Wednesday, April 1, 1925 Vol. LXI. No. 1578.

THE ARCHITECTS' JOURNAL & Architectural Engineer

With which is incorporated "The Builders' Journal."

FROM AN ARCHITECT'S NOTEBOOK.

THE SPREAD OF THE CLASSIC STYLE TO AMERICA.

For from those generous calices
The vegetative virtue shed
Flew over distant lands and seas
Waking wide nations from the dead;
And e'er the parent plants o'erthrown
Gave place to rank and noisome weed,
The giant Roman world was sown
Throughout with the ennobling seed.

And downward thence to latest days
The heritage of beauty fell,
And Grecian forms and Grecian lays
Prolonged their humanizing spell,
Till, when new worlds for man to win
The Atlantic's riven waves disclose,
The wildernesses there begin
To blossom with the Grecian rose.

MONCKTON MILNES (Lord Houghton).

9 Queen Anne's Gate, Westminster.

The Academy of Fine Arts, Venice : The Central Court

The *Accademia delle Belle Arti*, in the suppressed Scuola di S. Maria della Carità, the assembly-hall of this brotherhood, is on the Grand Canal opposite the south extremity of the iron bridge. It is one of the great art galleries of Venice.

THE

ARCHITECTS' JOURNAL

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An Educational Hiatus

THE thirteenth annual conference of Educational Associations recently held at University College, London, provided instructive reading to anyone —but reading that must be highly disquieting to architects. It is amazing to see day after day three columns of "The Times" devoted to every other branch of education and to realize that, among the fifty-three affiliated associations, architecture, alone among the arts, remains unrepresented and unrecognized. This congress is the great representative educational focus in England and papers were read or speeches made by such leading individuals as Mr. H. A. L. Fisher, Dr. Ernest Barker, Professor Soddy, Dean Inge, Lord Hampton, Sir Sidney Lee, the Astronomer Royal, Dr. Crighton-Miller, Dr. Hadfield—to name a few at random.

Under the title "Art Masters' Aims" we find the following: "The question of art education in secondary schools was discussed at a meeting of the National Society of Art Masters. Mr. W. H. Evans, of Brighton, the president, said he looked forward with pleasure to the prospect of having at the Board of Education an officer who would co-ordinate the whole of the art work in the country." How comes it that "the whole of the art work in the country," which it is proposed should be co-ordinated by the Board of Education, still denies existence to so great and so necessary an art as architecture? Is it the fault of the architects or of the educational authorities? Surely architects are to blame for not looking after their own business. We all know how little part is played by architecture in everyday life, and we are aware that architects are the only people who can raise their art to its proper place; and yet these immense conferences are allowed by architects to continue to be held yearly without any effort being made to get representation for architecture. Of the fifty-three affiliated societies, four speak on behalf of the claims of music; the drama, handwork, the Boy Scouts, dancing, all have their say; and a vast number of societies, some of which appear to be of an eccentric nature, press their claims upon the elementary, secondary, public schools, and universities throughout the country. Even medicine, that most specialized of callings, found a place, and addresses were delivered on hygiene and psychology, and several of our most eminent doctors took part in the discussions.

Can it be urged that architecture is so sure of her position that she can afford to stand at ease and do nothing? How comes it that so powerful and representative a body as the Board of Architectural Education overlooks such possibilities for valuable propaganda on thirteen successive occasions? One may assume that the bulk of architectural opinion would be in favour of adequate representation, and the question evolves into how best it could be secured. The Royal Institute is hardly itself definitely educational, and it is very probable that representation through a body of that nature would not be suitable. The Institute might desire to delegate representation to the architectural schools, either individually or in combination. It is anomalous that the masters of these schools should not claim a place either as members of the National Society of Art Masters, or on a body of their own.

Whether the conference of educational associations would welcome architecture or no remains to be seen; possibly it might argue that it cannot include studies of a technical nature, such as papyrology, architecture, and morphology of ichthyopsida, that they must reserve their energies for the arts and sciences that could reasonably form part of general culture; in which eventuality it would appear necessary to begin with the education of the educational conference. Even this venture is not a hopeless one, and architects ought at least to see what can be done.

If anyone should dispute the necessity of making a move he should take to heart the remarks of one of the headmasters that: "To a large number of men and women of affairs art teaching in the secondary schools was all the art teaching they ever received, and was of the highest importance." Every art supplies a contribution to culture and scholarship that reacts eventually to its own advantage, and we do not need to be reminded what architecture has lost in its divorce from everyday significance. Architects, in considering their professional opportunities, should not neglect the openings that would be offered to them if they were asked to supply teachers for courses of architecture, as a part of general education; and there are many qualified men and women who would genuinely welcome such an opportunity. Half the energy and income of exponents of every other art are concerned with teaching the child and the amateur who are expected to have an elementary acquaintance with literature, painting, music and eurhythmics, elocution, and the handicrafts. Artists of distinction visit schools, give courses of lectures, and have their own private pupils. None of these arts has so "practical" a value in the citizen's existence as architecture; he is born in a house, married in a church, works in an office, and when he dies he reposes under a fearful tombstone. One has only to consider the limited opportunities in practice open to the young architect to see how important this legitimate opening should be, and to conclude that it is of direct professional interest. Nothing has made greater strides in one generation than the outlook on education and its bearing on character

and general training. The examination test certainly exists, but it is not the fetish it was, and all around we may distinguish the human side and a recognition of the psychology of the student. Knowledge in the modern school is not turned on as with a hose connecting separate taps; the close connection and interdependence between apparently diverse subjects is a growing principle, and it should not require a skilled advocate to prove the cultural possibilities of architecture and its immediate reaction upon classical erudition, mathematical principles, historical facts, geographical limitations, and civic responsibility—even apart from its æsthetic mainspring.

Although we may not necessarily admit that the technical education of architects would benefit by direct representation, it is difficult to imagine that such a conference has no lessons to offer the staffs, however efficient, of the architectural schools. It is surely more reasonable to think that both they and their fellow teachers would gain by the intercourse, and that through them the general outlook would be widened. It might, however, be an even greater gain to the art and the public if the Board of Architectural Education were to establish a committee to consider the formation and development of architectural instruction as a factor in national education. Mr. J. Fairgrieve, in discussing geography, insisted on the distinction between the teaching syllabus and the examination syllabus. "Get your boys in their last year outside the classroom," he said. "Tackle them on the things in the newspaper, the problems of the world, and if they don't pass the examination, well, so much the worse for the examination." This is robust speaking, and it has good sense behind it, but it is neither robust nor sensible to leave out architecture from national education and civic training. Mr. Fairgrieve would not deny that the first thing his boys would see outside the classroom, or within it for that matter, is some kind of architecture; and he would probably also admit that a study of this would be at least as valuable as a study of the columns of the Press. For an architect the point needs no stressing; that it is not generally self-evident is partly his own fault, but, if he values the influence of his art, he cannot be content to let matters rest where they are.

MANNING ROBERTSON.

The Problem of the Rural Blacksmith

The Kent Rural Community Council have just issued a report of the conference held last month in Maidstone to consider the position of rural blacksmiths in Kent. It is a very exhaustive document that throws much light upon the condition of an ancient craft in these rather unsympathetic times. The discussion showed that there has of recent years been a steady diminution in the number of rural smiths, that of those who still carry on the majority are in a position of greater or less insecurity, and that the craft has almost ceased to attract apprentices. This unsatisfactory position is primarily due to the altered conditions of the countryside owing to the extensive displacement of horses by motor-cars, and the increasing use by farmers of agricultural machinery with standardized fittings. To enable the rural smith to adapt himself to the altered conditions, it is probably necessary that he should be equipped with more up-to-date machinery, such as a lathe and oxy-acetylene welding plant, so that he may be able to undertake much of the work which is at present sent to towns. Concurrent with this development it is desirable, as Mr. Frederick R. Hiorns, representing the R.I.B.A., pointed out, that the unrivalled tradition of English smiths should be maintained by encouraging the public to use the local smith more generally for the wide range of wrought-iron work which he is able to produce. Practical assistance might be given, on the one hand, by helping smiths to acquire modern plant, and on the other by making known that many smiths are capable of producing excellent decorative ironwork.

The Geological Museum

It is ill news that, with the transfer of the Geological Survey Department to South Kensington, the Geological Museum building in Piccadilly is to be demolished. There is some consolation in knowing that the removal is not a voluntary one, for the building has become a dangerous structure and must be pulled down. Built in 1851, the museum, in the opinion of most critics, is the *chef d'œuvre* of Sir James Pennethorne. It has a rather severely composed frontage to Piccadilly, and an especially fine elevation to Jermyn Street. The interior is no less distinguished than the exterior, the ground floor having a very dignified hall formed into three divisions by Doric columns for the display of stones used in building and architectural decoration. On each side, a staircase leads to the museum above—a spacious apartment with galleries running around. One of the museum's well-remembered exhibits was a granite statue of Hercules, guarding the entrance hall. Whether the giant frightened the public away, or whether it is that geology is not a popular study, there is no denying that the museum failed to attract the masses. Hemmed in by busy hotels and restaurants, it was the one building in Piccadilly in which you could find peace and quietness. Here you could linger and meditate undisturbed. The music of the adjacent jazz bands never penetrated its walls. Now it must go, and in its place, presumably, we shall have another riotous restaurant. It is a pity. The eastward end of Piccadilly is not rich in architecture, and Pennethorne's fine work can ill be spared.

Pennethorne in London

Pennethorne was, of course, at one time Crown architect, and in the course of his official duties it fell to his lot to demolish Nash's colonnade in the Quadrant of Regent Street, whose curved frontages have now almost entirely disappeared. He did the job as well as could be, and masked the line at which the colonnades had abutted upon the main buildings with a well-designed balcony supported on consoles. The last few sections of this balcony are even now being hacked away. Pennethorne is, of course, still represented in London. He completed the west wing of Somerset House, including the front to Wellington Street, and his work here is no less distinguished than that of Chambers, whose general design he carried on, but with a touch of individuality that is entirely Pennethorne's. The Stationery Office in Prince's Street, Westminster, is another work of Pennethorne, who here succeeds in being merely dull. Looking at this monotonous façade, one feels that the Classic Revival had indeed run its course. No wonder that when the Gothicists sprang in they carried all before them.

"Widespread Scepticism" about Bridges

In a provincial newspaper we read that "there is a widespread scepticism nowadays as to whether anybody could build a bridge which would be an architectural masterpiece." It is a familiar plaint. All the fine things have been accomplished; it is impossible to equal the design and craftsmanship of past centuries; we are infinitely lesser men that our forefathers—and so on. One had thought that the war would put an end to all such unworthy self-depreciation. The habit of looking backwards and sighing is an extremely unhealthy one; it blunts the edge of initiative and saps confidence. The fact is, of course, that we are infinitely better equipped to do good work than any generation that has gone before us. And we are doing it, though not to an extent commensurate with our capacity, because proper opportunities are not frequently enough provided. There are, however, signs of a change of policy in this respect, especially in official quarters, one of the most encouraging being the Minister of Transport's recent circular urging local authorities to take architectural advice on the design of road bridges. A few more reforms of this kind, and the fine works that will spring up will be sufficient answer to the plaints of the Jeremiahs.

Architectural Style—2

The Grammatical Formula

By A. TRYSTAN EDWARDS, M.A., A.R.I.B.A.

WHAT do we mean when we speak of architectural grammar? And besides this grammar, what other elements of architecture are there? Before answering these questions, let us revert for a moment to the analogy between style and language, which was the subject of the last article. Now, in the language of speech and literature there are three main elements—the vocabulary, the grammar, and lastly, the *sense* of what is spoken or written. The third is above and beyond the other two. A study of the sense is superior to the study of language, because the sense includes the whole of thought in general—art, literature, politics, science, and so on, while language is but an instrument for the communication of the thought. The study of language is, nevertheless, an important one. It is concerned, in the first place, with that grammatical use of vocabulary which leads to sense. This matter appertains to the "internal politics" of a language. Its "external politics" are dealt with in comparative philology, a science principally concerned with the relationship which the different languages bear to one another. The term "politics" is in this instance more than a metaphor, because among languages there is often a struggle for mastery, languages conquer or are conquered, they split up or unite and, in fact, they are subject to many of the stresses which disturb the political world.

In architecture, too, we find a vocabulary, a grammar, and above and beyond the vocabulary and the grammar is the sense or subject; furthermore, this sense can often be expressed in several architectural languages called "styles." And just as there is often a conflict between languages, there is a conflict between styles. For reasons which will presently be set forth, in architecture this conflict is far more acute than it is in the case of the language of speech and literature. There are, however, some essential differences between the nature of style and that of language, and it is important that the analogy between the two should not be present too far. Yet the comparison will be the means of adding certain truths about architectural style which could not easily have been arrived at by any other means.

The greater part of the vocabulary of architecture is expressional. Doors, windows, walls, roofs, and many other features proclaim themselves to be such, and we are not only enabled to this extent to interpret the sense or subject of an architectural style practised in our own country, but buildings belonging to a civilization quite alien to us are likely to have certain features which proclaim their purpose very clearly. This expressional character of the vocabulary of architecture is also responsible for the fact that in architecture the styles are related to each other more intimately than are the various spoken languages. If a Japanese word be interpolated in a piece of English prose it is utterly unintelligible, and there is not the slightest danger of undigested little chunks of one language invading another. But if somebody chooses to design a house in what may be described as the Japanese style and set it in the midst of an English village, there is nothing to hinder him, and although the juxtaposition of the two types of architecture would cause a discord, it would not prevent our understanding the domestic purpose of the new building. Thus, it is fatally easy to mix the styles of architecture.

While the vocabularies of the various languages of speech and literature enable the same thought to be expressed in several mediums, in architecture it is not always so easy to translate the subject of one style into that of another. The application of the Classic Order to buildings erected in this country has been described as a piece of affectation similar to the practice of writing Latin verse. But whereas in England there is a quite respectable equivalent of Latin verse, namely English verse, we have no native variant of the Classic Order capable of performing the same æsthetic function. But though certain subtleties of style are far more untranslatable than any phrase of ordinary language, all the simpler elements in an architectural vocabulary can quite well be expressed in a variety of styles and especially is this act of translation facilitated where the element in question has a definite use.

It will be found that in the illustrations which follow, many examples will be chosen without reference to style, for in the first instance it is necessary to establish the *grammar* of architecture. I have differentiated this grammar from the sense or subject of architecture, but it is necessary to bear in mind that even in the formal grammar there is a subjectival element, for the degree of mastery shown in the grammatical use of language enters into the *sense* of the thing spoken. For instance, the sentence "'e don't know nothing about it," does not even *mean* quite the same as "he knows nothing about it," because in addition to wrongly expressing the sense of the latter, it also conveys the information that the person uttering the statement is imperfectly educated. In these pages I am not discussing the sense, use, or function of architecture, except in so far as the general implication of a building is modified by grammatical usages. The practical requirements of buildings, systems of planning designed to satisfy the conditions of particular architectural "programmes," even the expressional function of architecture, so far as this is manifested in the character and status of a building, or in the disposition of its parts in accordance with utilitarian needs, has nothing to do with the present theme, which is the *language* of architecture, rather than the subject which is revealed by means of that language.

The grammar of the language of speech and literature is the means of attaining coherence and sense in that medium. The grammar of architecture has in addition to this a most peculiar quality. Not only is it the means of attaining coherence and sense in architecture, but an obedience to its rules inevitably leads to *beauty*. How does this come about? I do not propose here to enter into the question of general philosophic theory, because I am here concerned not with the whole of æsthetics but with architecture alone. Suffice it to say that architectural grammar is but part of a larger grammar, the grammar of design, which includes within its scope not only the formal principles regulating the products of art, but those of animate nature as well. For a discussion of this general grammar of design, I may refer the reader to my book "The Things which are Seen," where an attempt is made to set forth a philosophy of the visual art.

The grammatical formula consists of three main principles, those of Number, Punctuation, and Inflection. The whole form of architecture is included therein, and everything else appertaining to a building which cannot be interpreted in terms of these principles belongs to the subject of architecture. The principles of Number, Punctuation, and Inflection, apply equally to all buildings in any given style, and to all the styles of architecture. In so far as the principles are complied with, to that same extent is the quality of beauty manifested in a design, and wherever the principles are violated we have ugliness.

Yet a knowledge of the principles, although it may give us a sure direction and objective, does not make design more easy; on the contrary, we become aware of the extreme difficulty and complexity of the task as soon as we dig, as it were, beneath the smooth and simple surface of the three formal dogmas. The first of these ordains that a thing, if

it is to be a work of art must be one thing or an assemblage and not a duality or a division; the second emphasises the limits of the thing and separates it from its surroundings, while the third secures the subordination of the parts to the whole and also establishes the relation of the whole to what lies outside it. These principles, although expressed in the forms of animals and plants, are not empirically deduced from Nature, for in recognizing them we are going straight to the universal logic by which Nature, from the beginning, was informed and animated. The *beauty* of Nature lies not in its expression of function, but in the formal unity with which that expression is invariably accompanied.

The grammar of design which is here being expounded, has, as its basis, certain assumptions belonging to metaphysics and biology, which I have developed at length elsewhere. I propose here to outline these in a few sentences as the argument would be wholly incomplete without them. In the first place the grammar is an affirmation of the *objective standard* in architecture. The beauty of a building is held to depend upon the establishment of a certain relationship between the parts of the building itself. Thus, it can never be a question of taste or in any manner whatsoever a gift from the spectator to the object. The beauty is in the object and the spectator apprehends the beauty, or if he himself, in his capacity as an artist, fashions the shape of the object, then he must deliberately give it the organic relationship between its parts, by which alone it enters into the category of beautiful things. In the visual arts, then, the purpose of the artist, in so far as he is concerned with the formal aspect of art, is to create beautiful things. Here an important distinction arises between literature and the visual arts, and it modifies the character of the analogy between the grammar of language and that of art. In language it may rightly be said that the purpose of a sentence is to convey an idea.

There are theorists who have jumped to the conclusion that the purpose of a building is to convey an idea or emotion to the spectator. But such a statement ignores an essential difference between a thought expressed by literature, and a building. The latter is a three-dimensional object existing in space. It has therefore a double reality, as it exists both in idea and in corporate form. When Sir Christopher Wren designed St. Paul's Cathedral he did not wish merely to convey an emotion or idea by means of the building. His object in designing St. Paul's Cathedral was primarily to put in three-dimensional space in a particular part of London and for a particular purpose, St. Paul's Cathedral. This sounds simple. The metaphysic is simple also, for it is content to state, that between a person and the objective world outside him there is an identity of being. St. Paul's Cathedral is not merely a medium through which Wren has spoken to us, it is now stuff, an integral part of the solid stuff of our universe. We take delight in its objective being, for this objective being belongs to us. St. Paul's falls down and the idea of St. Paul's remains in its entirety. But by such a catastrophe our very minds would suffer an injury, because there would have been taken from us a very precious part of that solid universe which is ourselves.

This metaphysic banishes psychology, it warns psychology off the field of art. Through its agency the *subjective* view of art, the tendency to judge *things* by diving into the mentality of the spectator is proclaimed to be misleading, if not actually fraudulent. In a work of art the intellect resides in the *thing*, and this intellect speaks direct to the intellect which is in us. Nor can the objective standard be upset by an appeal to biology, by an assertion that the beauty of animals and plants was a pre-intellectual phenomenon, and that artists by dint of their emotions or instincts can produce beauty without the intellectual art which can establish an organic relationship between the parts of an object. Biology does not now acknowledge a pre-intellectual era in the growth of species. Intellect was there from the first and even the plants possess it, and are

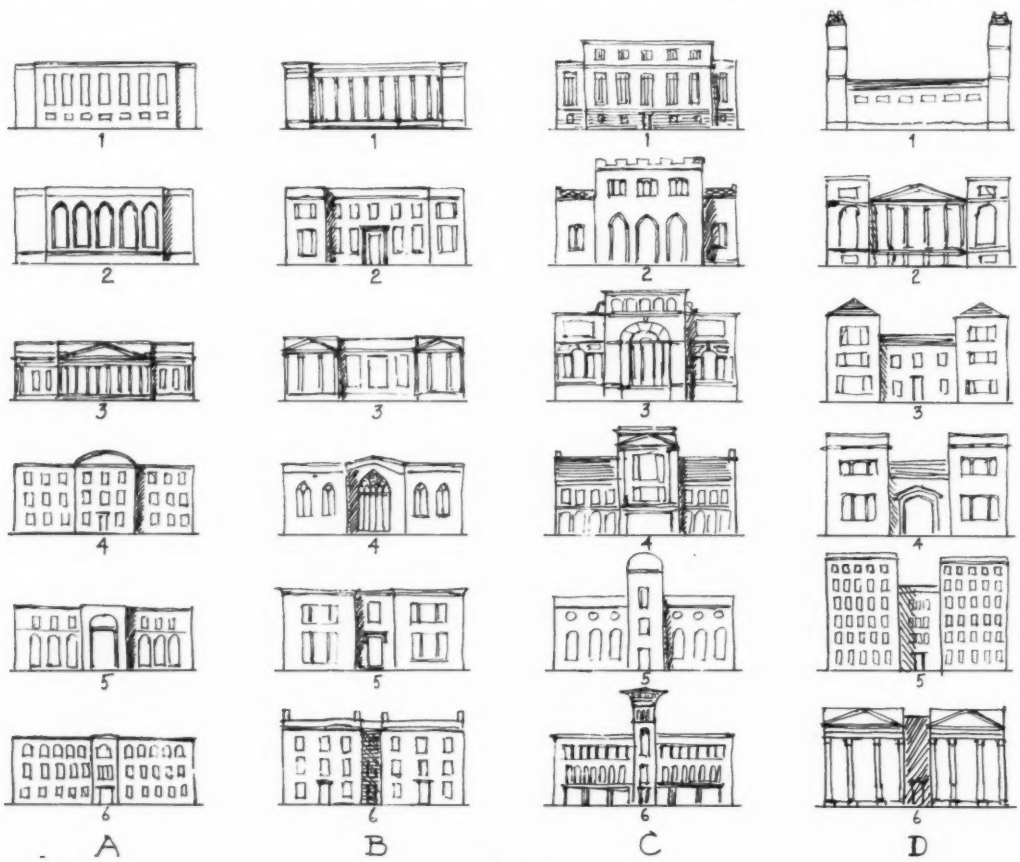


FIGURE 1.

guided by it. Most modern psychology is unfortunately founded upon very stale biology.

The grammar of design belongs to the domain of intellect. The diagrams which I shall here introduce in illustration of it, will tell their own story. It will, in fact, be scarcely necessary for me to do more than make the briefest comment upon them. Fig. 1 shows examples of the observance and breach of the first of the three principles —that of Number, which declares that both Nature and art abhor a duality which has not in some measure been resolved so that it may partake of the character of unity. The examples are mostly taken from existing buildings, some good, and others execrable. Sometimes the principle under consideration will be exemplified in a building which is well designed in other respects as well, sometimes its obedience to the one principle will be its own redeeming feature, the complementary principles being utterly disregarded by it; again, in some examples the violation of the principle will be seen to detract from the beauty of a design which has the merit of conforming with the other principles, and in yet a fourth category will be found designs which are faulty in all respects.

The reader can himself decide to which category the several examples belong. Fig. 1 shows four columns containing six diagrams each, showing how, in symmetrical façades of buildings, the dimensions of the central features have an important effect on the unity of the design.

In columns A and C the end features are slightly recessed behind the centre part; in columns B and D, they are in advance of it; in column C the centre part is raised; in column D the features of the extremities are raised.

In each column the width of the central feature progressively diminishes, the total width of the building remaining constant. In Figs. A.1, 2, 3, and B.1, 2, 3, and C.1, 2, 3, the central feature is obviously more important than the wings, so that the unity of the building is not compromised by the existence of the side features. When these latter are raised, however, as in Fig. D.1, although their lateral dimension is still insignificant, their height makes them so prominent that they constitute an unresolved duality. Fig. D.2 shows an example in which the lateral members, reduced in height, are fairly effectively dominated by the centre part, which is aided by a pediment giving it additional importance. Fig. D.3 is less satisfactory, the towers being emphasized by hipped roofs, while the centre portion is becoming dangerously narrow in width. Fig. D.5 is bad, because in spite of the central doorway the two main blocks assert their individuality at the expense of the whole. Fig. D.6 is worse still, a flagrant example of unresolved duality, for here each of the two pediments is a pronounced whole in itself, and it is quite impossible to conceive of them as a unity. Thus, it comes about that in a case of unresolved duality the greater the elaboration and refinement of the principal features, the worse does the offence become. For a similar reason it is counted more blameworthy if a person of education is guilty of a solecism, than if a similar offence were committed by an illiterate.

Building D.6 displays to us pediments and a classic order complete with its entablature, so it ought to know better than to distract us by an unresolved duality. Figs. A.1, 2, and B.1, 2, in which the centre feature seems to cut the façade in two, are also faulty; while in Figs. C.1, and 2, the towers are merely irritating, because they split the façades without unifying them. The figures in line 4, where the façades are divided into three equal parts, although as far as duality is concerned, they may be acquitted of guilt, yet violate the canon of *inflection*, which will be discussed later. For the present, however, it will be a more convenient procedure to develop the principle of Number a little further.

(*To be continued.*)

A Paris Theatre

ARCHITECTS who visit Paris this year should make a point of seeing the theatre that is now being built in the International Exhibition of Decorative and Industrial Art. The architects are MM. Auguste and Gustave Perret and André Granet, and the problem before them is somewhat similar to that presented to the British architects who were asked to design temporary buildings for the British Empire Exhibition. Funds are comparatively limited; and in a temporary exhibition it is clearly unnecessary to build too strongly. The French theatre, too, had to be so constructed that not only would it allow for the presentation upon the stage of comedy and tragedy, but also of ballets and plays that would give full scope to the designers of costumes and to decorators.

Another serious difficulty also faced the architects. They had to provide for the scenery either to be lifted up out of sight, or stored below the stage, and yet the conditions of the site made it quite impossible either to dig down, for in that case they would have broken into the underground railway, the Métropolitain, or to go high in the air, for fear of spoiling the perspectives of the Esplanade. It appears that they have successfully overcome all these difficulties. The theatre will be a kind of dramatic laboratory, or a studio in which experimental performances will be given. The skeleton of the construction is made of thirty-four heavy fir posts. Concrete will be used for the foundations, and steel beams will help to support the roof. The most careful estimates have been made of strains and stresses for the sake of economy, and it is hoped that all the wood and all the metal will be available again for use at the close of the exhibition at the end of the year.

Architecturally, the distinguishing feature of the theatre will be simplicity. On this point the architect, M. Perret, is fond of quoting from Fénelon, who is not usually considered to be an authority on design. Fénelon once said "there should not be any part of a building made for ornamentation alone, but all the parts necessary for supporting a building should also serve for its adornment." This exhibition theatre will certainly illustrate this principle in practice. The exterior will appear to have been built of stone. The windows, the ventilating shafts, and the doors are ingeniously contrived so as to break the monotony of the plain surface. Special care has been taken to provide plenty of exits in case of fire, and the doors have been so arranged as to keep out draughts as far as possible.

The stage has many interesting new features. It is so constructed that it can be divided into three independent parts. There is, in fact, a central stage, and two stages on the side. All these stages can be used at the same time for some spectacular play or ballet, or they can be divided by curtains for the more intimate type of performance. Clever mechanical arrangements are being installed for working these curtains and for the scenery. In front of the stage is a proscenium that can accommodate an orchestra of some sixty musicians.

Another feature of the theatre is a gallery which looks rather like the bridge of a ship. It runs across the stage in the "flies," and on this are to be installed all the electrical appliances. Thus in a centralized position the electrician will be able to play on the different switches like a musician on the organ, and will have a good view of the stage as well as the audience. In the ordinary British theatre the electrician stationed in the wings works under serious disadvantages. It is claimed, therefore, that this central bridge will enable many more electrical appliances to be used. The head of the firemen will also be stationed upon the "bridge," where he will have a bird's-eye view of the whole theatre. In the case of those performances where a chorus is needed, this gallery will be used also by the singers.

B. S. TOWNROE.

At a Venture

Lincoln's Inn and its Square; with some Inedited Marginalia by E.B.D.

SOME ecstatic person has avowed that Lincoln's Inn Square is "overwhelming." A little latitude is ever allowed to your ardent lover. One such unabashed devotee has declared: "I am sure that it is the finest square in London by a long way. No one with an eye for nature, architecture, antiquity or amplitude of space, can have a moment's doubt that this is the square of London squares, the perfect cube, so to speak, of metropolitan attainment." Prodigious! The lover has almost achieved a mathematical epigram of sorts.

London squares, both big and little, have mightily promoted the town-planning idea. An enclosed plot of ground—a blessed oasis of refreshing greenery amidst a dreary desert of grime—quite likely to have suggested the larger vision of a garden city to the mind of the incomparable Inigo while he was plotting the lay-out of Lincoln's Inn Fields. Peter Cunningham cites the record that in 1618 "the grounds were much planted round with dwellings and lodgings of noblemen and gentlemen of quality, but at the same time were deformed with cottages and mean buildings—encroachments on the fields and nuisances to the neighbourhood." So a Crown Commission was appointed "to plant and reduce to uniformity Lincoln's Inn Fields, as it shall be drawn by way of map or ground-plot by Inigo Jones."

Jones, it has been commonly asserted, wished to follow the proportions of the Great Pyramid; but John Timbs cites the authority of Colonel Howard Vyse for the statement that whereas the base of the Great Pyramid is 764 ft. on each side, Lincoln's Inn Fields, although 821 ft. on one side, is only 625 ft. 6 in. on the other; the area of the Pyramid being greater by many thousand square feet. Yet for this discrepancy nobody seems one penny the worse. A matter for real concern is that so very little of Inigo's work can be identified with full confidence.

If ever the decaying art of *genre* painting is to be revived, a good subject will have Lincoln's Inn for its setting: "Inigo Jones, the architect, complaining that Ben Jonson, the bricklayer, is not plumbing his perpendiculars." What matter that the picture would be historically inaccurate? Dates do not support the interesting, but untrustworthy, legend that red-headed Ben, a trowel in one hand, a book of Greek poetry in the other, helped to build the wall adjoining Lincoln's Inn gateway; for carved on its face is the accusing date 1618, by which time Ben was a successful playwright in his five-and-fortieth year. With reluctance we discard the beautiful tradition, and with it must go the supplementary figment of fancy that the two great men about to associate in the making of masques, each recognized with a dramatic start that they were not then collaborating for the first time. "Were you not the red-headed bricklayer who couldn't keep his perps?" "Yes; and you were the irascible architect I threatened to throw off the scaffold."

Certain it is that their collaboration in masque-making was very unhappy all the time, and especially in its sequel. Jonson was dismissed from Court favour at the instance of Jones in 1630, the immediate cause of the final rupture being a bitter dispute as to the true parentage of the masque of *Chloridia*. Jonson's subsequent lampoons on Jones recoil on the red or grizzled head of their author. They are simply spiteful slanders in doggerel.

Whether or not Ben Jonson ever did work as a bricklayer at Lincoln's Inn is not proven either way. He seems, at any rate, to have held an exalted opinion of the Inns of Court, for his play of "Every Man Out of His Humour" he dedicates to them as "the noblest nurseries of humanity and liberty," which is perhaps not too grossly flattering or a dedication.

Of course, the Jonson legend is mentioned in a little monograph on "Lincoln's Inn: its Ancient and Modern Buildings. With an Account of the Library. By William Holden Spilsbury, Librarian." By good hap, the copy of this little book that has fallen into the hands of the present causeur was once the property of E. B. Denison, Esq., Q.C., afterwards knighted, finally elevated to the peerage, and hereinafter referred to, for brevity, as E.B.D. Besides being a distinguished ornament to bench, bar, and the sciences of lockmaking and clockmaking, he must needs inflict his omniscience on architecture, and against his triumph with Big Ben of Westminster there must be set off his appalling deeds at St. Alban's Abbey.

His inordinate craving for self-assertion gave him the untidy and vandalistic habit of scribbling over the margins of his books. A few examples from the above-mentioned volume are here appended for the glimmering of light they shed on some minor points of architectural history.

Author of book cited: "New Square or Serle Court, on the southern extremity of the Old Buildings, was erected about 1688, and the Stone Building, from designs by Sir Robert Taylor, about 1780, at the north-eastern extremity, forming another court, in which are the entrances to the various apartments, having the Six Clerks' Offices on the east. A new wing was added by Mr. Hardwick in 1845."—E.B.D.: "No. 7, Stone Building," which may be taken to identify the "new wing." The author's mild remark that "the last-mentioned structures" differ somewhat from the original design evokes the petulant marginal note: "Do not bear the least resemblance" to the original building.

Where the author states the plain fact that the gatehouse "has always been admired," E.B.D. testily adds, "by fools," and where the author opines that the appearance of the Gateway "may have been somewhat altered," E.B.D. prefers to read more positively: "is very much altered," and cites in confirmation of his further note that "hardly any original work is left; architect's report to Bench in 1886." Against Mr. Spilsbury's opinion that the Gateway "will probably ere long disappear," the Denisonian gloss is simply "No," and although this curt negative was recorded more than forty years ago, it still holds good. Threatened gates hang long.

Concerning the Library-building alterations, the author records: "The general design of the enlargement and alterations having been made by E. B. Denison, Esq., one of the Benchers, the execution of the work was entrusted to Sir Gilbert Scott. . . . The building was begun in August, 1871, by the contractors, Messrs. Jackson and Shaw, but, owing to several unforeseen causes, the completion was delayed until May, 1873."

It is not difficult to guess the nature of the "unforeseen causes," which might not have been wholly "unforeseen" by persons acquainted with the respective temperaments of Denison and Scott. An inference can be drawn from E.B.D.'s MS. comment: "Scott wanted to spoil it by adding only two bays, to propitiate a stupid opposition by V. C. Malins, etc., which caused the delay. A rival plan was attempted, full of defects." Poor Sir Gilbert! One further characteristic extract from E.B.D.'s breezy marginalia. *Author:* "On the eastern front of the Hall, close against the Library, is a large porch, twenty-four feet long internally." *E.B.D.:* "All mine, and Scott began the steps wrong." Of course, E.B.D., being judge, nobody but himself could ever do anything right.

What Scott must have suffered at the hands of a coterie of contentious Benchers, one of whom had a great conceit of himself as an amateur architect—with what warrant let St. Alban's Abbey testify.

SAGITTARIUS.

Modern Domestic Architecture. 116.—Elmwood, Kenley : The Drawing-room

Sydney Tatchell, F.R.I.B.A., Architect

The illustrations on this and the succeeding plate are of rooms which form part of a general remodelling of the house, which was formerly an Early Victorian stuccoed residence, with the principal rooms having a north aspect. The rooms were entirely re-arranged so as to obtain the sun wherever possible.

Modern Domestic Architecture. 117.—Elmwood, Kenley : The Dining-room

Sydney Tatchell, F.R.I.B.A., Architect

Some notes concerning this illustration, and the one on the preceding plate, will be found on page 514.

Architecture in Painting

Mr. Charles Marriott at the A.A.

MR. CHARLES MARRIOTT gave an address on "Architecture in Painting" at a meeting of the Architectural Association held on Monday of last week under the chairmanship of the President, Mr. H. S. Goodhart-Rendel. For the purpose of his address the speaker took "painting" to include drawing, engraving, photography, and sculpture; that is to say, all representations of architecture other than those made for professional purposes, such as plans, elevations, and perspectives. He did not pretend to give a minute account of the subject, with names and dates, but only to glance at it broadly and consider the character of some of its phases. Introducing his subject the speaker said that a striking fact that comes out in a first glance is that the appeal of architectural subjects to the painter is not in proportion to the merits of the architecture. To take concrete instances, Charing Cross railway bridge has been much more painted and etched than Waterloo Bridge. This anomaly has an important bearing on the subject as a whole.

Proceeding, he said: The connection between architecture and painting is very old and very close, and it is twofold. There is the relation of painting as applied to architecture, and there is the relation of architecture to painting as a subject of representation.

Which came first, architecture or painting, may be left to the archæologists, but it seems likely that at a very early age man began to decorate the walls of his habitation with scratchings or paintings. There is no reason to suppose that the application of one art to the other was closer than that occasioned by their respective materials, and any "architectural character" that was given to the paintings was more or less instinctive. The great thing to remember is that painting is essentially a more flexible art than that of architecture, and it is the disregard of this fact which has caused some of the peculiarities in the reaction of the pictorial representation of architecture on architecture itself, which we shall have to consider. The two arts may be said to start from the same base, but they very quickly diverge in their possibilities. Architecture, for illustration, may be called the mother of painting; but the daughter very quickly ran away from the mother and, so to speak, turned round and looked at her, and even made faces at her. All would have been well if the mother had not tried to imitate her and confused an architectural with a pictorial function. This reaction of painting upon architecture is one of the most interesting things we shall have to consider.

For a long time the connection between the two arts was perfectly straightforward. Architecture was represented in painting for historical, topographical, or architectural reasons, and no great liberties were taken with it for pictorial purposes. What was attempted was a portrait of a building—or collection of buildings. Probably the earliest representations were sculptural—on coins. Certainly there are representations of architecture on Trajan's Column. From thence onward to about the sixteenth century all the representations were strictly architectural, with as much interest in construction as in form.

The change came about the middle of the sixteenth century, with the discovery of form as a separate consideration. Until then both architects and painters had treated form more or less as a consequence of what they were doing. They painted or built in an orderly manner, composing by instinct rather than rule, in order to make things "shipshape." Now they began to consider form as an end in itself, and they did not always distinguish clearly between architectural and pictorial effect. This was partly due, no doubt, to the fact that many of the great architects of the period were also painters and sculptors. During the Baroque period, and that of the Rococo, which may be described as fricasseed Baroque—the whole subject of the connection between architecture and painting was in the melting pot. There were many admirable painters and engravers of architectural subjects. Ferdinando Bibiena, Giovanni Antonio Panini, Canaletto, Guardi, among the painters, and Piranesi and Hollar among the engravers. In looking at their works we should remember that, on account of its greater flexibility, many architectural effects are legitimate in painting which are not proper to building. We must distinguish between the song and dance.

As between the "Views of Rome" of Piranesi and his imaginative "Carceri" the distinction is clearly made; but some architects of the period were not so discriminating. In the works of Guardi, as compared with those of Canaletto we may see the beginnings of the atmospheric treatment of architecture, which was carried to excess by the impressionists. We must remember, moreover, that many of the architectural designs of this period were made for the stage or for the settings of masques, pageants, and processions; and here again a tendency to the fantastic was legitimate, because the logic of the whole thing was provided by the play. But on the whole the influence of painting on architecture during the Baroque period was rather confusing.

Towards the end of the eighteenth century there seems to have been a settling down. This was the period of our great topographical painters, draughtsmen, and engravers: Sandby, Cosens, Turner, Girtin, and, above all, Cotman, who emphasized particularly the stability of architecture. Claude, of course, was earlier and less topographical, but in his works and in those of Richard Wilson the pictorial treatment of architecture could hardly be bettered. In this connection Samuel Scott must be remembered. Full advantage is taken of the superior flexibility of painting, but architectural dignity is preserved. The great English topographers were followed by a whole school of minor men: Prout, Thomas Malton, Havell, Pugin, and the lithographer, Thomas Shotter Boys, who lived down to our own time. In the admirable works of these men architecture is taken on its merits, though full justice is done to accidental effects.

But, and partly as a result of the Romantic movement, there was creeping in an undue concern for accidental effects, for the Picturesque. The Picturesque was not new—there were the studies of ruins by the seventeenth- and eighteenth-century men—but it now became a cult, and, combined with the increased attention to atmospheric effects, the consequences in painting reflected unfavourably upon architecture. The well-known passage from Whistler's "Ten o'clock," "the tall chimneys become campanili, and the warehouses are palaces in the night" well suggests the risks to both painting and architecture of this attitude. It might be called the "very like a whale" attitude, and its weakness consists in the assumption that Nature is only tolerable artistically "in the dusk with the light behind her." But we must not forget the admirable representations of architecture produced by the cult of the Picturesque and by impressionism, such as the paintings of Mr. Frank Brangwyn, the etchings of Whistler, the etchings and lithographs of Mr. Joseph Pennell, and the cathedral series of paintings by the veteran Claude Monet. The point is that in these works architecture is represented for its accidental effects rather than for its essential character; and there can be no doubt that during the second half of the nineteenth century architecture was beguiled by painting in a similar direction.

With the turn of the century there was a marked change in the treatment of architecture by painters, draughtsmen,

and engravers. Once more architecture was represented for what may be called architectural reasons. The tendency was not new, for with Whistler might be contrasted the Anglo-French etcher Meryon; but it now became the rule rather than the exception. Particularly in engraving, as represented by Sir D. Y. Cameron, Mr. Muirhead Bone, Mr. F. L. Griggs, Mr. William Walcot, Mr. Henry Rushbury, Mr. Stanley Anderson, Ian Strang, Job Nixon—to name only the first that come to mind. There are differences between them, but the general tendency is to take architecture on its own merits as architecture. It is the same in painting, as represented by the works of Sir D. Y. Cameron, Mr. Walter Sickert, Miss Sylvia Gosse, Mr. Ethelbert White, Mr. E. M. O. R. Dickey, Mr. Charles Ginnle, and many other members of the London group. The extremes are as between Mr. James Pryde, Mr. Algernon Newton, and Mr. Richard Wyndham. As compared with the works of nineteenth-century painters they show a quite remarkable preoccupation with the structural facts of architecture to the disregard of picturesque effect—a return to the attitude of the Primitives with the gains of the interval in formal emphasis and atmosphere. The subject of the representation of architecture cannot be left without some reference to the large part taken in such representation by photography. Here again we get differences. Some photographers seem unable to get their pictorial effects without sacrificing the solidity of the architecture; others again lean unduly to the literal; but in the works of your secretary the architectural and the pictorial claims are nicely adjusted.

At the moment there seems to be a clearer recognition of the characters and possibilities of the two arts; architects are less inclined to build pictorially, and painters, while taking full advantage of formal composition and atmospheric effect, are less inclined to destroy the architecture in the process.

Mr. J. C. Squire, in proposing a vote of thanks, said that he could not help agreeing with almost everything the speaker had said. His remarks about the Greeks, which seemed to indicate that they had never studied form, were, he thought, a little extreme. Of late there seemed to have grown up a school of artists who painted the ugliest things from an architectural point of view, such as Charing Cross Bridge. He felt that it might be useful in interesting the public in architecture if contemporary painters would take notice of some of the better modern buildings.

Sir Martin Conway seconded the vote.

Mr. Goodhart-Rendel pointed out that he had recently discovered that in Park Square, Regent Street, there was a entrance to a chapel designed by the elder Pugin.

Mr. W. H. Ansell said that Mr. Marriott's remarks with regard to the Greeks and form could be disputed by the fact that some of the Greek buildings were unfinished.

Mr. Oswald P. Milne thought that of all the styles Gothic, real Gothic, was the finest ever produced. To-day they had to think out their buildings on paper. This created a danger that they might pay too much attention to form and not study their building to the extent it should be studied as a building.

Mr. Gilbert H. Jenkins thought that the sculpture and pottery of the Greeks showed that they must have been interested in form. In present-day architecture there seemed to be a lack of team work between architects and those practising the other arts.

Mr. A. H. Moberley also referred to the Greeks, and said it was quite clear that many æsthetic effects were produced consciously, and some unconsciously, by their designers. To-day the generation was self-conscious, and was particularly interested in beauty of form. He thought that buildings were more beautiful in the time when people were content not to make them works of art.

Mr. Marriott, in replying to the discussion, said with regard to the Greeks that Mr. Moberley had supplied the answer to the questions raised by the other speakers. He pointed out, in reply to Mr. Squire, that many of the younger artists were painting modern buildings.

"Elmwood," Kenley

The illustrations given on pages 509 and 511 are of rooms which form part of the general remodelling of this house. It was formerly an Early Victorian stuccoed residence, with the principal rooms having a north aspect. The superfluous decoration, both inside and outside, was removed; mullioned and lead-lighted windows introduced in place of the flimsy sash windows, and the rooms entirely rearranged so as to obtain the sun wherever possible; and with an electric light installation, central heating, and modern sanitation, the house was brought up to modern standards as far as possible.

The general contractors were Messrs. J. Jarvis and Sons. The central heating and domestic hot-water installations were carried out by Messrs. Benham and Sons. The panelling and decorations shown in the illustrations were executed by Messrs. G. and A. Brown, Ltd. Mr. Sydney Tatchell, F.R.I.B.A., was the architect.

A New Birmingham Building

This building (see pages 526, 527) has been erected in Cornwall Street from the designs of Messrs. Bloomer and Gough. It faces south, and stands upon a site measuring 90 ft. by 90 ft. The foundations were in a very bad condition, and there were two vaults, one above the other, remaining from an old market hall which previously occupied the site. When this market hall existed Cornwall Street was known as Bread Street. It had a lower level than the present thoroughfare, and at that time was one of the worst streets in Birmingham.

The foundations of the new building are of concrete, partly reinforced. The walls generally are of brick, and some of the piers are stanchions encased. The structure generally is steel-frame, and most of the floors are fireproof. The building is so designed that two more stories may be added, if necessary, at some future time. In the offices, which have fibrous plaster ceilings, the decoration is a little more elaborate than that in some of the other parts of the building. Most of the offices on the ground floor are formed with glazed screens; these are of glazed fluted glass with a silvery ground finish. The front vestibule is lined to a height of 7 ft. with marble in different colours.

The general contractors were Messrs. T. Elvins and Sons, and the sub-contractors were as follows: Hathern Station Brick and Terra-cotta Co. (terra-cotta); Charles Wade & Co., Ltd. (steelwork); Siegwart Fireproof Floor Co., Ltd. (fireproof floors); Hewitson's Flat Roofing Co. (other roofings); W. H. Heywood & Co. (patent glazing and fittings); Rowe Bros. & Co., Ltd. (sanitary ware and fittings); Bryan's Adamanta, Ltd. (plaster work, fibrous); J. H. Walker, Ltd., West Bromwich (stained glass and leaded lights); Walker and Worsey, Ltd. (door furniture, strong-room doors and safes); John Gibbs, Ltd., King's Heath (gates, railings, removable folding gates and iron grills); Art Pavements and Decorations, Ltd. (mosaic decoration and marble work); George Clark and Sons (lifts); Paragon Heating Co. (heating apparatus); J. R. Pearson, Ltd. (bronze letters inlaid blue enamel); Chamberlain, King and Jones, Ltd. (furnishing).

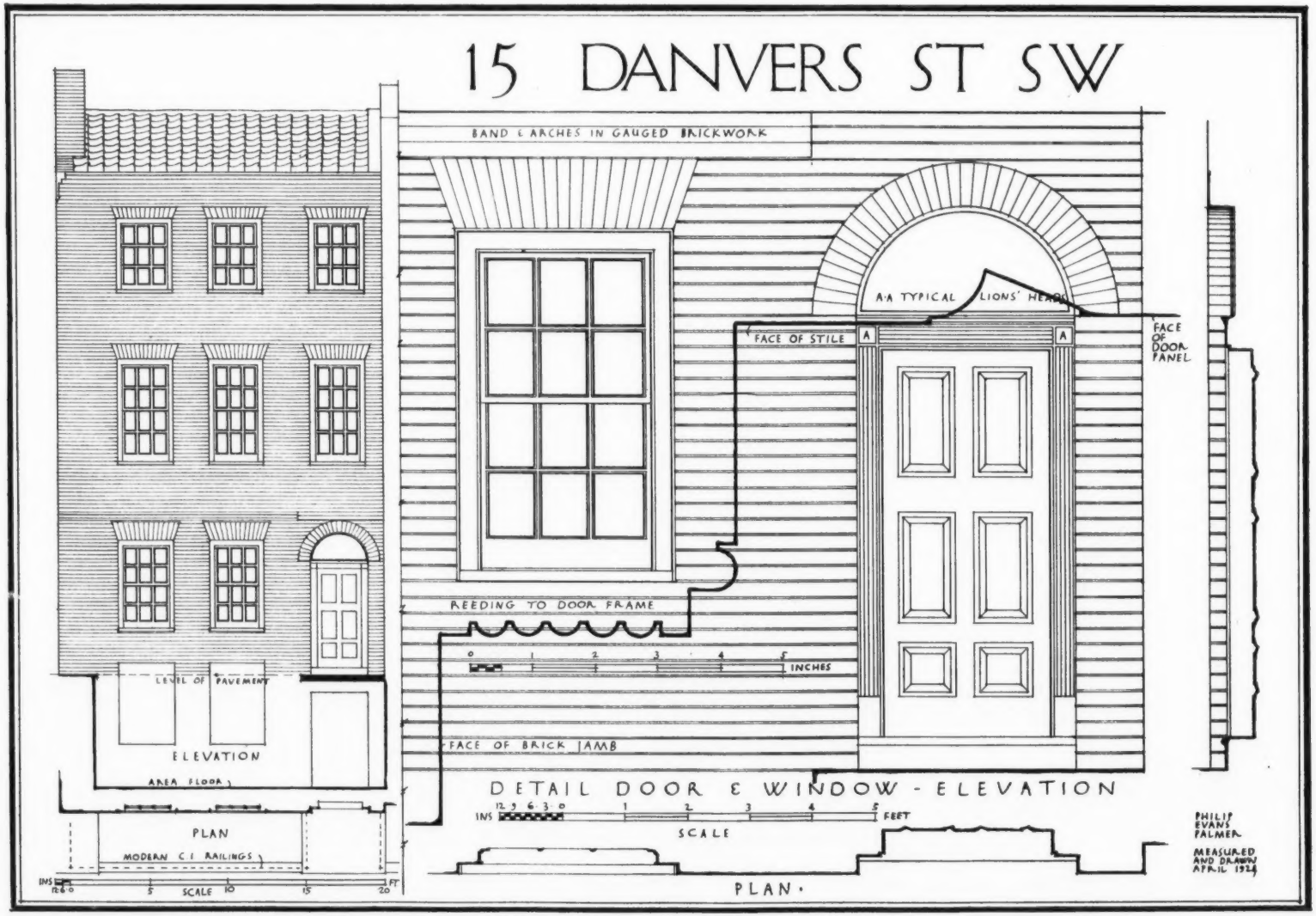
The Bridge at Banff

In view of Colonel Ashley's recent circular to local authorities urging the necessity for architectural supervision of the design of road bridges, the illustrations which we publish on pages 520-525 of the bridge which has been erected at Banff, Canada, from the designs of Mr. Frank W. Simon, F.R.I.B.A., are of special interest.

This bridge spans the Bow River in the Canadian Rockies, and forms a part of the development of the Banff National Park, one of the great areas of country held open in perpetuity for the Canadian people, and to afford a home for a large herd of buffalo. The bridge takes the place of an old unsightly girder bridge. It is carried out in reinforced concrete faced with Tyndall limestone—a beautiful light-grey stone quarried in Manitoba, not far from Winnipeg.

Measured Drawings. 50.—15 Danvers Street, Chelsea

Measured and Drawn by Philip Evans Palmer



Notwithstanding much recent rebuilding, Chelsea still abounds in simple work of the eighteenth century. A small typical house front in Danvers Street is shown above.

Chalk-Cement Walls

Mr. P. W. Barnett's Investigations

IN view of the numerous applications received at the Building Research Station of the Department of Scientific and Industrial Research for information bearing upon the two methods of employing chalk-cement for walling purposes, that is to say, by (a) making it up into pre-cast blocks, or (b) ramming it "in situ" between shutters, it was thought by the Building Research Board that the publication of the following notes by Mr. P. W. Barnett, A.R.I.B.A., would serve a useful purpose.

Mixtures Used and Method of Preparation.

(a) Chalk-cement Blocks.—The process of making chalk-cement blocks with a fairly high cement content, but without pressure, is described as follows in an article by Mr. J. F. Wilks in the "Journal of the Ministry of Agriculture," February, 1921: "Chalk is run through a 1 in. sieve and mixed in a heap with cement and a little water. The whole is then well stirred with a shovel, and the mixture, in its damp state, is placed in moulds and floated off with a trowel. When the mixture has set sufficiently the clamps are taken off the moulds and the blocks are then packed up to dry out. The drying takes about two or three weeks. The amount of water that should be added to the chalk and cement before the mixture is placed in the mould can be accurately gauged after a little experience. The mixture should be in a pliable state; if too much water is added it takes longer to dry off, but otherwise no harm is done."

(b) Ramming between Shutters.—The following specification was followed in the construction of one of the experimental cottages (No. 10 in Table II below) built for the Department of Scientific and Industrial Research at Amesbury, Wiltshire.*

"The chalk after digging will be broken to pass a 1½ in. mesh. It will then be mixed dry, on a boarded platform, with one-twentieth of its weight of Portland cement, by turning over at least three times, as in concrete mixing, and no mixture must be allowed to stand for more than thirty minutes before using."

A house with *pisé* walling at Prince's Risborough, designed and constructed by Mr. T. G. Davidson,† possesses composite walls of plain chalk and 6–1 chalk-cement, the latter being laid and rammed on the outer edges against the shuttering in order to obtain, with an economical use of cement, a good dense face, which requires no plaster covering.

Strength.

The strength of chalk-cement concrete may be said to increase with (1) the increase of the cement content; (2) the increase of water content (up to a point); and (3) the increase within reason of consolidating pressure applied.

Chalk-cement blocks of brick dimensions possessing a higher crushing strength than ordinary London burnt bricks have been produced in brickmaking plant in this country. The natural moisture content of the chalk used in these bricks averaged 13·5 per cent., and with up to 5 per cent. added moisture and a 4–1 mix, it was found possible to make bricks which crushed at 110 tons per square foot after nine weeks' maturing; pre-pressed bricks with 5 per cent. added moisture and a 12–1 mix crushed at 63 tons per square foot. The chalk for these tests was broken down to pass a 2 in. ring, then mixed with the binding material, the mixture being further crushed to pass a ¼-in. mesh. It was found that for brickmaking fine grinding was not desirable, as it tended to cause lamination. This also applies to chalk-cement for the *pisé* method; breaking down to the size of a nut is considered to give the best results, the object being a conglomerate of small lumps of chalk cemented together by plastic chalk and cement.

Moulded 10–1 chalk-cement blocks, made with a chalk of 15 per cent. natural moisture content, have shown a crushing strength of 23 tons per square foot after sixteen days' air storage. A few tests have been made at the Building Research Station on 6 in. chalk-cement cubes rammed in a mould with varying water contents, using a weak mix of twenty parts chalk to one of cement. The chalk used was broken to pass a ½-in. ring, and was mixed dry with the cement, the mixture being gauged just before ramming into the moulds. With about 29 per cent. added moisture a maximum crushing strength of 15·4 tons per square foot was obtained.*

Heat Transmission.

Chalk-walled houses are known to be "warmer" and more comfortable to live in than those of most other constructions, and recent tests† on the heat conductivity of walling materials have shown that this is not due simply to greater thickness, as is the case with ordinary earthen *pisé*. A comparison of the thermal conductivities of a few walling materials obtained in recent tests is given below in order of heat-insulating efficiency. It will be seen that chalk-cement is almost three times as efficient as stock bricks in cement in this respect.

Table I.

Material.	Conductivity in B.T.U. per sq. ft. per hour for 1 in. thickness for 1° F. difference in temp.
Chalk-cement (20–1)	2·2
Breeze concrete (4–1)	4·1
Fletton bricks in lime	5·0
Concrete (4 Portland stone, 2 sand, 1 cement) ..	5·5
Stock bricks in cement	6·1
Clay and gravel pisé	8·7
Sand-lime bricks in cement	9·3

Resistance to Damp.

Attempts have been made to render chalk-cement walls less hygroscopic by the addition of sodium silicate to the gauging water, where this is used, or by applying a coat of silicate solution to the surface of the completed wall. The objection to the former method is that the setting of the cement is accelerated to such a degree that deposition and consolidation may not be completed before the commencement of the setting action, and a loss of strength results. The use of sodium silicate, too, has been found to cause efflorescence through the formation of sodium carbonate, and this is aggravated when a silicate used contains an excess of alkali. If sodium silicate is employed it is desirable, therefore, to use that now on the market containing a small proportion of alkali to silica. It is significant that in one case where a proprietary "petrifying liquid" with a sodium base was used no trouble with efflorescence was experienced.

Cost.

Where chalk is obtainable on or near the site, its use with cement, either as pre-cast blocks or as *pisé*, results in an appreciable saving in walling costs. Mr. Wilkes, in his article above referred to, states that the saving over brickwork in a pair of cottages built in 1904, and costing £365 9s. 8d., was £14 for the pair; in another built in 1907, and costing £166, the saving was £21. Only the ground floor walls of these cottages were of chalk-cement blocks, and four parts of chalk were used to one of cement in their

* "Experimental Cottages." A report on the work of the Department of Scientific and Industrial Research at Amesbury, Wiltshire, by W. R. Jaggard. Published by H.M. Stationery Office, 1921.
† Building Research Board Special Report No. 5. Published by H.M. Stationery Office, 1923.

* Building Research Board Special Report No. 5. Published by H.M. Stationery Office, 1923.
† Building Research Board Special Report No. 7. Published by H.M. Stationery Office, 1923.

manufacture. Taking post-war figures, 1921, the table below, extracted from the report on experimental cottages referred to above, makes an interesting comparison by establishing a unit cost, represented by the figure 10, for the brickwork of a "control cottage" (No. 14).

Table II.

Materials.	No. of Cottage.	Costs taken as per unit cube.
Brickwork in mortar with a 2 in. cavity and galvanized iron wall ties (11 in. work).	14	10·0
Chalk and cement, 20 to 1, rammed between shuttering, reinforced with wire netting every 3 ft. in height and rendered externally with one coat of lime slurry (15 in. work).	10	8·1
Solid concrete, 8 to 1, rammed between shuttering (9 in. work).	12	8·1
Chalk and cement blocks, 12 to 1, with 2 in. cavity and galvanized iron wall ties and rendered externally with one coat of slurry (10 in. work).	13	6·19
7 in. concrete blocks, external face rendered and set in cement.	11	6·19
Wet chalk—"Winterslow" method (15 in. work)	9	6·19
Rammed chalk pisé rendered externally (15 in. work) ..	19	6·19
Rammed chalk pisé rendered externally (15 in. work) ..	5 Ratfyn	5·95
Do. do. do.	26 & 27	5·48
Chalk and straw rammed between shuttering (15 in. work)	4 Ratfyn	5·0

The cost of the chalk-cement *pisé* walls of a six-roomed cottage erected in Dorsetshire amounted to £113 19s. 3d., out of a total cost of £640, or 18s. 10d. per yard super. The walls, 12 in. thick, were formed by ramming a twenty to one mix in shuttering. It was estimated that the walls would have been about £28 cheaper had 18×12×9 in. blocks, made of seventeen parts chalk and three parts sand, and one part cement, been used; but it should be noted that this estimate assumes the same proportion of cement, although a higher proportion may prove desirable to avoid loss by breakage during handling. Mr. T. G. Davidson claimed that the 1 ft. 10½ in. composite walls of the house at Prince's Risborough, previously referred to, were 35 per cent. cheaper than 11 in. hollow brick walls would have been.

General.

Three cottages were built for the Department of Scientific and Industrial Research at Amesbury having *pisé* walling with chalk as the principal ingredient, and all three have proved satisfactory; No. 10, having walls of chalk-cement composition described above, being, perhaps, the most successful.

A cottage built by the Ministry of Agriculture at Amesbury with 10 in. chalk-cement block hollow walls (cottage No. 13 in Table II) has also proved quite weatherproof and generally satisfactory.

Chalk-cement bricks, unprotected, cannot be said to have been so successful. Samples of these, built into a wall adjoining one of the Amesbury cottages, are showing signs of erosion.

Lime slurry is probably the most satisfactory finishing coat for chalk-cement walls. A cement slurry is not advisable; on one of the chalk-cement block cottages at Amesbury it was a complete failure. A heavy lime plaster coat would probably give trouble unless reinforced with wire netting fixed to the wall.

Chalk-cement makes the best of *pisé* or cob walls, but to be durable it must be just as carefully protected from damp from above and below as ordinary earth in such construction. As a concrete for small house construction, when protected on the surface, it possesses advantages over richer concretes made with the more commonly used aggregates; the greater strength of the richer concretes is as a rule greatly in excess of requirements.

Euclid for Fun

By WILLIAM HARVEY

WHITTLING a stick is a well-known pastime not usually associated with any great expenditure of mental energy; solving one of old Euclid's problems might be voted a bore for the opposite reason, but combine the two employments, and a sufficiently entertaining occupation presents itself.

The latest findings of archæologists, by the way, go to show that the geometrician of ancient Alexandria probably never intended his theories to be read for the purpose of "improving the mind," but that since geometry was then a matter of general and practical interest, he took the trouble to record certain truths of use to his fellow-men in their everyday occupations.

The beautiful solid shown in Fig. 1 illustrates the value of combining practice with theory, for any child can carve one from a cube of cork or play-wax in a few moments in spite of its appearance of awe-inspiring complexity. This double-tetrahedron served the necromancers of mediæval times in their magic art, its principal function being the mystification of the client, for that was the essence of the business if Chaucer and Ben Jonson are to be believed.

What the necromancer probably did not reveal was the ease with which the double-tetrahedron is produced by making a notch in each of the twelve edges of the cube, and, to those unfamiliar with the transformations of geometrical solids, this simple process would hardly be likely to occur.

The old puzzle of the gardener who has been instructed to plant four apple trees all equally distant from one another is solved by reference to a geometrically regular body, the tetrahedron, also easily carved from a cube. For this solid only four cuts are necessary, as its four equilateral faces are determined by amputating the four alternate corners of the cube, as shown in Fig. 2.

After trying to set out his trees at the corners of a square, and finding that this arrangement would not work, because the diagonal of a square is longer than its side, the gardener discovered that he could obey instructions by planting three trees at ground level at the three corners of an equilateral triangle and then making a large mound of earth between them upon whose top he planted the fourth tree. He took care, of course, to make the sloping height at each corner of the mound equal to the distance between the trees at its base. The practical possibility (and the absurdity) of so doing are both indicated in the sketch.

In spite of the antiquity of this puzzle, some one always requires an explanation whenever it is propounded, so it is just as well to be prepared.

Pleased with his own ingenuity, the gardener proposed to himself a new riddle, which he hoped to solve on the same principle as the last. Having an empty wire fern-basket in the shape of a ball hanging in the conservatory he determined to plant four ferns at equal distances from one another, but here an unforeseen difficulty arose. Instead of setting out his triangular base on the flat earth of the orchard he had to work to the curve of the fern-basket, and found that he didn't know how long to make the first line. If his triangle was too big, the fourth point on the opposite side of the fern-basket came too near to the first three, and if it was too small the fourth point came too far away.

Numerical calculation and accurate projection by mechanical drawing were not in his line, but he solved his problem, nevertheless, with the aid of a nursery ball. This well-known object he found prettily decorated with three circles of bright-coloured paint, each band being divided into four equal lengths where the other circles intersected it. Between them they cut up the surface of the ball into eight exactly equal parts, each part being an equilateral triangle swelled out to the curve. Counting these eight faces and finding their number just twice as many as he wanted, the gardener hit upon the bright plan of putting

FIG 1

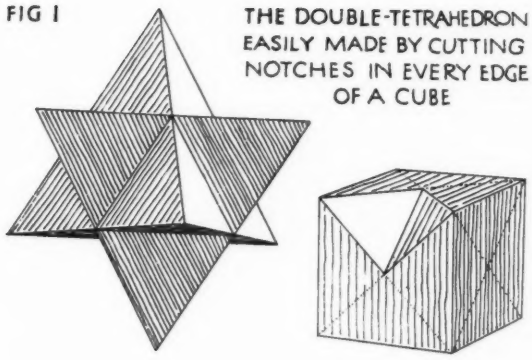


FIG. 2.

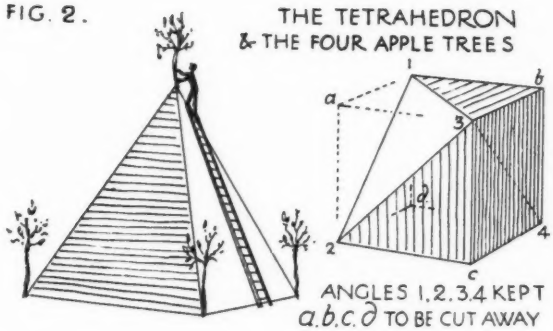


FIG. 3

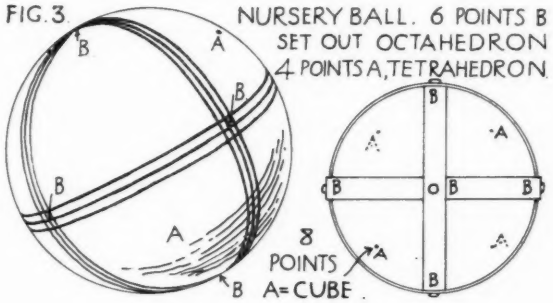


FIG 4.

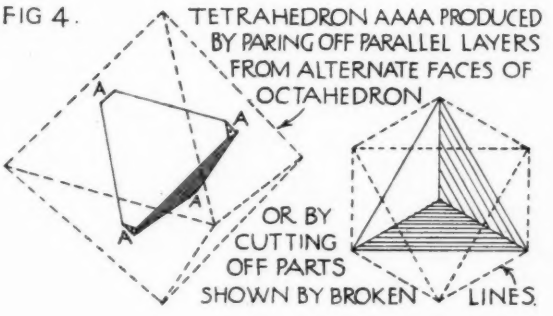
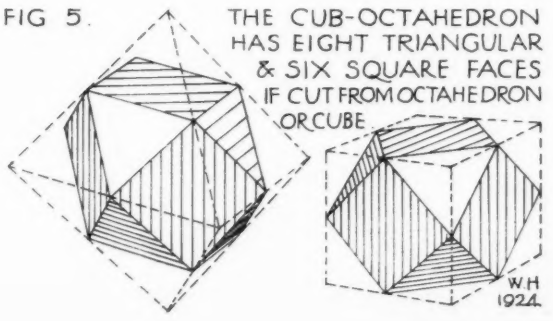


FIG 5.



a chalk mark in the centre of each alternate triangle, and found that he had arrived at the principle on which to work. He set out three intersecting bands of paper, each divided into four equal parts, about his fern-basket, and fastened them at all their six meeting places with paper-fasteners. Then he planted one fern in the centre of each of four alternate faces. (See Fig. 3.)

Now, provided that one does not worry about just how he found the centre of each triangular face—it can be done quite simply—he was quite correct in his setting out, and this may be proved without any learned dissertation by simply examining the three models we have in hand. The pattern formed by joining the six paper-fasteners by straight lines is known by the name of octahedron, whose spherical form is marked upon the nursery ball. (Fig. 3.) This regular figure has also been marked out in making the double-tetrahedron. (Fig. 1.) Its edges, twelve in number, are indicated by the lines at the bottoms of the notches. It is obvious to anyone who has made and is handling the model double-tetrahedron that each of its eight points corresponds with the centre of the triangular face of the octahedron, so that's that! Q.E.D.!

Theory without the model is not nearly so kind to us. Had the gardener been so unfortunate as to look in the encyclopædia instead of the nursery in his anxiety to discover the relationship between octahedron and tetrahedron he might have been hit in the eye by the following statement, whose ambiguity would make it quite useless for his purpose: "The tetrahedron is regarded as a secondary form of the octahedron from which it is derived by cutting away the alternate angles or edges."

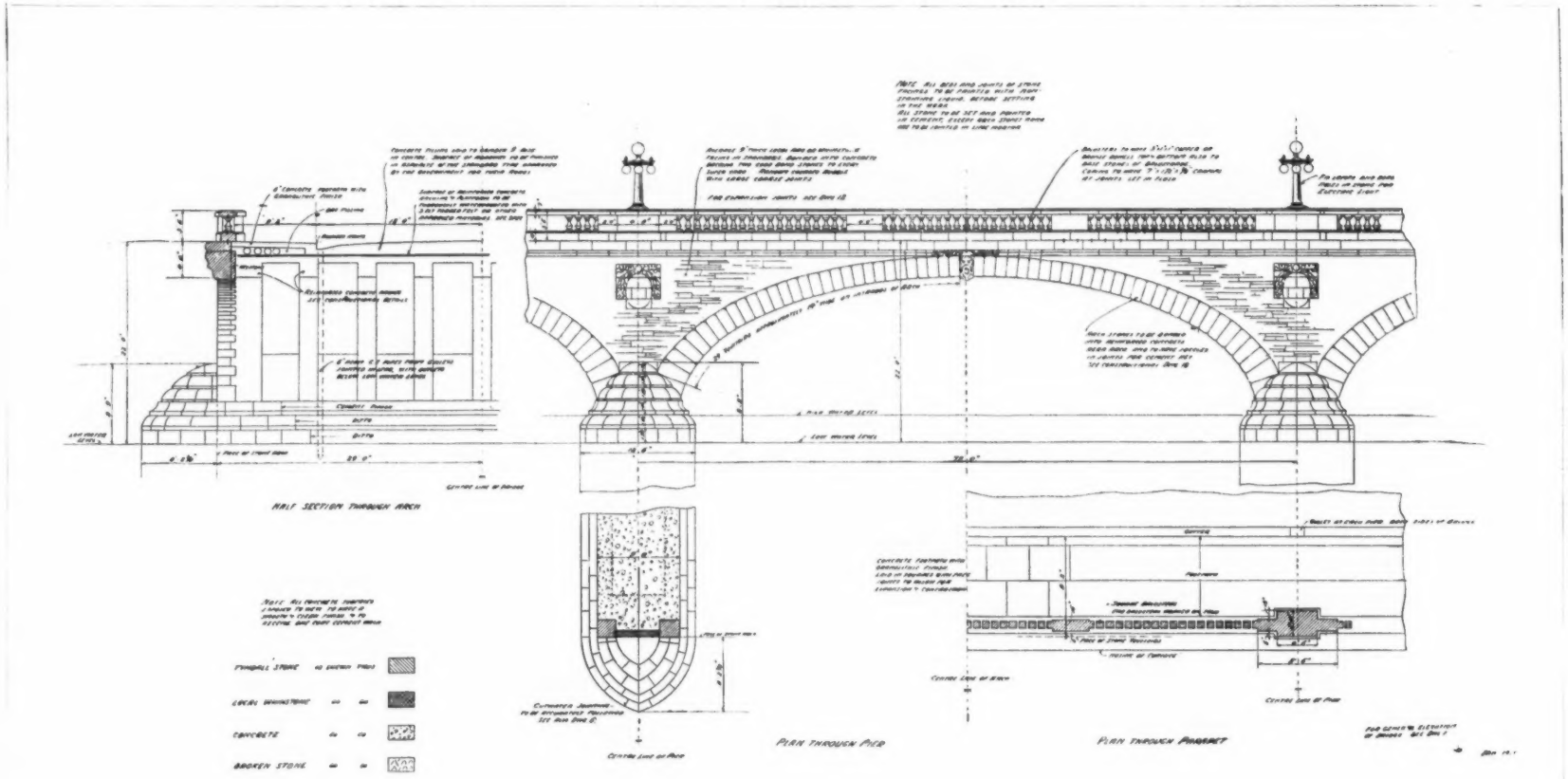
The gardener in choosing four alternate faces in which to plant his ferns may be considered as having spiritually pared away the other four by the simple process of neglecting them, and the reader who has entered into "Euclid for fun" can actually reduce an octahedron to a tetrahedron by shaving equal parallel layers from four alternate faces.

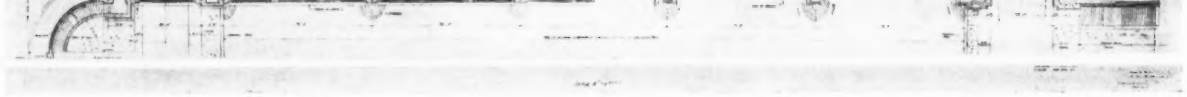
Another method, which would not, however, be any particular use in solving the fern-planting problem, is to place the octahedron with one face flat on the table and cut slantwise down from the centre of the uppermost face to the three edges of the base. Possibly this is what the encyclopædia is trying to say, but it is rather difficult to reconcile the paring away of three adjoining corners and the whole of the faces of the original octahedron with the exception of its base with the process of "cutting away the alternate angles or edges."

Whittling out a geometrical model not only possesses the notable advantage that the combinations of the five regular solids are practically inexhaustible, and can supply rational entertainment when one is stranded on a railway station, but the results obtained by ordinary careful working are not deceptive. The use of models, or rather the exercise of making models and examining them in the light of the processes just performed would prevent the insertion of "howlers" like the following in a well-known geometry book: "A cube may be inscribed in an octahedron by joining the middle points of each edge"; and again, "A new solid called the cub-octahedron is formed by slicing off the corners. It has six squares and six equilateral triangles for faces." The use of a penknife would soon demonstrate that "joining the middle points of each edge" marks out, not a cube, but the cub-octahedron mentioned in the next clause, and the same solid can be made by slicing off the corners of a cube. Whether the amputation is performed on cube or octahedron the number of triangular faces is the same, but it happens to be eight, not six as stated in the book. This cub-octahedron was a favourite shape for the heads of pins and ornaments among the Romans, and may be seen cast in glass as a paper-weight or a curio in the windows of most opticians' shops in present-day London. The ingenious nests of balls, one inside another, which the Chinese carve out of a single block of ivory are generally provided with their larger holes arranged in the centres of the faces of the cub-octahedron inscribed within the sphere.

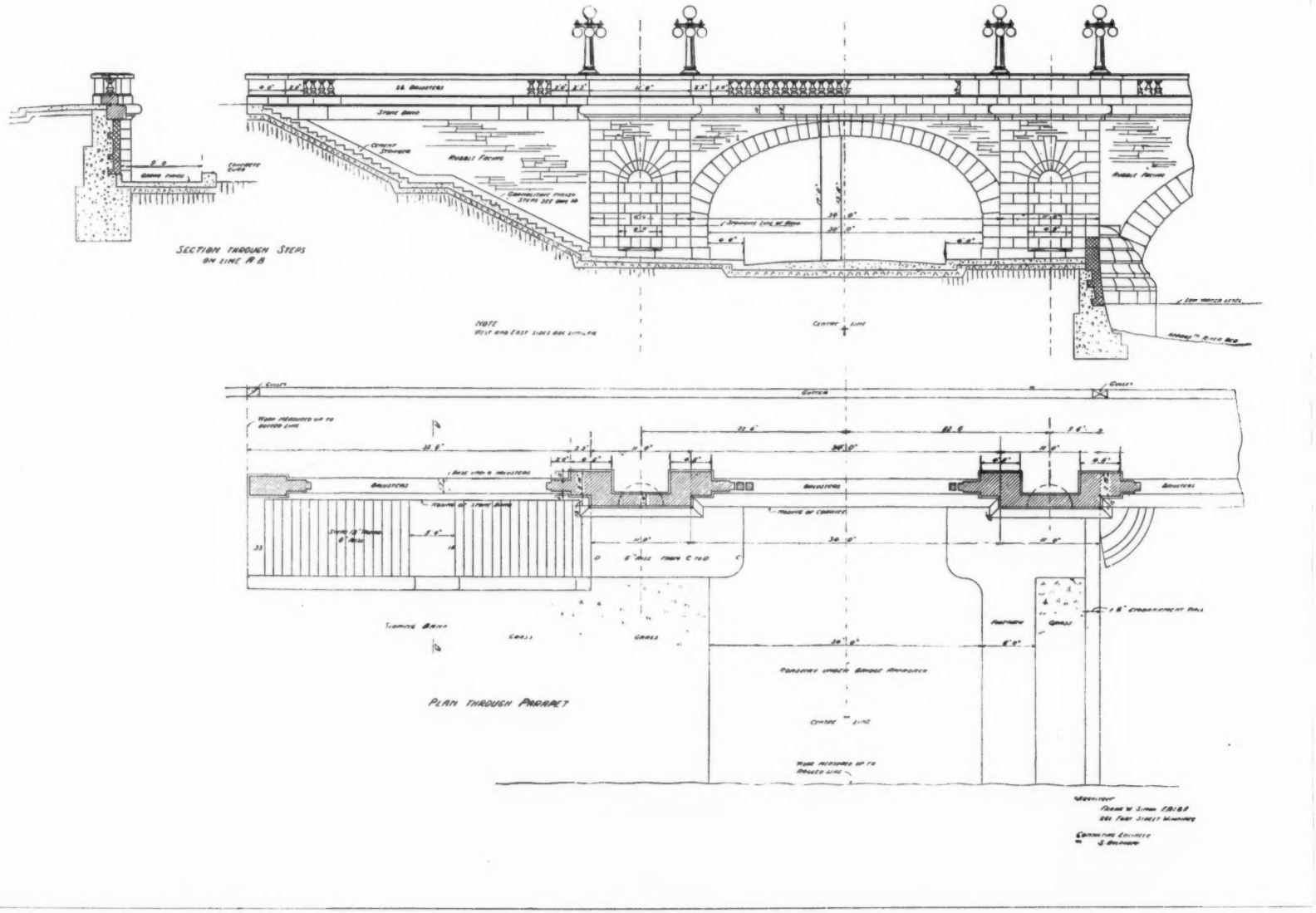
Architects' Working Drawings. 98.—A Bridge at Banff, Canada, over the Bow River

Frank W. Simon, F.R.I.B.A., Architect

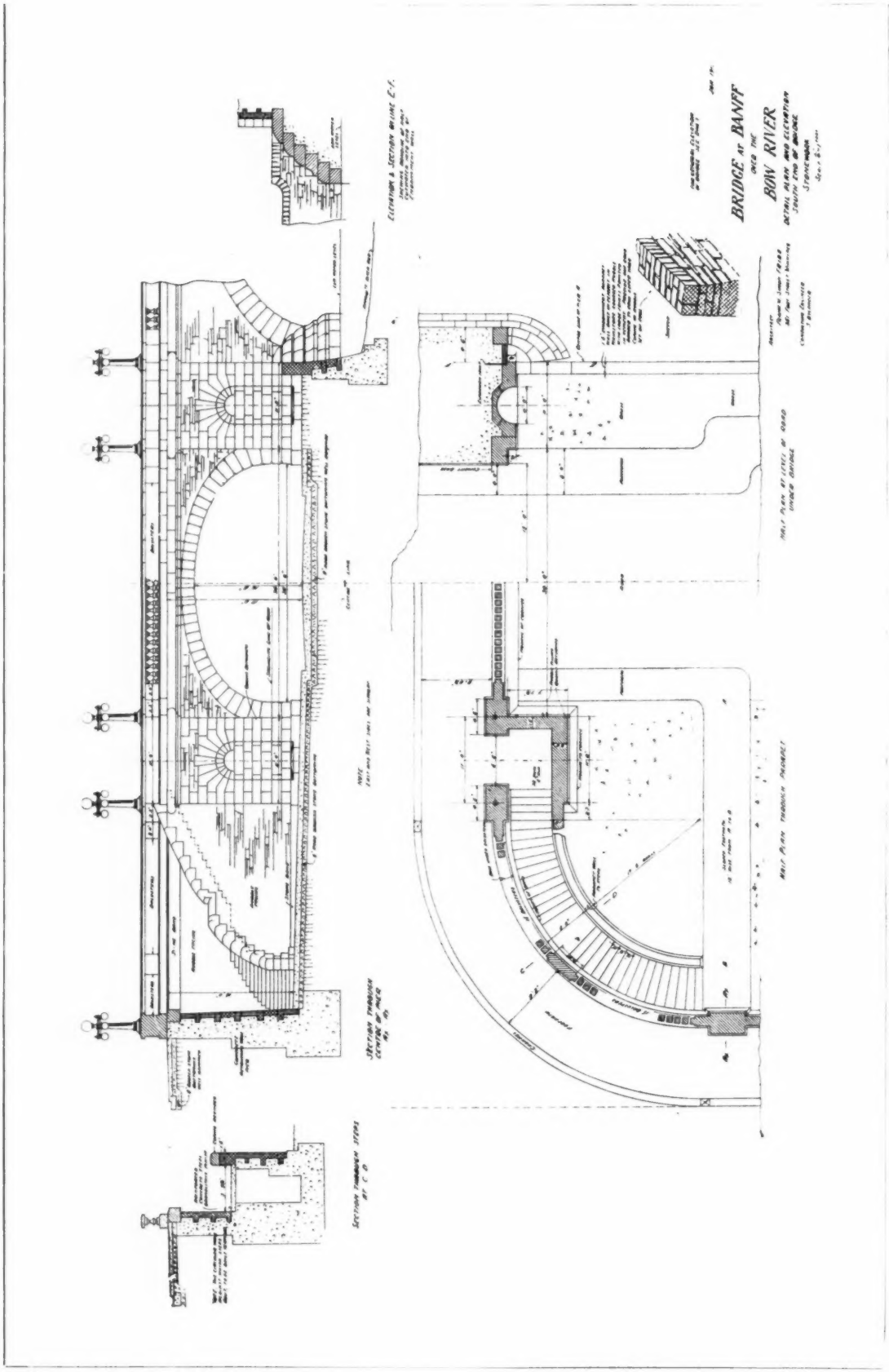




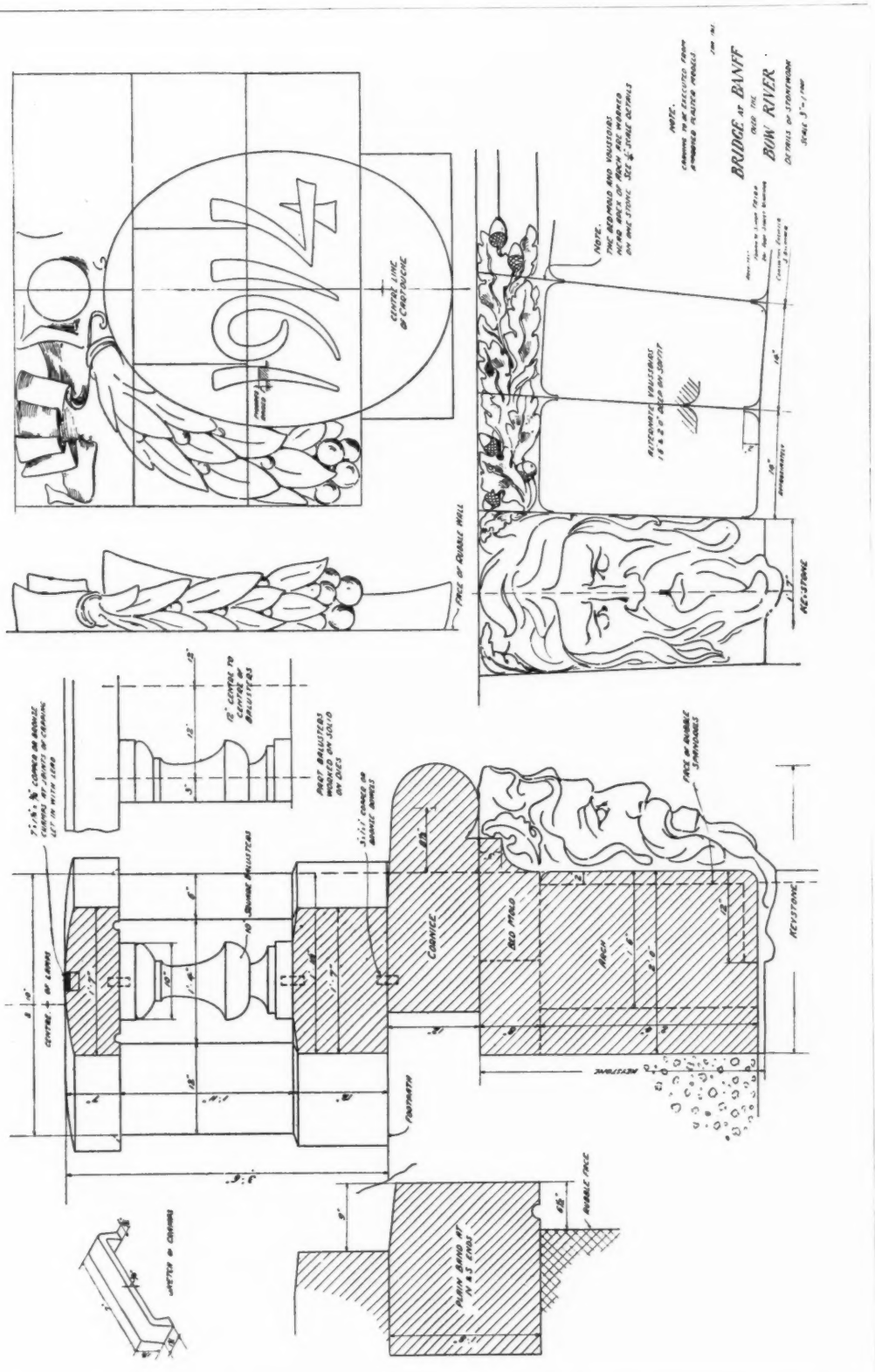
A GENERAL ELEVATION AND PLAN.



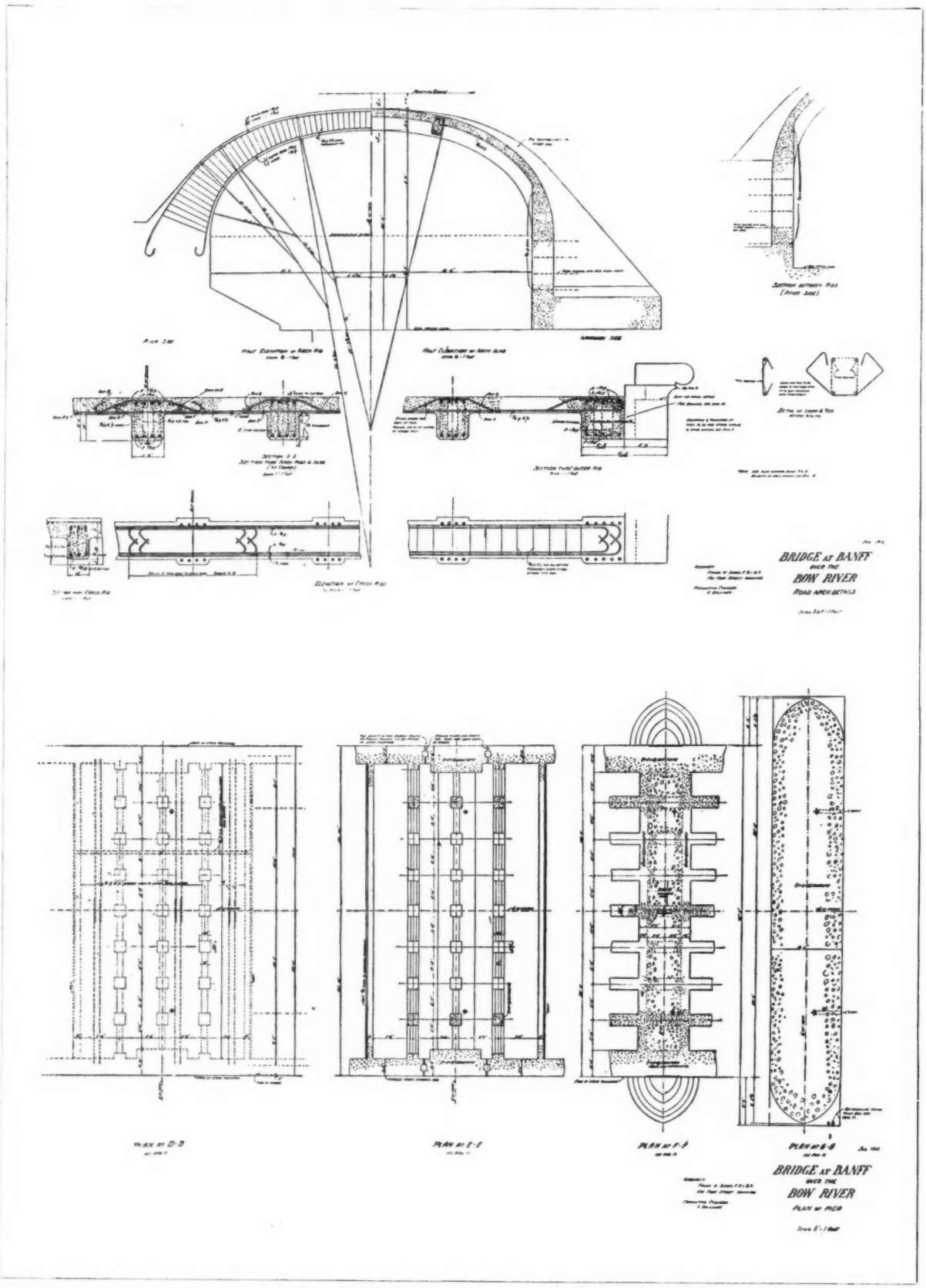
This bridge spans the Bow River in the Canadian Rockies. It is carried out in reinforced concrete faced with Tyndall limestone. Further particulars are given on page 514.



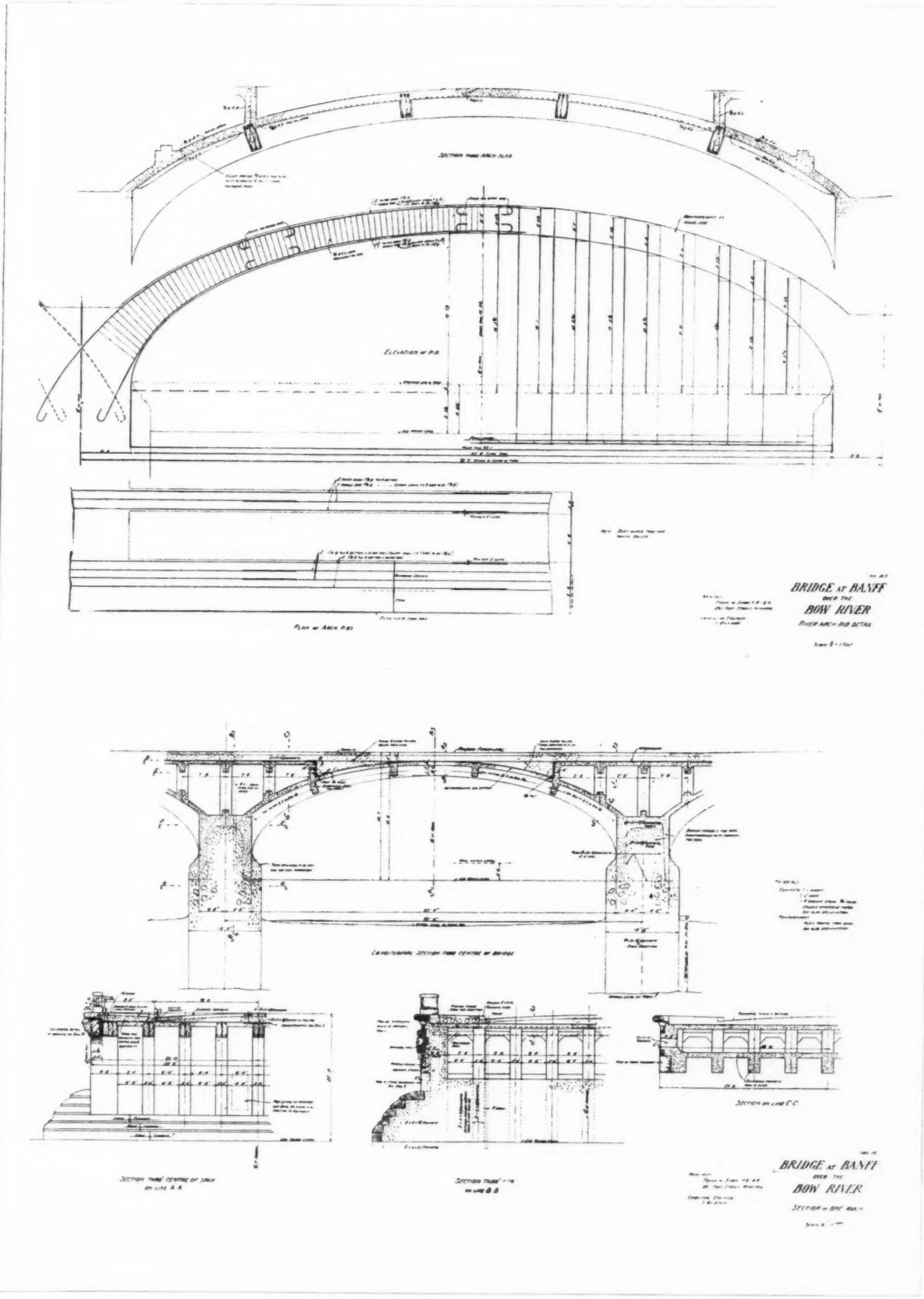
A BRIDGE AT BANFF, CANADA, OVER THE BOW RIVER: A DETAIL PLAN AND ELEVATION OF THE SOUTH END OF THE BRIDGE.
FRANK W. SIMON, F.R.I.B.A., ARCHITECT.



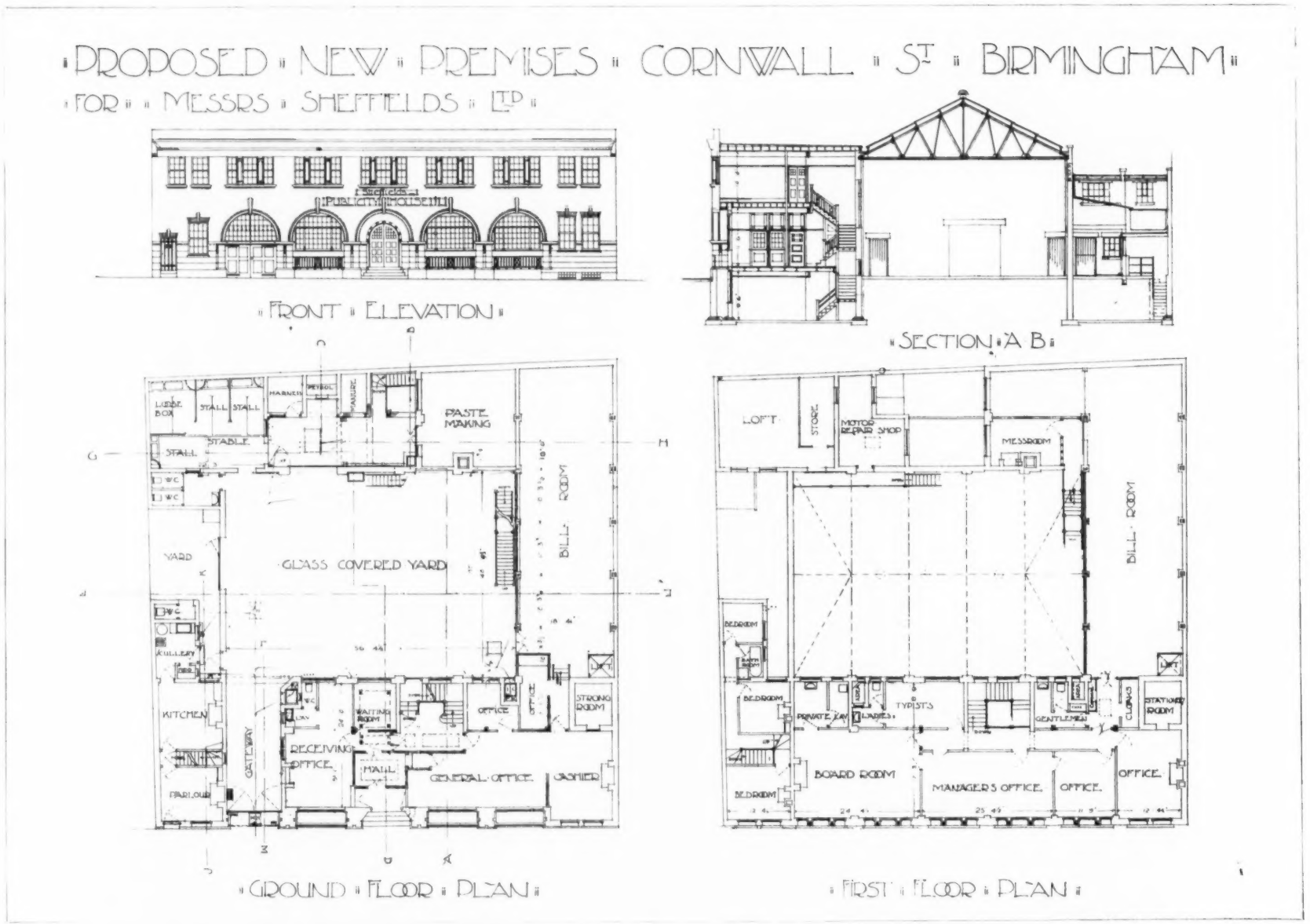
A BRIDGE AT BANFF, CANADA, OVER THE BOW RIVER: DETAILS OF STONEWORK.
FRANK W. SIMON, F.R.I.B.A., ARCHITECT.



A BRIDGE AT BANFF, CANADA: CONSTRUCTIONAL DETAILS. FRANK W. SIMON, F.R.I.B.A., ARCHITECT.



A BRIDGE AT BANFF, CANADA: CONSTRUCTIONAL DETAILS. FRANK W. SIMON, F.R.I.B.A., ARCHITECT.



NEW PREMISES FOR MESSRS. SHEFFIELDS, LTD., CORNWALL STREET, BIRMINGHAM. BLOOMER AND GOUGH, ARCHITECTS.

Current Architecture. 266.—Business Premises and Warehouse in Cornwall Street, Birmingham

Current Architecture. 266.—Business Premises and Warehouse in Cornwall Street, Birmingham

Bloomer and Gough, Architects

This building is so designed that two more floors may be added at some future time. The structure generally is steel-frame, the walls being of brick, with details in terra-cotta. Further particulars are given on page 514.

New Methods of House Construction*

By JOHN WILSON, F.R.I.B.A., F.R.S.E., Principal Architect, Scottish Board of Health

THE primary reason for the desire of the Government and the public to find alternative methods to ordinary brick and stone construction is the failure of the building trade, to whatever reason we may ascribe it, to supply the necessary housing accommodation for the country. The second is to find methods of construction which can be carried out by semi-skilled and unskilled men who can receive a short and intensive training to enable them to do this work. We all desire to have stone or brick houses built, but the labour and the materials are not available for the building of the houses within a reasonable time. The question is primarily a social one, and drastic steps must be taken at once to provide accommodation in order to house homeless people and to clear the festering slums in our midst.

Since the war, large numbers of satisfactory concrete dwellings have been erected, in which several methods of construction have been employed. Most of these schemes, however, rely to a lesser or greater degree upon the employment of those expert trades in the building industry which are most scarce and which are essential to the requirements of the present building programme in materials of construction other than concrete. There is a sufficient body of experience to show that comfortable, dry and healthy dwellings, satisfactory in appearance, can be constructed of concrete. Suitable aggregates are to be found in most districts. They require no skilled labour to prepare, and the quantity available is generally plentiful.

One of the best methods is the use of concrete placed or poured *in situ* between wooden or steel shutters. This method of building the walls and partitions is a proved success, but has not been largely employed. The outer layer of the walls of a house constructed by this method should be made impervious and the inner layer made of porous ingredients, of such a nature as would prevent capillary attraction and the passage of heat. If very dense concrete is used provision must be made for expansion.

In these houses the walls are finished externally by cement rendering or roughcast, and inside by ordinary commercial plaster. These plastered surfaces, together with poured concrete, form the outer wall, and no air space is required. In order to minimize plastering as far as possible, in many cases a fair finish can be produced by carefully stopping all holes, rubbing down and applying a cement wash with a brush, and so preparing a surface sufficiently well to take paper or distemper. The question of an efficient system of easily moved shuttering is one of the greatest importance in connection with poured *in situ* concrete houses.

The system of construction which consists of a wall formed of two pre-cast slabs—these being held at the ends by cement concrete pillars or posts, either pre-cast or cast *in situ*—has been largely employed. They all suffer, however, from the fact that if they are erected by other than skilled labour, it is essential that they should be roughcast or cemented on the outside to make them weatherproof, and plastered within to make them pleasing in appearance. On the other hand, if the slabs are so well placed as to make this roughcasting or plastering unnecessary, they require the employment of the skilled bricklayer or mason to set them properly, and to make them water-tight and sufficiently smooth on the interior either to carry distemper or to be capable of receiving a paper covering.

Houses formed of pre-cast slab or pre-cast blocks of not less than 3½ in. to 4 in. thick, as this is the minimum thickness for a satisfactory bed, are quite satisfactory, if they are composed of clean and properly mixed ingredients, if a sufficient amount of horizontal bond is provided, and if the vertical pillars (where such are used) are so constructed that condensation on their inner surface cannot take place.

Another system which is worthy of mention is a poured concrete method of construction, which was tried some years ago in Liverpool, and is about to be repeated, and involves the erection of buildings out of large concrete pre-cast slabs poured into moulds. The walls are not provided with air spaces, but made of impervious concrete without and breeze concrete on the inner surface. The method has produced effective houses, which have been in use for twenty years, and there seems no reason why such a system should not be adopted in other areas.

There are also one or two schemes which are slight modifications of the above and have been tried both here and on the Continent. The unit slabs, which are about 2 ft. 6 in. to 3 ft. wide, and are of such a length as to form one storey, are narrower and of less weight, and therefore require less heavy machinery for their manipulation. Such a system points to the possibility of a large output on the basis of factory production.

Timber houses may be divided into three classes: (1) houses of normal timber construction built entirely of timber; (2) houses of timber framing and infilling of various other materials; (3) houses of timber framing covered with steel sheets on outside face. The houses coming under class (1) may be further sub-divided into (*a*) houses built on the site, and (*b*) houses constructed at a factory in large parts or panels and assembled on the site.

As regards class (1), generally the timber house is not, of course, a new or untried method of construction. In many parts of the world it is the normal type of building, and in this country there are many examples of wooden houses which have existed for many years and have proved satisfactory. Experience shows that if the proper class of timber is used, there is nothing against the wooden house as regards weather resistance, durability, and the transmission of heat. The risk of fire, which is one of the main factors to be taken into account in the consideration of timber dwellings, would tend to restrict their adoption on a big scale in the large industrial centres. Further, if the erection of timber houses were to be carried out in large numbers on the site by the ordinary methods of building, most of the skilled building craftsmen required for the normal building programme would still be needed, with the substitution, to a considerable extent, of the carpenter for the bricklayer.

As regards class (2), i.e., houses with timber framing, such as the old-fashioned English half-timbered type, with filling of various materials to complete the structure of the wall. Where timber is involved it is essential so to combine the materials as to prevent the incidence of dry rot, which frequently occurs if timber is buried or partially buried in cement concrete. If a material which had not this objectionable characteristic could be found and not only used to make an impervious exterior, but also fill up the cavities to the inner surface of the wall, and so prevent possibilities of vermin and other difficulties arising out of this hollow space, it would be a great advantage.

In regard to class (3), i.e., houses with timber framing faced with steel plates, the Weir type of house is the most prominent. Lord Weir's house is essentially a timber-framed house faced externally with steel sheeting. There is therefore nothing very novel in the principle of its construction, and there is abundant evidence that houses made of steel on wooden framing can be considered as a reasonable method of providing immediate housing accommodation. Such houses have been occupied, when properly maintained, either as dwelling houses or as buildings of various kinds for many years from the date of their construction.

* Extracts from a paper read before the Edinburgh Architectural Association.

Contemporary Art

The Australians Again.

A certain disappointment awaits attendance on the latest exhibition of Australian art now being held at the Spring Gardens Galleries. The old cleavage between the artists who live in the Commonwealth and those who live in Europe exists, and once again the art of sculpture is conspicuous only by its absence. What London is waiting for is a really representative show of all the arts and all the artists. No more significant phenomenon has appeared in the history of modern art than the spontaneous hatching of the full-fledged and brilliant bird of Australian art, but England would like to see it in its full plumage.

At the present show only the painters resident in Europe exhibit, and as these exhibited only a few months ago, something of freshness and spontaneity is lost. Moreover, many of the works now shown are well known. They are none the worse on that account, as such fine things as "The Sculptor and His Brother," by George Coates, and "Blanchette," and "Self Portrait," by James Quinn, are there to prove. Architecture receives sympathetic attention in many a good canvas. The white studies of mid-France by A. Baker-Clack are beautiful, and so are the studies in the same region by Cumbrae Stewart; Dora Meeson's "London Bridge," which received Honourable Mention at the 1923 Salon, is a competent piece of work. The same artist's decorative panels of children and flowers are a welcome interpolation into this pictorial congeries, while as an indication of her versatility are her buildings found in the streets of Cairo. Edith M. Fry provides some sympathetic garden arrangements, and Fred Leist one architectural piece and a number of stimulating portrait studies.

The Leicester Galleries.

Meanwhile the most notorious of all the Australians renews his attack on British virtue. Unlike the display at Burlington House, this new collection of work by Norman Lindsay has a *raison d'être :* the water-colour drawings. These are definitely decorative in character.

At the same gallery Edmund Blampied shows how well an accomplished etcher can treat sympathetic subjects in painting. The vision is the same while the method varies. The pictures and drawings of buildings are full of good work and have very pleasant subdued colour.

The Goupil Gallery Salon.

Fewer works are shown here than is usual, and to some extent in consequence the level is higher. The treatment of building subjects rises to distinction in more cases, and in more ways than one. The veteran and friend of Whistler, Walter Greaves, provides one more astonishment in his "Entrance to Cremorne Gardens in the Seventies"; James Pryde two, smaller than usual, of his imaginative evocations; William Nicholson two distinguished light of colour, simple studies at Avignon, while Beatrice Bland comes out as never before with no less than half a dozen admirable oil-paintings of streets and canals in Venice. An interesting oil interior is F. H. S. Shepherd's "The Listener." Among the drawings there are some delightful architectural things, such as Richard Wyndham's "Market Place in Marseilles"; a nicely seen study called "In the Gardens," by H. M. Livens; Charles Ince's "Fishermen's Dwellings," and Charles Ginner's remarkably able "Cannon Street Station." E. Barnard Lintott's "Aldeburgh" and "Cagnes" are accomplished and true even if slight. There are drawings by two sculptors—Havard Thomas and Eric Gill. The latter's secure the maximum of expression from the minimum of lines. They are true glyptic work, sure and direct, as though done with a cutting tool; as purely glyptic in quality as the fragment in Caen stone, "The Sleeping Christ," by the same artist, which is the only piece of sculpture in the show.

At the same galleries is a collection of recent paintings by Sylvia Gosse, the best of which are undoubtedly the half-dozen architectural subjects found in Dieppe.

Pictures, Prints, and Drawings.

The collection at Tooth's Galleries of pictures of Irish Life, by Jack B. Yeats, show an advance on the artist's last exhibition. A development even of verisimilitude has taken place, and these human documents are more convincing than ever. No man paints quite like this observer, who gets right up to his subject and brings it to a summary conclusion.

A very fine collection of one hundred woodcuts—I use the old, well-recognized term for all and every kind of engraving on wood—reveals at the Redfern Gallery a sound conception of the art and an accomplished practice in the work of both Robert Gibbings and Eric Daglish. The former deals with buildings and figures, illustrations and ideas, expressed in simple masses of white and black, almost silhouettes in certain cases, and without chiaroscuro for the most part. The prints of the latter are rich in texture and true in spirit, and some have floral backgrounds quite decorative in character in a way which neither Bewick nor Linton knew.

Leon Underwood has been demonstrating the return to primitivism and its justification by an exposition of old Austrian and Slovene paintings on glass; one of the outlets in the directions of art and religion of the peasant spirit. They are quite crude, of course, and child-like, but quite convincing. Leon Underwood is trying, both in his sculpture and in his decorative painting, to get back to this spontaneity of impulse. His large wall-panel, 9 ft. by 4 ft., called "Peasantry," depicting a scene in Kent, has gone to the Pittsburgh International Exhibition at the Carnegie Institute, and will accompany the collection when it travels, to New York, St. Louis, and Philadelphia.

KINETON PARKES.

WALL PANEL: "PEASANTRY." BY LEON UNDERWOOD.

THE Clock Tower in Newington Butts, Southwark, S.E., marks the site of many churches, the last of them being erected in 1793. This old church was removed in 1876. The Clock Tower was erected in 1877. It is thought that the Clock Tower marks the site of the Saxon church named in "Domesday Book" in connection with Walworth.

The tower is 100 ft. high. It was built of Bath stone. Within thirty years of its completion it was in an advanced stage of decay. The surface had suffered deterioration from the attack of the acid in the atmosphere. In 1908 the more decayed portions of the surface were replaced with new stone from the same quarries. The remainder of the surface was cleaned, and the whole was treated with a so-called stone preservative.

Last year the stone had again become so decayed from atmospheric attack that the condition of the structure became dangerous. Mr. Arthur Harrison, M.I.C.E., Engineer and Surveyor of the Borough of Southwark, and the Borough Council consulted Mr. A. T. Bradford, of Messrs. E. J. & A. T. Bradford, of 62A Borough Road, regarding methods of restoration. Three alternatives were considered. First, employing the method adopted sixteen years ago was abandoned. Second, refacing the tower in Portland stone, at a cost of £3,000 to £4,000 was discussed. It was decided that this was too great an expense. Third, Mr. Bradford suggested that the surface be refaced with a Portland cement mortar, composed of "Atlas White" Portland cement and a white silica sand of coarse grain, at a cost of considerably less than £1,000.

The last-mentioned procedure was adopted. The work was carried out by Mr. Bradford's firm. The perished surfaces were cut away to a point where a proper foundation for the white concrete could be obtained. The stonework was treated with a grout composed of "Atlas White" Portland cement and "Colemanoid," and the new work in white concrete was modelled entirely *in situ* with the exception of the detached finials, which were cast from the same materials. Even the plain mouldings were the work of modellers rather than plasterers, for the ultimate success of the work depended vitally upon craftsmanship. Copper dowels were inserted to carry the projections. Wide random joints, pointed with "Atlas White" concrete mortar, were adopted throughout.

An attractive finish was secured by slightly varying the tone and texture of adjoining sections of the concrete surface. The final textural finish was obtained by rubbing the surface of the white concrete after it had hardened, just as natural stone might be rubbed. The joints pointed in "Atlas White" produced an effect similar to that of blocks of natural stone. The tower is not an exhibit of restored stonework, in the sense that it has been entirely refaced with white concrete. The stone is completely covered, and thus protected by the concrete renderings from the penetration of water and moisture. No attempt was made to disguise the material used. It has no pretension to being other than proper white Portland cement concrete, though to the lay observer the tower has the appearance of being constructed from new masonry.

Another instance of covering decayed stone with white concrete renderings was executed on St. Cuthbert's Church, Philbeach Gardens, last autumn for Mr. S. Theo. Puzey, Surveyor. The stone trim on that church had become very badly damaged by atmospheric acids, and "Atlas White," Leighton Buzzard silica sand of coarse grain, and water to which "Colemanoid" had been added were successfully employed in like fashion to the work on the Clock Tower by Messrs. Dore, plasterers.

In cases where London atmosphere causes disintegration of the surface of stone, employing white concrete to protect Bath or other stone from further deterioration has the advantage of economy and permanency. No instance can be found in the London area where the surface of proper Portland cement concrete has been destroyed by atmospheric attack. Architects and surveyors who are interested, or who have under their supervision buildings which have suffered from surface deterioration can obtain from The Adamite Company, Regent House, Regent Street, London, W.1 (sole representatives of "Atlas White" Portland cement and "Colemanoid" respectively), specifications and detailed instructions for applying white concrete renderings to stone surfaces.

Frederic Coleman

Law Reports

Marquis and Right of Way

Marquis of Granby v. *Bakewell U.D.C.*

Chancery Division. Before Mr. Justice Eve.

In this case the Marquis of Granby sought a declaration that there was no right of way to the public over three paths running through the grounds of Haddon Hall Park, Derbyshire, as alleged by the defendants, the Bakewell Urban District Council. The marquis also sought an injunction against the defendants to restrain trippers and the removal by them of certain fences, walls, gates, and notice boards, placed by him across the paths to protect what he considered to be his private rights. Two of the paths in dispute had been the subject of closing orders by the justices some 125 years ago.

It was stated that the grounds had always attracted sightseers, and were the "joy" of architects and Nature lovers. Of late they had been invaded by thousands who arrived in charabancs and left a lot of litter about.

During the hearing it was stated that a settlement had been arrived at.

The Council made admissions with regard to the paths which were the subject of the closing orders and that this would ensure the privacy of Haddon Hall, while on the other hand the marquis dedicated to the public a path "both useful and pleasant," a little way from the hall. The action was stayed on the terms agreed, it being stated that provision had been made for the costs.

Brick Houses and Interlocking Bricks

Surrey County Council v. *Sims.*

King's Bench Division. Before Mr. Justice Mackinnon.

The Surrey County Council, in this action against the defendant, Mr. Harry Sims, sued for possession of a semi-detached cottage and small holding at the Little Woodcote estate, and for rent and the repayment of a loan, etc. The defendant set up a counter-claim for damage he alleged he had sustained owing to the condition of the cottage and land.

The County Council were represented by Mr. Saul, K.C.; defendant appeared in person.

The facts appear fully in his lordship's judgment.

His lordship stated that the Surrey County Council sought possession of premises that the defendant, Mr. Sims, held under an agreement dated December 31, 1920, and also payment of arrears of rent and water rate and the amount they had paid as guarantors of a loan made by Barclays Bank, with mesne profits. The case arose out of a scheme of the County Council initiated towards 1921 for creating a number of small holdings with houses on each one for the benefit of ex-Service men on the Woodcote estate, Wallington. The Council took a farm which had been cultivated for many years and cut it up into about eighty small holdings, with semi-detached houses. At that time there was a great demand for brick houses and the Council got only one extravagant tender for the erection of brick houses, and therefore they decided upon a system of interlocking bricks, and the houses were built on that system. The year 1921, when this scheme was begun, was an unfortunate one for small holders to begin as there was an unprecedented drought. In the following winter serious defects developed in these houses, and it was admitted by plaintiffs that defendant and other occupiers had a serious grievance in that they had to endure great discomfort owing to the houses not being waterproof. The County Council were not under any legal liability in respect of the repairs, but in the course of 1922 they caused repairs to be done to the houses by putting weather boards on their exterior. The Council spent a total of £12,000 on these repairs. Finally, in September, 1923, the County Council offered to the tenants a remission or repayment of half the rent from the time they started down to Michaelmas, 1922, and a distribution among the tenants of £1,200 granted by the Ministry of Agriculture as monetary compensation for the discomfort owing to dampness of the houses. All the tenants except the defendant accepted that. Defendant at that time had been in possession of his holding about four years, and had paid considerably less than one year's rent. It was therefore not surprising that on December 6, 1923, the Council gave him formal notice to terminate his tenancy and brought this action to regain possession. Proceeding, his lordship said with regard to the defendant's counter-claim, the defendant on applying for the holding said he knew the place well and had had a life-long experience as a horticulturist. It was provided in the tenancy agreement which defendant signed that he was to keep the house and buildings in repair. There was a provision that the Council might determine the tenancy if the rent was more than fourteen days in arrear. The rent had been more than three years in arrear before the plaintiffs gave notice to quit. Defendant had been in possession four and a half years and had only paid £25 rent altogether. He had also failed to pay the water rate and £125 borrowed from Barclays Bank, which the County Council guaranteed and had had to pay. Defendant counter-claimed for over £1,000 because the house, he said, was unfit for habitation and caused the illness of his children and himself and because the land was not as represented. On a strictly legal basis plaintiffs were not liable for damage in respect of the condition of the house as defendant had agreed to keep it in repair. Nor had defendant any ground of complaint regarding the land. He admitted he knew the place well, and that he had a life-long knowledge of horticulture. He took the land as it was described as arable land. It was admitted he had brought it to a good state of cultivation. He knew that it was to begin with not in the state that a well-cultivated garden would be in. It was agricultural land in a reasonably good condition for a small holder to begin to cultivate. There was really no defence to the action.

He entered judgment for the plaintiffs on the claim for £266 odd, with possession, and costs, and also for the Council on the counter-claim with costs.

Correspondence

Competitions

To the Editor of THE ARCHITECTS' JOURNAL.

SIR,—From time to time there appear in the architectural and building papers pious ejaculations as to the evils of the competitions system, but rarely, if ever, is there any constructive policy outlined to combat these evils.

The leader in your issue for March 10 indicates the great interest that is taken in competitions generally—it also indicates that the R.I.B.A. has been lacking in initiative so far as the regulations governing competitions are concerned, but it does not indicate any new or untried method by which the system may be improved.

But for the suggestion that several years might be occupied in research work before a competition is launched, there is nothing in the article which is not anticipated or provided for in the Institute regulations—still, it is hardly to be supposed that the promoters would be prepared to go to the expenditure of time and money in such extended research work when they may reasonably expect that a competition conducted in accordance with the R.I.B.A. regulations will produce an architect who, as the result of research, has designed a building eminently suited to its purpose and embodying the most recent ideas and practice.

Far from lacking in initiative, the Council of the R.I.B.A. recently instituted a thorough investigation into the regulations governing competitions, it consulted the members on the matter, and the Society of Architects co-operated; many months were spent in the consideration of the whole of the information thus obtained, with the result that the revised regulations were put before the general body in March last and approved; further, the interests of competitors are being constantly safeguarded by the R.I.B.A., and I think it may safely be said the conditions of every possible competition come under review by the Institute, and are either approved or amended or the competition is banned.

The successful violation of conditions is, of course, to be deplored, but it is only in the rare instance that such happens, and it is not forgotten—a wise assessor will see to it that "conditions" are as few as possible consistent with the promoters' requirements, so as to leave the competitor free and unfettered in the development of his design—the healthy "grizzle" we shall always have, but an impartial inquiry generally discovers "'tis but a grizzle."

In conclusion, I have no doubt in my own mind that the competition system has vastly helped towards the advancement of architecture and modern planning.

London. HENRY V. ASHLEY.

The Week's News

Housing at Bridgwater.

The Bridgwater Corporation have decided to erect thirty houses on the Victoria Road housing site.

A New Housing Scheme for Barnes.

Working-class houses are to be built by the London County Council on the Lowther Estate, Barnes.

More Houses for Luton.

The Luton Urban District Council have decided to build 100 houses at an estimated cost of £60,500.

Kidderminster Infirmary Extensions.

A sum of £20,700 has been promised towards the extension of Kidderminster Infirmary.

Maisonettes for Hackney.

The Hackney Borough Council propose to borrow £34,000 to build maisonettes.

Private Housing Scheme at Coventry.

A Coventry firm has expressed its intention of constructing 200 houses during the next twelve months.

The Royal Waterloo Hospital Extensions.

The Governors of the Royal Waterloo Hospital for Children and Women propose to complete the erection of a new wing at a cost of £35,000. The equipment will cost £15,000.

New Football Stands for Portsmouth.

The Portsmouth Town Council have approved the plans for the provision of new grand stands at Fratton Park, to be erected by the Portsmouth Football Club.

Leigh Infirmary Extensions.

The Leigh Infirmary Governors have decided to extend the infirmary at a cost of £26,000. The extensions include the erection of a nurses' home and a new children's ward.

Housing in Essex.

The Lexden and Winstree (Essex) Urban District Council are applying to the Ministry of Health for sanction to a loan of £27,000 for the erection of sixty houses.

Housing at Houghton-le-Spring.

The Houghton-le-Spring Urban District Council have decided to purchase a site for housing purposes from the Ecclesiastical Commissioners.

Housing at Harrogate.

The Housing Committee of the Harrogate Corporation have considered further methods of house construction and have resolved that additional houses be built of brick and stone.

More Houses for Rhyl.

A scheme for the erection of twenty-four houses at Rhyl under the 1924 Housing Act has been sanctioned by the Ministry of Health.

Proposed Sewage Works for Stanley.

The Stanley Urban District Council have decided to apply to the Ministry of Health for sanction to a loan of £35,000 to carry out sewerage works at Hustle Down.

Kensington Hospital Rebuilding Scheme.

The Board of Governors of the Kensington, Fulham, and Chelsea General Hospital propose to spend £100,000 on the rebuilding of the hospital. Plans have been prepared by Sir Aston Webb, the honorary architect to the Board.

Proposed Extension of Ingham Infirmary.

The General Committee of the Ingham and South Shields and Westoe Dispensary recommend the Governors to erect a new wing, to accommodate sixty beds and eight cots. The cost is estimated at £50,000.

Another Richmond Bridge Proposed.

The Surrey County Council state that the only solution of the traffic congestion on Richmond Bridge would be the building of another bridge downstream on the line of the new Chertsey arterial road.

Sir Guilford Molesworth's Estate.

Sir Guilford Lindsay Molesworth, K.C.I.E., of the Manor House, Bexley, engineer, a Past President of the Institution of Civil Engineers, who died on January 21, aged ninety-six, left property of the value of £25,111, with net personalty £25,006.

Ferry Fryston Improvements.

The Ferry Fryston Parish Council propose to ask the West Riding County Council to approve a scheme for the erection of public offices on the new estate at Airedale, and the building of a mortuary at Ferrybridge.

The Extension of the King's College for Women.

King's College for Women, Household and Social Science Department, have received a gift of £2,000 from a lady (who wishes to remain anonymous) for the purpose of providing new accommodation for the resident principal administrative officer.

The Extension of Chislehurst Girls' School.

Mr. T. R. Ferens, of Hull, has lately given £40,000 towards the cost of a new assembly hall and other buildings at Farrintons', the Wesleyan Methodist girls' school at Chislehurst, Kent. The total cost of the new buildings will be about £60,000. It is expected that they will be opened by the Queen.

Four New Roads for Manchester.

Approval has been received by the Manchester Town Planning Department of schemes for the following four new roads: Nuthurst to Moston; extension of Old Hall Lane from Wilmslow Road to the railway bridge; extension of Church Lane, Harpurhey, to Thorp Road, Lightbowne; and a road from Mauldeth Road, Withington, to Wilmslow Road, Didsbury.

Barrow Housing Plans.

The Barrow Rural District Council have decided to build fourteen houses at Mountsorrel, and fourteen at Barrow. Application is being made to the Minister of Health for sanction to the building of an additional fourteen houses at Barrow, twenty at Anstey, six at Rothley, twenty at Sileby, and twelve at Woodhouse.

The London County Council and Thames Bridges.

Without discussion it was agreed at the last meeting of the London County Council that it was not necessary to reappoint the special committee on Thames Bridges, as the Improvements Committee could deal with those matters on which the former committee did not report. The membership of the Improvements Committee was increased to eighteen.

Heywood's War Memorial.

An inquiry has been held by the Ministry of Health into the application of the Heywood Town Council for sanction to a loan of £7,524 for the erection of a covered market in Hind Hill Street, and for permission to appropriate land at present used as a market ground as a site for the war memorial and public gardens.

New Appointments at the Ministry of Health.

The Minister of Health has approved the following arrangements to take effect on the promotion of Sir A. Symonds, K.C.B., Second Secretary, to be Secretary to the Board of Education. Mr. E. R. Forber, C.B., C.B.E., to be Deputy Secretary to the Ministry of Health; Mr. L. G. Brock, C.B., and Mr. I. G. Gibbon, C.B.E., to be Principal Assistant Secretaries.

Housing at Hampstead.

The London County Council have sanctioned the application of the Hampstead Borough Council for the borrowing of £26,480, the balance of the cost of the acquisition of a site and the erection of dwellings, together with the necessary roads and sewers, at South End Close. The total actual cost of the scheme has amounted to £201,286, of which sanction has been given by the Council to the borrowing of £174,806.

Big Cheshire Housing Scheme.

A scheme for the erection of 3,000 houses at a cost of three and a quarter millions is to be embarked upon at Bromborough, Cheshire, following the purchase which has just taken place of the well-known Cheshire estate, The Heys and Plymyard Manor. The estate, which is on the main Birkenhead-Chester road between Bromborough and Eastham, and comprises about 300 acres of land, has been sold to a local builder by the trustees of the Duckworth estate.

List of Competitions Open

Date of Delivery.	COMPETITION.
†April 7	Swimming Baths, &c., Stockbridge. To be erected at a cost not exceeding £8,000. Premiums, £25, £15, and £10.
*May 1	**The United Grand Lodge of England invite designs for rebuilding the Freemasons' Hall in Great Queen Street, Kingsway, London.**
*May 15	Technical College for the Middlesbrough Education Committee. Assessor, Mr. Percy Thomas, F.R.I.B.A. Premiums £200, £100, and £50.
May 31	The best and most economical system of shuttering or equivalent suitable for use in connection with poured or *in situ* cottages. First prize £250; £250 may be awarded in additional prizes. Methods which are already in use or for which patent rights had been applied for before January 1 will not be considered. Apply Mr. H. H. George, Ministry of Health, Whitehall, S.W.1, not later than May 24.
June 11	National Commemorative War Monument, to cost one hundred thousand dollars, for the Government of Canada. Apply Office of the Secretary, Department of Public Works, Hunter Buildings, Ottawa. A few copies of the conditions, together with declaration forms, can be obtained from the R.I.B.A.
*June 30	**Lay-out of open spaces and fortifications between Valletta and Floriana and those encircling Floriana. Premiums £1,000 and £500. An indemnity of £100 will be awarded to three other designs showing conspicuous merit. Assessors, Mr. E P. Warren, F.S.A., and Professor Patrick Abercrombie, A.R.I.B.A.**
July 1	An extension building adjacent to the Shirehouse, Norwich, for the Norfolk County Council. Premiums £150, £100, and £50. Assessor, Mr. Godfrey Pinkerton, F.R.I.B.A., on the whole of the designs submitted, and to make the award. Apply Mr. H. C. Davies, Clerk of the Council, The Shirehouse, Norwich.
Sept. 1	High bridge over Copenhagen Harbour. Three prizes to the value of Kroner 35,000. Apply City Engineer's Office, Town Hall, Copenhagen. Deposit of Kroner 100 (returnable).
Dec. 31	**The Argentine Government offer prizes of 10,000, 5,000, 4,000, 3,000, and 2,000 Argentine gold pesos for the best architectural designs for a National Institute for the Blind. Apply Enquiry Room, Department of Overseas Trade, 35 Old Queen Street, Westminster, S.W.1.**
No date	New Secondary School in Perth Road, Dundee. For the Education Authority. The Competition is limited to architects in practice in Scotland and carrying on business on their own account. Application for the conditions of the competition and instructions had to be made to Mr. John E. Williams, Executive Officer, Education Offices, Dundee, not later than February 18. Mr. J. A. Carfrae, Licentiate R.I.B.A., is the Assessor.
No date	Proposed Presbyterian Church at Cheam, Surrey. In the first instance rough sketches only will be required and therefrom the committee will select the architects to be paid for the preparation of more finished drawings. Apply Mr. George Tweddle, Jr., Secretary to the Building Committee, "Southdown," Burdon Road, Cheam, Surrey.

* Date of application passed. † Banned by the R.I.B.A.

The Telephone Box Competition.

The design of Sir Giles Gilbert Scott, R.A., has been placed first in the Telephone Kiosk Competition. The competition was organized by the Royal Fine Arts Commission on behalf of the Post Office.

Trade and Craft

The Fire at Messrs. Pollard's.

The recent fire at the premises of Messrs. E. Pollard & Co., Ltd., storefitters and builders, occurred in their showrooms at 29 Clerkenwell Road, and not at their shopfitting factory in Aylesbury Street. The top floor was damaged, but fortunately only a very small amount of the stock was spoiled by water. Writing on March 25 the firm state: "We hope to have the affected department running normally by the end of this week."

Morny's Scent Shop in Regent Street.

In describing Morny's scent shop in Regent Street in our issue for March 18 we stated that Mr. Paul Turpin, the architectural decorator, of 17 Berners Street, London, W.1, was responsible for the marble pavement surrounds. We should also have stated that Mr. Turpin did the entire decorations, including the marble panelling on walls, painted ceiling, and other effects of the interior, and also the marble and bronze gold ornamentation on the exterior of the shop. Mr. Turpin executed the contract in conjunction with Messrs. P. H. Rémon et ses Fils, of Paris, to the designs and under the supervision of Messrs. Mewès and Davis, architects.

Knightsbridge Court.

Messrs. Jackson and Boyce, of 19 Berners Street, London, W.1, have secured a contract for the electric lighting, electric bells, telephones, and fire alarms for a large building to be erected in Sloane Street, and to be known as "Knightsbridge Court." The building will consist of twelve shops, fifty-eight flats, a modern garage, running the whole length of the building, with silencing devices, and a hydraulic lift to lower cars into the basement. The architects are Messrs. Dudley Newman and R. D. Elliott.

Parliamentary Notes

Mr. N. Chamberlain informed Capt. Waterhouse that the number of houses completed with State assistance under the Housing Acts during the year ended December 31, 1924, was:

Local authorities schemes	17,275
Private enterprise schemes	35,455
Total	52,730

Returns as to building by private enterprise without subsidy were obtained half-yearly in March and September. During the year ended September 30 last, 73,032 houses were so provided.

Mr. Chamberlain informed Mr. Young that he hoped to introduce a Smoke Abatement Bill next Session.

In answer to Capt. O'Connor, Mr. Chamberlain said that on February 25, 1925, the total number of authorities who had received approval to housing schemes under the 1923 Act was 1,411, and these schemes provided for 184,202 houses. Proposals covering 73,056 houses were approved under the Act of 1923 in the year ended February 25, 1925, and 334 local authorities first adopted schemes under the Act in that period. Approval was given within the same period under the 1924 Act to schemes of 311 local authorities covering 31,900.

The London Society

The annual meeting of the London Society has been held at the Royal Academy. Lord Crawford and Balcarres, the president, in moving the adoption of the annual report, referred sympathetically to the illness of Sir Aston Webb, chairman of the council, and to the death of Lord Curzon of Kedleston, vice-president of the society.

There were three serious problems of conservation which were causing the Society deep anxiety—those of St. Paul's Cathedral, the City churches, and Waterloo Bridge. There was no diversity of aim or objective in the matter of St. Paul's. Such controversy as existed was limited to purely technical questions as to how its safety could best be secured. London was united in the desire for its preservation. He wished he could say the same with regard to the other two problems. That of the City churches was not one of structural preservation; it was a fight between those who were anxious to preserve and those who were anxious to destroy. The Society had taken steps to ensure that, if the Bill went through, a society such as theirs should be adequately represented when it came to deciding which churches should actually go. With regard to Waterloo Bridge, he could not say how profoundly he regretted the decision to displace it by a new structure. He could not say how deep was the personal chagrin which he felt at the promptitude with which so far-reaching a decision was made. They were now trying their best to ensure that the technical problem should be re-examined, and that before the bridge was destroyed they would be able to satisfy themselves and the public that that course was imperative.

Coming Events

Wednesday, April 1.

Garden Cities and Town Planning Association, The Classroom, Gray's Inn, W.C.—"The Basis of the Garden City Movement, with special reference to Letchworth and Welwyn." By Mr. C. B. Purdom. 5 p.m.

Thursday, April 2.

British Museum.—Lecture XIX: "The Terramare and Etruscan Periods." By Miss Claire Gaudet. 4.30 p.m.

Friday, April 3.

Chelsea Polytechnic.—Lecture XIX: "The Terramare and Etruscan Periods." By Miss Claire Gaudet. 8 p.m.

Obituary

Mr. Percy Macquoid.

We regret to record the death of Mr. Percy Macquoid. He was one of that small school of English artists who made furniture one of the chief interests of their pictures and of their lives. He was first known as a water-colour painter, and latterly as a theatrical designer and as a great authority on furniture and costume. He designed the scenery and costumes for many plays, the last being "Mary Rose" and "The Dover Road." His book, "A History of English Furniture," is a standard authority, and in the Schrager furniture case he was the chief witness for the art dealer.

Rates of Wages in the Building Trades‡

The following table shows the revised rate of wages for craftsmen (bricklayers, masons, carpenters and joiners, woodcutting machinists, slaters, plumbers, plasterers and painters) and labourers in the building trade. The labour rates for London are given in the Table of Current Prices published on pages xxi. xxii.

Grade.	Craftsmen.	Labourers.	Grade.	Craftsmen.	Labourers.	Grade.	Craftsmen.	Labourers.
	s. d.	s. d.		s. d.	s. d.		s. d.	s. d.
A	1 8	1 3½	B	1 6	1 1½	C	1 4½	1 0½
A1	1 7½	1 2½	B1	1 5½	1 1½	C1	1 4	1 0½
A2	1 7	1 2½	B2	1 5	1 1	C2	1 3½	11½
A3	1 6½	1 2	B3	1 4½	1 0½			

The towns in which the above Grade rates have been reported to apply are shown below, divided into their main Area Groups. The principal exceptions are indicated in the notes appended to each group. In towns marked* the rate for painters is 1d. less than that paid to other craftsmen, and in those marked † it is ½d. less than the craftsmen's rate.

NORTH EAST COAST :—

Grade A.—Alnwick, Annfield Plain, Barnard Castle, Bishop Auckland, Blackhill, Blyth, Chester-le-Street, Consett, Crook, Darlington, Durham, Gateshead, Hartlepools, Hebburn, Hexham, Jarrow, Middlesbrough, Morpeth, Newcastle, North and South Shields, Seaham Harbour, Shildon, Stanley, Stockton-on-Tees, Sunderland, Thornaby, Wallsend, Whitburn, Whitley Bay, Willington, and Wooler. **Grade A2.**—Berwick-on-Tweed.

YORKSHIRE :—

Grade A.—Barnsley, Batley, Beverley, Bingley, Birstall, Bradford, Brighouse, Castleford, Cleethorpes, Colne Valley, Crosshills, Dewsbury, Doncaster, Grimsby, Guiseley, Halifax, Harrogate, Hebden Bridge, Holmfirth, Horbury, Huddersfield, Hull, Ilkley, Immingham, Keighley, Leeds, Mexborough, Mirfield, Morley, Normanton, Ossett, Pontefract, Pudsey, Rawdon, Rotherham, Scunthorpe, Selby, Sheffield, Shipley, Sowerby Bridge, Spen Valley, Wakefield, Wombwell, Yeadon, and York. **Grade A1.**—Bridlington and Scarborough. **Grade A3.**—Barnoldswick, Driffield, Filey, Goole, Skipton, Whitby, and Worksop. **Grade B3.**—Kirby Moorside, Malton, Northallerton, and Pickering.

[NOTE.—*Malton was up-graded on 1st July from B_3 to A_3 by the Yorkshire Joint Regional Wages Committee, but pending the result of an appeal against the regrading, B_3 rates are being paid. Barnoldswick, Goole, Skipton, and Whitby, craftsmen,* 1s. 7d. *; labourers,* 1s. 2½d.]

NORTH WESTERN COUNTIES :—

Grade A.—Accrington, Adlington, Alderley Edge, Altrincham, Ashton-in-Makerfield, Ashton-under-Lyne, Atherton, Bacup, Barrow, Birkdale, Bispham, Blackburn, Blackpool, Blackrod, Bolton, Broughton (Flints.), Burnley, Bury, Carlisle, Chester, Chorley, Church, Clayton-le-Moors, Cleveleys, Clitheroe, Colne, Connah's Quay, Dalton-in-Furness, Darwen, Denton, Droylesden, Dukinfield, Eccles, Farnworth, Fleetwood, Frodsham, Glossop, Great Harwood, Haslingden, Hawarden, Helsby, Heywood, Higher Kinnerton, Horwich, Hyde, Kirkham, Leigh, Leyland, Littleborough, Longridge, Lymm, Lytham, Manchester, Middleton, Mossley, Nelson, Oldham, Ormskirk, Oswaldtwistle, Padiham, Pendlebury, Poulton, Preston, Prestwich, Queensferry, Radcliffe, Ramsbottom, Rawtenstall, Rishton, Rochdale, Runcorn, St. Annes-on-Sea, St. Helens, Saddleworth Sale, Salford, Shaw, Shotton, Southport, Stalybridge, Stockport, Swinton, Thornton, Todmorden, Tyldesley, Walkden, Warrington, Westhoughton, Whalley, Whitefield, Widnes, Wigan, and Wilmslow. **Grade A1.**—Lancaster, Macclesfield, Morecambe, and Wrexham. **Grade A3.**—Askam, Broughton-in-Furness, Buxton, Chapel-en-le-Frith, Cleator Moor, Congleton, Coniston, Crewe, Distington, Egremont, Grange-over-Sands, Harrington, Hayfield, Knutsford, Macclesfield, Maryport, Middlewich, Nantwich, New Mills, Northwich, Sandbach, Tarporley, Ulverston, Whitehaven, Winsford, and Workington. **Grade B1.**—Colwyn Bay, Conway, Holywell, Llandudno, Llandudno Junction, Mostyn, Prestatyn, Rhos and Rhyl. **Grade B2.**—Ambleside, Bowness-on-Windermere, Cockermouth, Grasmere, Kendal, Keswick, Langdale, Penrith, and Windermere. **Grade B3.**—Bangor, Carnarvon, Holyhead, and Llanfairfechan.

[NOTE.—*In the Liverpool and Birkenhead districts the rates are* 1s. 8½d. *for carpenters and joiners, woodcutting machinists, and painters,* 1s. 9d. *for other craftsmen, and* 1s. 3½d. *for labourers. The rate for plumbers at Warrington is reported as* 1s. 9d. *; New Mills and Whaley Bridge, craftsmen,* 1s. 7d. *; labourers,* 1s. 2½d.

MIDLAND COUNTIES :—

Grade A.—Alfreton, Belper, Bilston, Birmingham, Blackheath, Chesterfield, Coalville, Coventry, Derby, Heanor, Hinckley, Ilkeston, Kenilworth, Langley Mill, Leek, Leicester, Lincoln, Long Eaton, Loughborough, Mansfield, North Staffordshire (Stoke-on-Trent, Burslem, Hanley and Newcastle-under-Lyme), Nottingham, Nuneaton, Oldbury, Ripley, Sutton Coldfield, Sutton-in-Ashfield, Swanwick, West Bromwich, Willenhall, and Wolverhampton. **Grade A2.**—Brierley Hill, Burton-on-Trent, Coseley, Cradley Heath, Darlaston, Dudley, Gornal, Halesowen, Knowle, Melton Mowbray, Northampton, Old Hill, Rugby, Sedgeley, Solihull, Stafford, Stourbridge, Swadlincote, Walsall, and Wednesbury. **Grade A3.**—Atherstone, Bewdley, Boston, Bromsgrove, Cannock, Droitwich, Gainsborough, Grantham, Hednesford, Kidderminster, Leamington, Lichfield, Louth, Malvern, Matlock, Newark, Oakengates, Peterborough, Redditch, Retford, Rugeley, Shifnal, Shrewsbury, Skegness, Sleaford, Southwell, Stourport, Stratford-on-Avon, Tamworth, Warwick, Wellington, and Worcester. **Grade B.**—Kettering, Market Harborough, and Wellingborough. **Grade B1.**—Oakham, Oundle, Raunds, Rushden, Thrapston, and Uttoxeter. **Grade B2.**—Bridgnorth, Church Stretton, Horncastle, Ludlow, Newport, Spalding, and Wirksworth.

[NOTE.—*The rate for plumbers at Chesterfield is reported as* 1s. 9d. *and at Stafford as* 1s. 8d., *and for labourers at Ludlow,* 1s. 0½d.]

EASTERN COUNTIES :—

Grade A3.—Brentwood, St. Albans, and Welwyn Garden City. **Grade B.**—Bedford, Cambridge, Felixstowe, Ipswich, Luton, and Norwich. **Grade B1.**—Baldock, Biggleswade, Braintree, Chelmsford, Clacton, Colchester, Frinton, Halstead, Harpenden, Hatfield, Hertford, Hitchin, Hoddesdon, Ingatestone, Letchworth, Lowestoft, Southend-on-Sea, Stevenage, Stotfold, Walton-on-the-Naze, and Yarmouth. **Grade B2.**—Dovercourt, Gorleston, Harwich, King's Lynn, Newmarket. **Grade B3.**—Ampthill, Attleborough, Aylsham, Bishop's Stortford, Braughing, Cromer, Dunstable, Ely, Fakenham, Leighton Buzzard, March, Much Hadham, Puckeridge, Southwold, Standon, Stowmarket, Tring, and Woodbridge. Grade C1.—Aldeburgh, Halesworth, Leiston, Saxmundham, Wickham Market, and Wymondham. **Grade C2.**—Coltishall and Saffron Walden.

SOUTHERN COUNTIES :—

Grade A2.—Gravesend and Northfleet. **Grade A3.**—Addlestone, Ashford (Middlesex), Ashtead,† Cobham, and Leatherhead.† **Grade B.**—Abingdon, Ascot, Didcot, Henley, Maidenhead, Oxford, Portsmouth, and Reading. **Grade B1.**—Amersham, Bournemouth, Bracknell, Brighton, Byfleet, Chatham, Chalfonts, Chesham, Christchurch, Dorking, Eastbourne, Eastleigh, Egham, Eton, Gerrard's Cross, Gillingham, Gosport, Guildford, Hove, Maidstone, Marlow, Poole, Redhill, Reigate, Rochester, Sevenoaks, Slough, Southampton, Staines, Sunningdale, Sunninghill, Tilehurst, Tonbridge, Tunbridge Wells, Windsor, Woking, Wokingham, and Wycombe. **Grade B2.**—Bexhill, Bramley, Cranleigh, Farcham, Godalming, Haslemere, Horsham, Littlehampton, New Forest (Brockenhurst, Lymington, Lyndhurst, Milford, New Milton and Ringwood), Oxted, Winchester, Witley and Worthing. **Grade B3.**—Arundel, Ashford (Kent), Aylesbury, Bagshot, Banbury, Basingstoke, Bicester, Bletchley, Bognor, Bosham, Broadstairs, Buckingham, Burgess Hill, Camberley, Canterbury, Chichester, Crawley, Deal, Dover, East Grinstead, Faringdon, Faversham, Fenny Stratford, Folkestone, Hastings, Havant, Herne Bay, Hythe, Lingfield, Margate, Midhurst, Milton Regis, Newbury, Newport Pagnell, Pangbourne, Petworth, Ramsgate, Sandgate, Sittingbourne, Stony Stratford, Thame, Walmer, Wendover, Westgate, Whitstable, Witney, Wolverton, and Woodstock. **Grade C.**—Andover. **Grade C1.**—Hayward's Heath, Isle of Wight, and Tidworth. **Grade C2.**—Alton,* Hartley Wintney,* Hawkhurst, Petersfield, Rye, and Staplehurst.

[NOTE.—*Amersham, Bournemouth, Brighton, Chalfonts, Christchurch, Eastbourne, Eastleigh, Egham, Englefield Green, Eton, Gerrards Cross, Gosport, Hove, Poole, Slough, Southampton, Staines, Windsor, Wokingham, and Wycombe, craftsmen,* 1s. 6d. *; labourers,* 1s. 1½d.]

SOUTH WESTERN COUNTIES :—

Grade A.—Bristol. **Grade A1.**—Devonport* and Plymouth.* **Grade A2.**—Newton Abbot, Paignton, and Torquay. **Grade B.**—Bath. Cheltenham, Exeter,* Gloucester,* Hereford,* Swindon,* and Ross-on-Wye.* **Grade B1.**—Barnstaple, Princetown, Stroud,† Taunton, and Weston-super-Mare. **Grade B2.**—Bridgwater, Burnham-on-Sea, Cirencester,* Coleford,* Exmouth, Ledbury,* Lydney,* Totnes,† Weymouth,* and Yeovil.* **Grade B3.**—Bovey Tracey, Box,* Bradford-on-Avon,* Brixham, Cheddar Valley,* Corsham,* Melksham,* Midsomer Norton, Radstock, Trowbridge,* Wellington,* and Westbury.* **Grade C1.**—Calne,* Chippenham,* Crediton,† Cullompton,* Dawlish, Dorchester,* Frome,* Glastonbury, Minehead,* Shepton Mallet, and Street.

[NOTE.—*Exeter, painters,* 1s. 6d. *; other craftsmen,* 1s. 7d. *; labourers,* 1s. 2½d.† *Plymouth, Devonport and district, painters,* 1s. 7d. *; other craftsmen,* 1s. 8d. *; labourers,* 1s. 3½d. *Weston-super-Mare, craftsmen,* 1s. 6d. *; labourers,* 1s. 1½d.]

SOUTH WALES AND MONMOUTHSHIRE :—

Grade A.—Aberdare, Ammanford, Barry, Bridgend, Burry Port, Cardiff, Ebbw Vale, East Glamorganshire and Monmouthshire Valleys, Garw Valley, Gorseinon, Llanelly, Maesteg, Merthyr, Neath, Newport, Ogmore Vale, Pontardawe, Pontypridd, Porthcawl, Port Talbot, Rhondda and Rhymney Valleys, Sirhowy Valley, Swansea and Swansea Valley. **Grade A1.**—Abergavenny. **Grade A2.**—Chepstow. **Grade B.**—Brecon, Builth, Carmarthen, Llandilo, Llandrindod Wells, and Milford Haven. **Grade B2.**—Monmouth. **Grade C.**—Pembroke and Pembroke Dock.

[NOTE.—*The rate for labourers at Milford Haven is reported as* 1s. 1½d.]

SCOTLAND :—

Grade A.—Airdrie, Alloa, Alva, Ayr, Barrhead, Bellshill, Bridge of Weir, Burntisland, Clydebank, Coatbridge, Dumbarton, Dundee, Dunfermline, Dunoon, Edinburgh, Falkirk, Glasgow, Gourock, Grangemouth, Greenock, Haddington, Hamilton, Helensburgh, Irvine, Johnstone, Kilmarnock, Kirkcaldy, Lanark, Larbert, Largs, Leith, Leslie, Markinch, Motherwell, Musselburgh, Neilston, North Berwick, Paisley, Poncaitland, Perth, Port Glasgow, Renfrew, Rothesay, Stirling, and Wishaw. **Grade A2.**—Arbroath, Brechin, Montrose, and Peebles. **Grade B.**—Dumfries, Galashiels, Hawick, Maxwelltown, and Selkirk.

[NOTE.—*The rates quoted do not apply to plasterers and painters in Scotland, who are not affiliated to the National Wages and Conditions Council. The rate for labourers at Perth and Irvine is reported as* 1s. 3d., *and at Arbroath, Brechin, and Montrose,* 1s. 1½d. *In the case of plasterers a rate of* 1s. 9d. *per hour after the increase of* ½d. *in August is payable at the following towns :—Airdrie, Alloa, Alva, Ayr, Clydebank, Coatbridge, Dumbarton, Dundee, Dunfermline, Edinburgh, Falkirk, Glasgow, Greenock, Hamilton, Irvine, Kilmarnock, Kirkaldy, Leith, Motherwell, Paisley, Perth, and Stirling. Grade A.—Airdrie, Alexandria, Alloa, Alva, Ardrossan, Ayr, Barrhead, Bellshill, Beith, Bridge of Allan, Broxburn, Broughty Ferry, Buckhaven, Burntisland, Carnoustie, Clydebank, Coatbridge, Cowdenbeath, Dumbarton, Dundee, Dunfermline, Dunoon, Edinburgh, Falkirk, Glasgow, Gourock, Grangemouth, Greenock, Gullane, Haddington, Hamilton, Helensburgh, Irvine, Johnstone, Kennoway, Kilmacolm, Kilmarnock, Kirkcaldy, Larbert, Largs, Larkhall, Leith, Leslie, Leven, Markinch, Methil, Motherwell, Neilston, North Berwick, Paisley, Perth, Port Glasgow, Renfrew, Rothesay, Saltcoats, Stenhousemuir, Stirling, Uddingston, Vale of Leven, Wemyss, and Windygates, painters,* 1s. 8d. *Grade B.—Aberdeen, Arbroath, Biggar, Callander, Carluke, Cupar, Galashiels, Girvan, Hawick, Kelso, Kirkcudbright, Lanark, Peebles, Selkirk, and St. Andrews.* 1s. 7d. *Grade C.—Peterhead,* 1s. 6d. *Brechin, Forfar, and Montrose, painters,* 1s. 5½d. *; Dumfries and Maxwelltown, craftsmen,* 1s. 6½d. *; labourers,* 1s. 2d. *Galashiels, Hawick, Jedburgh, Kelso, and Selkirk, bricklayers, masons, joiners, woodcutting machinists, slaters, plumbers, and labourers, craftsmen,* 1s. 6½d. *; labourers,* 1s. 2d. *Inverness, joiners,* 1s. 5d.]

‡ From "The Labour Gazette."