the arch features more apparent, piers rather than columns, together with rejection of the smaller detail ornament, which crept into the late examples, and by completing in a like way, making all materials—as, for instance,

iron—do their part in a harmonious manner, something more simple and more just to ourselves might be produced.

There have been erected recently in Sydney three notable examples of exposed brick surfaces, and one in particular has a most disappointing appearance; the whole effect is oppressively flat and monotonous, brought about by the entire absence of any boldness of proportion, and the mouldings of the strings and cornices being so small as to be hardly perceptible on the opposite side of the street. There can be no doubt that failures such as these have a very bad influence on the progress of the use of bricks. The work throughout was all that could be desired, as will be understood when it is stated that the facing joints did not exceed  $3/16''$ , and the bricks were not gauged or rubbed, but hard, double-pressed as they had left the kiln. To an observer interested the lesson given by this example points out that if an effective result is desired it is most necessary that the design shall not rely upon small and insignificant moulds, good work notwithstanding, but rather upon shaping of parts of the actual building into such forms as will ensure effect in proportion, as will be seen in the case of another of the buildings referred to which has been treated in a bold manner by an execution in Romanesque. The piers and the fine arches, together with striking breaks and formations in the wall surfaces and the attention given to color harmony, cause one when looking at it to forget the brick as an atom and think only of the magnificent whole formed by its use. The knowledge is present to the most simple that it is brick, but there is, co-existent, the impression that the effect is excellent. In this case the architect has given some small attention to detail, of course rendered necessary by following pretty closely the style, but it is not too much to say that had all detail been omitted the design would not have suffered.

The nature of the modern brick, on account of its hard and finished surface, renders it necessary to impress the mould before being burnt; and so far so good, for it is most desirable

that the whole surface, plain and otherwise, of the buildings should be uniform, which would be a matter of impossibility were the attempt made to carve, cut or rub any particular portion, for which bricks less hard would have to be provided. But in this method of previous impression, advantage is taken of the easy method of production to indulge in excess, and the abomination of small and insignificant mouldings is the result. Mouldings which cannot be seen are abortive and useless in any material, and, in this case, what can be got in the brick itself cannot be carried out when laying it, and nothing looks worse than lines of moulding not perfectly straight and horizontal. The only remedy that remains, when such occurs, is to straighten up as much as possible, by the aid of tuck pointing. The only logical method of using bricks for mouldings is to treat them as part of, or one member of the mould, than to endeavour to get two or three members in each course of bricks.

All attempts at the execution in brickwork of the classic orders, with columns, and entablature, should be avoided, and the massive detail rendered necessary by the adoption of the Renaissance renders failure certain unless a plentiful mixture of stone is used, which is not always possible.

Color is a question that requires a great amount of attention when designing, and some of the huge mistakes which almost every city can complain of in the way of glaring examples of red walls, lavishly interspersed with bands and all kinds of geometrical patterns in white brick, should certainly be things of the past. There can be no doubt that in this particular some advance will have to be made in a general manner by the manufacturers, but it is very certain that none will take place till a firm demand is made by the designer; in fact, none can be expected if the user is content to manage with the result of a loose system, which, as far as color is concerned, depends merely on what the clay likes to give. It must be confessed that the advance made in controlling the color return has been nothing compared with what has been done in the fast produc-

tion of a hard and well-shaped brick, and yet each is equally important, and the end will not be reached till such is universally accomplished. By the aid of a little chemical science the clay might be treated in a manner capable of producing any of the ordinary tints, and there is no doubt that if the makers were convinced that the production of such was in their interests, the want would soon be satisfied. And it should always be remembered that those who help to make a city dull and oppressive by smoke-covered stone and sombre and crumbling stucco, and fail to take advantage of the chance to liven and beautify by the use of inviting material, have a lot to answer for when the absence of artistic feeling among the lay portion of the people is so depressing. Nothing gives so much pleasure as a tastefully selected arrangement of colours in brick, and the brilliancy is renewed each time a shower of rain falls.

#### IRON.

Iron, however, much more than brick, on account of its new and different nature, has great cause to be dissatisfied with the mode of ornamental treatment it has received. Its special qualities as a building material have conferred such general advantages, that it is a matter for regret we do not pay the attention to its appearance that we give to it in its purely useful capacity. The generous aid which it lends to us in the solution of our building difficulties, and the manner in which, by its use, we are enabled to do so much that was hitherto impossible, surely demands that its worth shall cease to be covered by imitative and unsuitable designs. Who is the engineer or architect that has not had reason to be thankful for its aid, perhaps as a girder in getting over a troublesome span where intermediate supports would have been objectionable; or by its use as columns in the little lateral space taken up in proportion to the work done, and where, by reason of its bulk, stone would have been inadmissible, and yet in return, the mean action is taken of covering up the iron girder with

wood or cement, and by painting and sanding, making it look like a stone lintel which never could have done the work. Or, in the case of the column, by moulding it after a classic model, totally ignoring the very palpable fact that by its lean shaft all the proportions of the model are lost. On no account should any of the classic columnar orders be applied to it, for if enough of iron is used to retain the usual proportions waste of material is bound to occur, and, on the other hand, if the use is made economically, the ratio of thickness to height is sure to result in a sickly and mean effect. The advantage of iron is that it enables us to do the work required with a much less bulk than if stone, brick or wood were used; therefore it is contended that it is contrary to the ethics of good design to make it appear like those materials when doing its superior work. In the case of the girder or truss, surely there can be no logical objection to their straightforward exposure. The rivets and angle irons could easily be left to make a presentable appearance.

An example of a girder exposed is to be found in the front of a recent large building erection in Sydney, and it must be admitted that its calm, dignified, and straightforward appearance is not unpleasing. The flanges and angle irons have been carefully worked, and the heads of the rivets left very clean; but beyond this there is nothing in the way of ornamentation, and none is wanted, for where it has to do laborious work, a simple but effectual appearance is the best, and it would be entirely out of place to fancifully ornament it.

Deference must of course be paid to the necessity of sheathing the iron columns and girders with fire resisting material, but this is not always necessary, for there have been one or two examples of iron columns and girders so constructed and arranged that by means of a fusible plug in case of a fire, a continuous stream of cold water will circulate through them, provision also being made that all cradles and seatings should have a similar benefit; and an able paper



was read before this Association, touching on the subject, which will be found in the Proceedings for 1892. The scheme is, of course, permissible of considerable improvement.

Wrought iron is capable of lending itself to very delicate and artistic treatment, and recourse to it should always be taken to give the necessary contrast to the heavier and more astute construction. Grates, grills, railings, finials, &c., are excellent chances to treat in a light way, and the most beautiful results can be obtained.

Wrought iron also enables the architect to do much in the way of roof effects. Every designer can appreciate the addition to the proportions of a building which a raised and curved roof makes, and the strength and pliability of wrought iron in every way conduces to the easy attainment of such roofs. But, as was pointed out, it is always unsatisfactory to put any ornament to it, when, as in a girder, it is doing laborious work, and in such cases it is best left plain. It is, however, in its cast state that most of the anomalies exist. At the present there is a term—"cast-iron impudence," which is freely used, and actually it might be suggested that it has its origin in the glaring and impudent manner in which cast-iron ornament is plastered over our buildings. It is not going too far to say that almost eighty per cent. of recent erections in the Colonies have in some way been made to rely on this stuff for appearance, and yet at the same time it would be impossible to find more than about six different designs amongst the whole. In every city and town is to be found the cast-iron shop, the keeper of which has set out on the walls the same monotonous display of specimens to be found in every other place of a like nature. He calls each design by some fanciful but totally inappropriate name. He sells it by the foot, it is put up by the foot, and the result is a never ending array of yard after yard of cast-iron, so utterly bereft of any variety or beauty, as to terribly hurt a tasteful eye, and totally stamp out even a spark of regard for cast iron. It is not only want of variety or

beauty in the design, but also the roughness of the casting, no care being taken to preserve a good surface or sharp edges ; and the casting very often appears a confused mass of dots and lumps.

It must not be thought that this paper is to entirely condemn the principle of treating it for ornamental purposes ; but some improvement might be made with advantage in the habit of making in cast iron an attempt to resemble, as for instance, ferns or other vegetable forms. Cast iron should not be used for purposes of ornamentation only, but rather primarily as meeting a necessity and the ornamented to make presentable. As an instance might be taken a column in a store, the plain shaft of which, together with simple and unostentatious cap merging into a cradle with bracing studs, is far better and more in place, than to have an elaborate thing in say Corinthian style put in somewhere in the front, with no reason for its existence than that it is intended to make a nice appearance ; or again, would it not be far better to just have a little, but suitable wrought iron work, judiciously used, than all the cast iron fringes, crests, brackets and finials, which are so unmercifully used ? Cast iron is best used only where some work is to be done, and in such cases very simply beautified. If used only for ornamental purposes the greatest care should always be exercised not to indulge in an excess which is so tempting on account of the ease with which such is produced. All materials which allow of being moulded or cast, and thereby easily multiplied, conduce to quantity in large proportion to trouble in production, and human nature is so fond of display that the inevitable result is overbearing and debased ornamentation ; not so much the consequence of itself in its parts being bad, as because of being in direct violation of the rule—"That of the best we may have too much."

By the foregoing the author hopes to have made as clear as such a short paper can allow, that engineers and architects have not done justice to iron and brick when designing for

appearance in these materials. The remarks made in the beginning as to the course followed by the Greeks in the development of their styles will have to be taken to heart, and the silent advice given out by their example followed out by those who have to do with our architecture of to-day and in the future.

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## DISCUSSION.

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MR. G. A. MANSFIELD, a visitor, in opening the discussion, said that he had listened with great pleasure to the interesting paper, and concurred with the author in most of the remarks made. There was no doubt that in this colony the treatment of bricks as a constructive and ornamental material had not received the attention it deserved, and the same remark applied equally to wrought and cast iron. The difficulties that architects had to encounter in the design and execution of their work were much greater than those with which engineers had to contend. In the matter of time alone, the exigencies under which the architect worked were often a considerable difficulty. This was mainly the fault of the conditions under which we lived, the haste that characterized all our doings. The value of money lying idle, the value of the site which also represented money, all these conditions meant haste, and this hurry did not give the architect an opportunity of doing justice to himself. On the question of design few outside the profession knew to what an extent the architect was under the control of those who employed him, and almost every one in the community