Wednesday, January 21, 1925 Vol. LXI. No. 1568.

THE ARCHITECTS' JOURNAL & Architectural Engineer

With which is incorporated "The Builders' Journal."

FROM AN ARCHITECT'S NOTEBOOK.

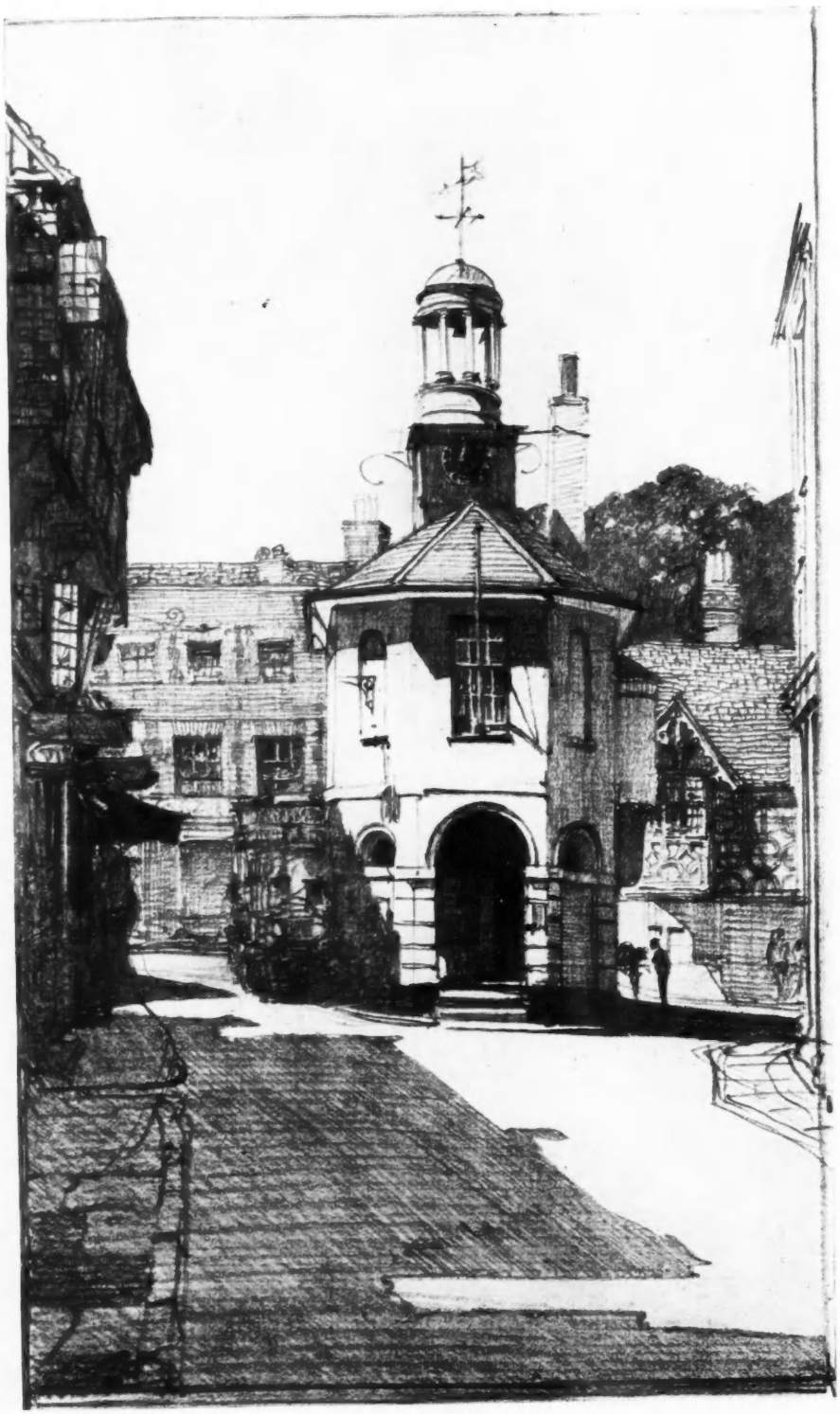
ST. JOHN'S CHURCH, WESTMINSTER.

In this region are a certain little street called Church Street, and a certain little blind square called Smith Square, in the centre of which last retreat is a very hideous church, with four towers at the four corners, generally resembling some petrified monster, frightful and gigantic, on its back with its legs in the air.

CHARLES DICKENS: "*Our Mutual Friend.*"

9 Queen Anne's Gate, Westminster.

Drawings of Architecture. 17.—Godalming



From a Pencil Sketch by Harold Falkner.

THE

ARCHITECTS' JOURNAL

9 Queen Anne's Gate, Westminster.

Wednesday, January 21, 1925. Volume LXI. No. 1568

The Influence of Wren on Contemporary Architecture

AFTER a period of more or less total eclipse, Wren has once more come into fashion. Those who admire works of art for the sole reason that other people admire them, now tell you that Wren was a very good architect, and that classicism is the only thing. Their ancestors, two generations ago, thought St. Paul's a very immoral building, and carried their passion for the Gothic style to such lengths that they were prepared to build and inhabit dark spiky houses of an incredible inconvenience as well as an incredible ugliness, very imperfectly hygienic, and filled with all the labour-creating devices that the ingenuity of man could devise. To-day, however, classicism is in fashion. What the vogue may be ten years hence, goodness only knows. Those of us who believe in a sensible, simple, dignified, and harmonious architecture are content to be thankful for present mercies. Fashion for the moment is on our side. Let us exploit it while we may, and leave the future to take care of itself—which it certainly will do, and probably with a vengeance.

That the example of Wren should be studied and followed at the present time is only to be expected. For Wren is the greatest of the English masters of classicism. He was a classicist in the spirit as well as the letter; for his classicism was not a mere affair of pillars and pediments and cornices; it did not consist in the mere following of academic rules (indeed, few architects using the classic idiom have cared so little about academic correctness). He was a classicist in the practice of restraint and good taste, classical in his belief in dignity, symmetry, and proportion; in his power to achieve grandeur without theatricality, and dignity without display. The rules are to be found in the text-books. But the spirit which underlies the rules and the creative art which knows how to ignore them must be looked for in the works of the master.

Wren's influence on contemporary architecture has principally made, and will probably continue to make, itself felt on the domestic side. This is, I think, inevitable. For while the practical requirements of domestic architecture, especially in the country, have changed but little, at any rate in fundamentals, since the days of Wren, the needs of public architecture are not the same as they were. To begin with, the greater part of Wren's public work was ecclesiastical. We build few churches in the twentieth century; nor is it likely that any large quantity of the old will be destroyed by fire. The bulk of Wren's work is thus seen to be without immediate significance for the contemporary architect of public buildings. Nor can Wren's other than ecclesiastical public buildings be generally imitated at the present time. Palaces, hospitals, town halls, colleges, libraries—they are built on lines which make them in most cases unsuitable for direct imitation to-day. Wren practised his art at a time when land was comparatively cheap. Where great size was required he extended the length and breadth of his design, keeping the height always down to that convenient level at which the classical orders can be used with the greatest suitability and effect. In any large town at the present day land is prohibitively dear. And as public buildings have to be at least as large as they were in Wren's day, and generally considerably larger, it follows that a very great increase in the height of such buildings has been found necessary. Hence it comes about that in almost all cases Wren's methods of treatment are inapplicable. Many attempts have been made to apply the orders to high buildings; but it cannot be said that any are perfectly successful. Perhaps the most satisfactory is the development in terms of steel and concrete of Michelangelo's favourite design—the single gigantic order, resting on a pedestal, which is the ground floor, and rising, through two or more stories, to an immense cornice. Selfridge's and Wolseley House in Piccadilly are two, on the whole, very satisfactory examples of this solution of the problem. They are entirely unlike anything ever built by Wren. It is only in those rare cases where public buildings can afford to be low that Wren's example can be imitated.

Most modern architects have, very sensibly, abandoned any attempt to embody classical details in their designs of high office buildings (which constitute the majority of public buildings now erected), preferring to leave their work quite plain, and trust for effect to good fenestration and the play of light and shade made by alternately raised and re-entrant panels. We are apt to think that this bare, geometrically austere treatment is an entirely modern invention. But, surprisingly enough, Wren has a great deal to tell us about it. His river front to Trinity College library at Cambridge, is a superb example of this austere "modern" manner. True, the building is a low one; but I see no æsthetic reason why a similar design should not be carried up to a much greater height.

But Wren's chief influence has been, and must be, on domestic architecture. Now that fashion is turning from the irritatingly picturesque, hole-and-cornery cottage style, which was at the height of its popularity in the first years of the present century, it is to Wren that any architect who is anxious to supply the public demand must inevitably look. For Wren is almost the only great classical artist who has contrived to combine in his domestic architecture real dignity with a certain snugness; symmetry and fine proportion with homeliness; a weighty gravity of manner with charm. He learned, moreover (from long experience

with parsimonious employers) the art of building finely and handsomely in the cheapest possible way. Every man has a pardonable anxiety to get as much as possible for his money—and the anxiety is particularly acute in these days, when cash is scarce and taxes high. An architect who knows how to build a handsome, upstanding house that shall at the same time be homely and unpretentious, and who can build it cheaply—this is the man for whom we have all been looking. And this, precisely, is what Wren was. No wonder, then, that his architectural practice, modified by contemporary exigencies in regard to comfort, is influencing domestic design to-day.

The influence of Wren and reasonable, unpedantic classicism is seen immediately in the external appearance of modern dwelling-houses. The annoyingly quaint buildings of twenty years ago have given place to compact, box-like houses of simple plan. Their façades are more or less completely symmetrical in arrangement. Gone are the inordinate roofs, the gables, the preposterously high chimneys. (These last have made what is, let us hope, positively their farewell appearance on the roof of the new County Hall.) Gone are the masses of incoherent decoration, borrowed from the worst French and Flemish Renaissance models, with which the more pretentious houses of the past were adorned. A pillared porch, a few panels in raised brickwork, the implication of a cornice, a pleasantly-designed balcony—these are all the decorations of the newer type of house.

Within, the rooms are well proportioned and plain. The cornery eccentricity of the cottage type has disappeared. The staircases are simple, solid, and unpretentious. The fireplaces discreet. (I have often wondered, by the way, why that charming motif of the corner fireplace with a stepped mantel rising in stages above it, employed by Wren so freely in the smaller rooms at Hampton Court, is not more favoured by modern architects.) The excessive cost of panelling and carving prohibits us, it is true, from using Wren's favourite wall decoration. Wren had a way of concentrating all available wealth on his interiors. But where no redundant wealth is available, either for internals or externals, we must fain be content to do without even this rich, but sober, decoration.

I have painted a somewhat over-rosy picture of the contemporary dwelling-house, portraying rather what it might become than what it actually is. But that the domestic architecture of the present time is developing in the direction of a revived Wrenish classicism cannot, I think, be doubted. The work of the most promising among the younger architects points reassuringly to this conclusion.

ALDOUS HUXLEY.

St. Paul's

In this issue Mr. William Harvey concludes the outline of his proposals for the preservation of St. Paul's Cathedral. The perilous condition of this great building has naturally aroused intense public interest, and many remedial measures have been suggested—most of them of a piecemeal nature, and few of them striking at the root causes of the trouble. Mr. Harvey, so far as we are aware, is the first qualified expert to put forward a comprehensive scheme of reparation that can be carried through without resorting to the extreme of taking down and rebuilding the dome and its supports. He holds—as all must hold who have any regard for this great national monument—that the first principle of its repair must be "conservation." Not a stone should be disturbed unnecessarily. St. Paul's, with a rebuilt dome and piers, would lose much of its magic, much of its historical interest, much of its structural significance. It must not be forgotten that St. Paul's presents itself not only as a great national building, but as the supreme monument of a man whose veritable inventions in building construction incorporated with its fabric have a unique value as landmarks in the history of structural science. For this reason alone it is important that the Cathedral should be preserved as nearly as possible the entity he left it. Not until every possible method of repair has been thoroughly explored must we consent to the drastic measures outlined by the Commission as the only alternative to the patchwork procedure that has been ineffectively followed for so many years past. Mr. Harvey has made a close study of his subject, and has had a wide experience of the methods of repair that have been adopted with complete success by the Ancient Monuments Department of His Majesty's Office of Works. He would be the last to suggest that his proposals are exhaustive or that they could be carried out without some concession to necessity. What he has put forward is a scheme—in the opinion of many who are qualified to express an opinion, a practicable one—designed to ensure the structural stability of the cathedral with a minimum disturbance of its fabric. We hope that Mr. Harvey may be afforded an opportunity of expounding his scheme to the responsible authorities before any decision is taken involving the demolition of the dome and its supports.

Notable Crashes

With St. Paul's in parlous plight, there is just now much talk of buildings that have crashed down in years gone by. Historians recall the fall, two thousand years ago, of the Tower of Siloam. Others eschew antiquarian research and speak of the collapse, in 1861, of the tower and spire of Chichester Cathedral; or of the sudden fall, twenty-two years ago, of the Campanile of St. Mark's, Venice. Mr. Josiah Gunton points out in "The Daily Telegraph" that in these cases of collapse there were certain common factors: the buildings all gave warning; they were in the hands of experts; the experts spent years in examining the buildings and issued reports; and the buildings collapsed. We must hope that the ominous run of coincidence will end before it reaches St. Paul's. In connection with Chichester Cathedral it is not without interest to recall that Wren himself rebuilt the upper part of the spire, when he added a "pendulum-like device to counteract the oscillation caused by the high winds." This served its turn, no doubt, but did not prevent the tower and spire from ultimately collapsing, telescope-fashion, into a heap of ruins.

A Collapse in Fiction

Building collapses have been sometimes treated of in fiction. Mr. John Meade Falkner, in his novel, "The Nebuly Coat," introduces one with great effect. The whole background of the novel, in fact, is the sadly-dilapidated Cullerne Minster, whose tower constantly threatens to fall. A great gale puts the finishing touch to it. The next day "there was something terribly amiss with the tower, in spite of all brave appearances. The jackdaws knew it, and whirled round their old home, with wings flashing and changing in the low sunlight. And on the west side, the side nearest the market place, there oozed out from a hundred joints a thin white dust that fell down into the churchyard like the spray of some lofty Swiss cascade. . . . As Westray (the architect in charge of the renovations) ran through the great church, he had to make his way through a heap of mortar and debris that lay upon the pavement. The face of the wall over the south transept arch had come away, and in its fall had broken through the floor into the vaults below. Above his head that baleful old crack had widened into a cavernous fissure. The church was full of dread voices, of strange moanings and groanings, as if the spirits of all the monks departed were wailing for the destruction of Abbot Vinnicomb's tower. There was a dull rumbling of rending stone and crashing timbers, but over all the architect heard the cry of the crossing arches: 'The arch never sleeps, never sleeps. They have bound upon us a burden too heavy to be borne; we are shifting it. The arch never sleeps.'" The tower collapsed with "a roar as of cannon, a shock as of an earthquake, and a cloud of white dust hid from the spectators the ruin of the fallen tower."

St. Paul's Cathedral and the Method of its Repair—2

To Save the Dome

By WILLIAM HARVEY

THE complete preservation of Wren's great dome is the main object that must be kept in mind. Partial repairs, which confessedly lead towards ultimate demolition and some possible rebuilding of an imitation dome, are altogether contrary to the historical and artistic interests of the building, and are unworthy of consideration. Even financially considered their cheapness will be costly in the long run.

A scheme in accordance with the principles of archæological conservation and of sound structure, which will not involve the loss of any essential part of Wren's building or interfere in any way with its internal or external appearance can be designed. The idea of comprehensive consistent control of the pressures in an existing building in a state of decay is a comparatively novel one, which developed in my mind during my exhaustive statical survey of the ruins of Tintern Abbey. Such a scheme is based upon the recognition of the tendencies of all existing masses in the building to fall apart, followed by a reconsideration of the possible functions and action of all these masses if reunited by the introduction of essential connections as determined by the conservator. These essential connections may be either tensional or compressional as indicated by the requirements and the practical possibilities of the case.

At St. Paul's Cathedral, which is principally composed of masonry and rubble set in feeble lime mortar, and is distinctly lacking in coherence, tensional reinforcement will certainly be valuable. Movements in the structure consequent upon the bursting pressures and arch thrusts created by the enormous weight of the central domes and, in a lesser degree, by the vaults of the lower parts of the church, could be modified by an endless chain of reinforcement buried in a concrete beam in the interior of the surrounding walls and connected across the building above vault levels. (See plan Fig. 1.)

The reinforcement would encase the central parts of the building, now spreading away from the axis of the dome, and unite the compressional material into a comparatively rigid base for further operations aiming at the relief of the overburdened and eccentrically loaded central piers. Here some new compressional members will be required, and a great truncated cone of reinforced concrete would be built to underpin and receive part of the weights and wind-pressures of the inner and outer drums and distribute them upon the outer lightly loaded portions of the piers. It would also spread them over the adjoining masses of the bastions and the ends of the aisle walls.

The preservation of the existing appearances limits the field of operations for the new works to such positions as the interiors of walls, and piers, the space between the vaults and roofs, and the eight concealed areas left by Wren between the high blank upper walls of the aisles and the clerestory walls of the nave, choir, and transepts. (See Fig. 2.) Within this permissible zone around the great drums it will be necessary to create a gigantic ferrule, which will provide at once vertical support and resistance to bursting pressure and afford a rigid central node or hub, to which all the other lines of reinforcement of the outer walls will be secured. This zone of operations is not by any means unencumbered, and the minor obstacles, such as stairways, vault fillings, and pavings will complicate the working out of an essentially simple and reasonable proposal. They will not, however, make its accomplishment impossible, for the conservator, while respecting existing arrangements wherever practicable, must be given free use of his discretion in the restricted field of operations allotted to him.

Already some of the minor passages and stairways of the building have been altered by successive surveyors to the fabric on far more slender grounds. In this curious art of

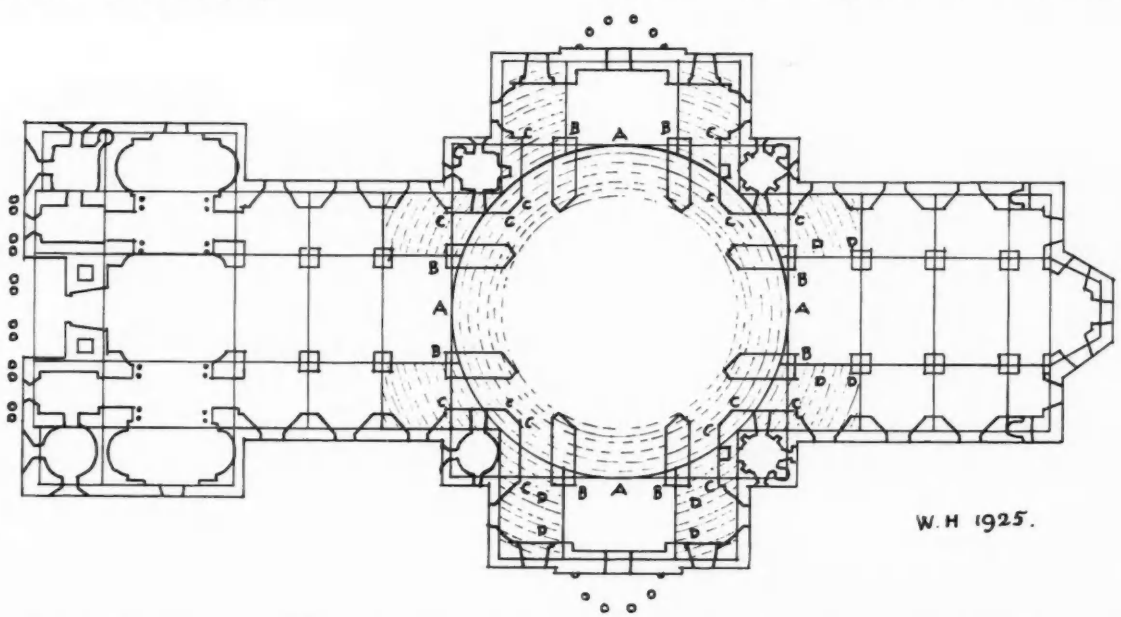


FIG. 1. Suggested main lines of reinforcement to be buried in concrete beams in the wall tops; and plan of reinforced concrete truncated cone to underpin the outer and inner drums and spread their weight over the surrounding masses of masonry. None of these measures will interfere with either the external or internal appearance of the building.

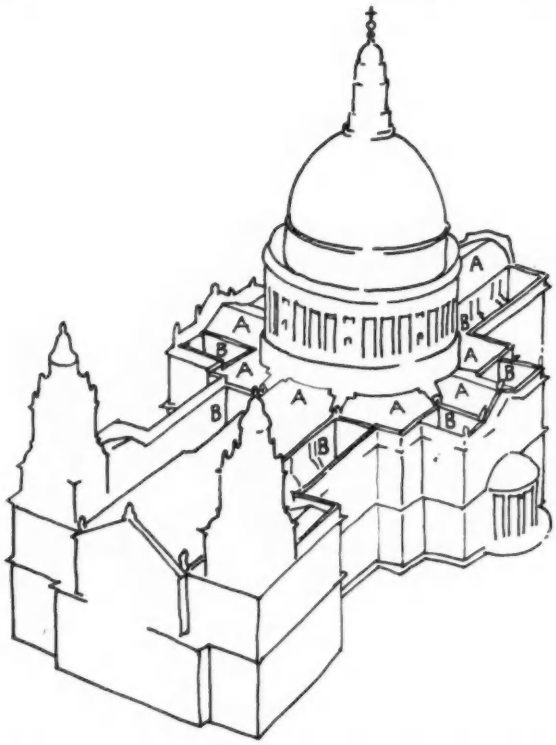


FIG. 2. The conservator's field of operations lies between the vaults and the roofs A.A., and in the areas B.B., hidden between the blank high walls of the aisles.

conservation, too, apparent obstacles are frequently found to be additional opportunities for knitting the building together. In composing a design for improving the structural condition of the building the larger aspects must be considered first, and the modifications that may be necessary for the application of the scheme to the existing work are woven in as questions of detail.

The cardinal defect of Wren's beautiful design is not easily grasped from the plan or from those parts of the building ordinarily most frequented. A series of grand arches over the high naves, of small arches over the aisles and of semi-domes bringing the octagon out to the angles of the circumscribing square all seem to promise adequate spread of thrust and weight. The arrangement of the masses on plan is excellent as regards buttressing and diffusing arch thrusts over the foundations of the bastions and the aisle walls, but the vertical component of the weight is not so diffused and rests almost entirely upon the inner corners of the eight main piers.

It is easy now in the light of the great beacon of constructional science erected by the late M. Eiffel to recognize that Wren ought to have made preparation to spread the dead weight of the central domed structure over a wide area of foundations with just the same care that he exercised in diffusing the arch thrusts. His failure to do so occasions the chief deficiencies in the structural scheme, but it is quite possible to apply a remedy once the defect is recognized. If the appearance within the building had not been a matter of importance, and if Eiffel had preceded instead of followed Wren, the great architect might have built flying buttress-arches springing from the bastions at ground-floor level and rising up to about the main piers so as to receive the lines of thrust from the great arches carrying the drums. These buttresses might have carried masonry walls, on their backs, strong enough to conduct some part of the weight of the high central mass down into the masonry of the bastions.

The steeple of St. Dunstan's in the East, where a tall tapering central mass is supported upon four arched legs, shows how Wren could spread out weights when he had a mind to, but in the case of his largest work he seems to have ignored alike the opportunity and the need.

It will not now be permissible at St. Paul's Cathedral to bring the springing of any such buttress support below the aisle vault, but as the aisles are comparatively low a very useful buttress "support" could be built up above the aisle vault. The word "support" is used in place of "arch," because the new structure would be reinforced in such a manner that its lateral thrusts will be minimized.

The support would be blended into the cone and would form a continuation of its surface to the lowest possible point of application. For the sake of clearness the main lines of the supports only are shown on the sketch (Figs. 3 and 4), but the cone as a whole and these four particular lines of it would form a single structural entity. It will be necessary to cut into the substance of certain existing round-headed arches, but not into any that are visible from the floor of the cathedral. Part of the thrust of these arch-like supports would be usefully absorbed by anchor bars carried into the main piers at a point where they would resist the thrusts of the existing aisle arches. At a later stage of the operations, the metal of these anchor bars would be incorporated with the reinforcement scheme of the piers during their re-coring.

The relationship of these supports to the lines of wall-top reinforcement and the proposed great horizontal tensioning on the summits of the existing high vaults is shown in Fig. 5. The upper part of the cone is to be carried on as a continuation of the same surface and will practically take the line of the thirty-two existing but defective counterforts of the dome. The cone will pass right through the outer drum, picking it up and, proceeding upwards, will have its upper rim let in to the masonry of the inner drum, which it will partially underpin. The cone will be a complete circle in plan from its summit at the inner drum down to the level of the top of the high vaults of the nave, choir and

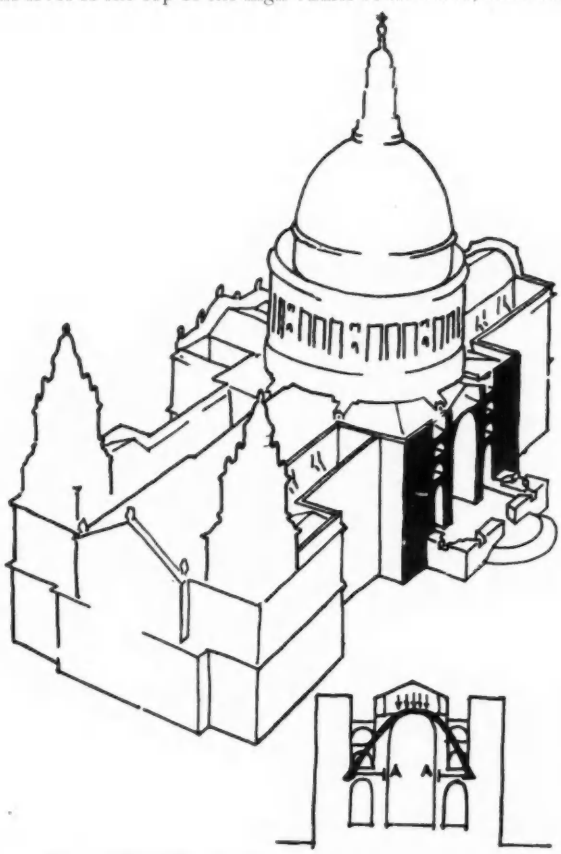


FIG. 3. Round-headed arches over aisles transmit lateral thrusts but are quite incapable of spreading weight. The conic section support in the small diagram could do so. Its abutment would be amplified by arches in the main piers at A.A.

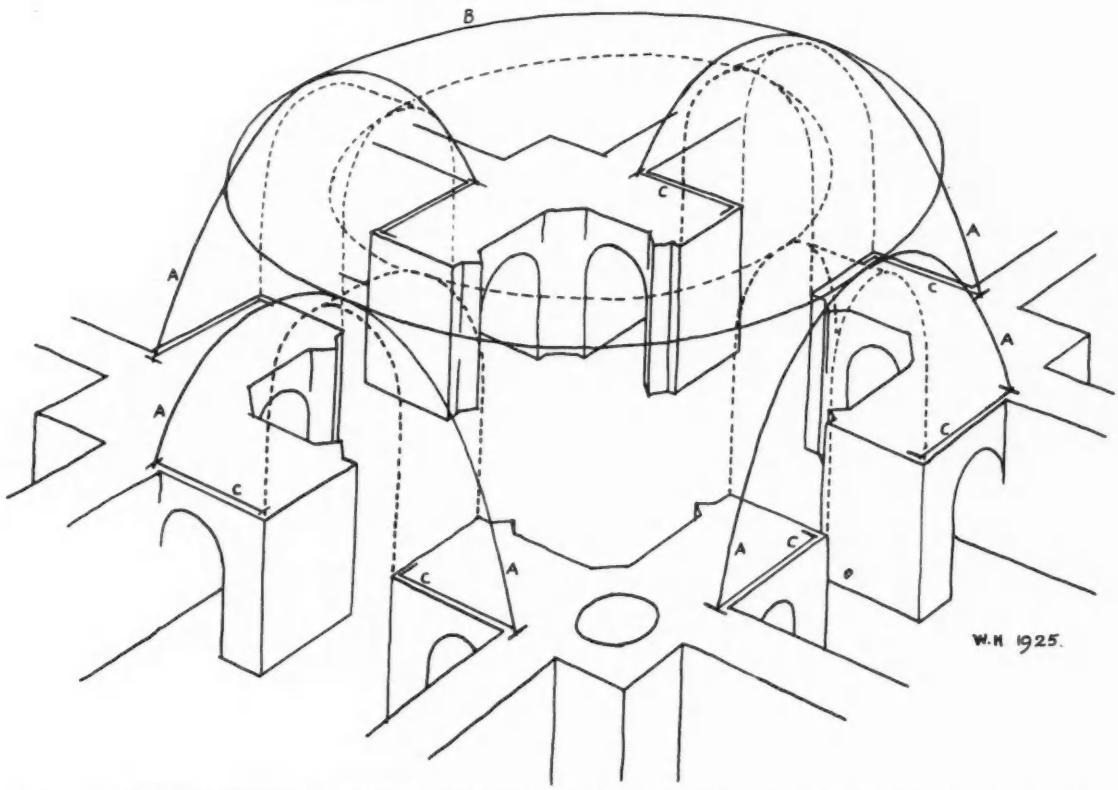


FIG. 4. A.A., Arch-like supports springing from bastions above the aisle vaults. They would be thickenings of the cone's surface rather than separate members. B., Great tension ring above crowns of high vaults which are shown by dotted lines. C.C., Anchor bars across span of aisles to restrain thrust of A.A. outward and of aisle vault inward. The sketch shows masonry removed down to level of top of aisle vaulting.

transepts, where it will rest upon the four hyperbolic supports. The cone, however, would not be bounded by these supports as by arch-rings, but would continue to descend as a conical surface bearing upon all existing masonry walls and supports that it passes, until it reaches down to the summit of the aisle vaults. The object of this would be to avoid any concentration of pressure at one limited point of application.

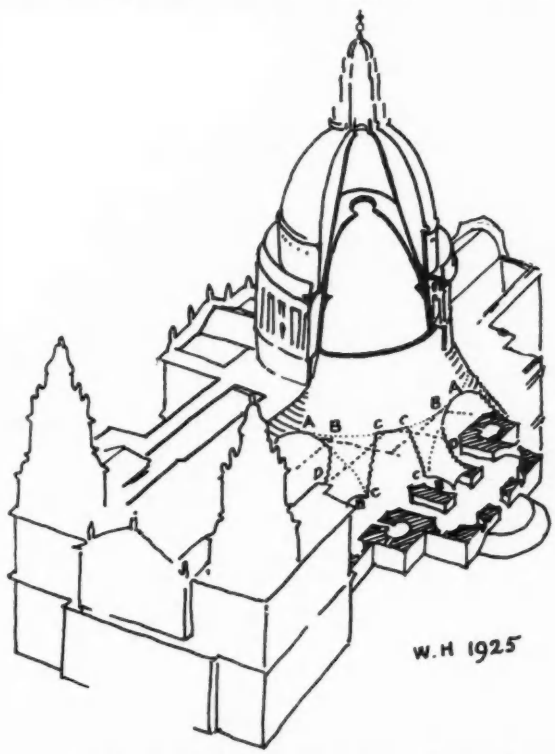


FIG. 5. Principal lines of reinforcement around reinforced concrete cone. Letters A.B.C., etc., as on Fig. 1.

Reference to Fig. 1 will show how the cone bears upon the backs of the great arches at their crowns A.A., upon the back unloaded portions of the main piers B.B., and upon the bastions C.C., upon the high walls of the nave, choir and transepts at D.D., and upon the high upper walls of the aisles at E.E. Taken in conjunction with the tensional reinforcement that would have already been inserted around and across the building and which would, to a very great extent, control the thrusts of those portions of the cone below its circular base, this arrangement would spread the weight over the largest possible area.

Wren has provided ample masses of solid masonry in the lower parts of the walls, surrounding the building, and by this method the weight of the central portion will be shared among them with a comparatively slight increase of total pressure upon the foundations.

This or some such scheme should be in the mind of the conservator from the moment that he has convinced himself that temporary patching will not meet the case. Demolition and rebuilding must not be thought of as the only alternative, and it is the duty of all who love the work of our greatest architect to insist that proposals which can only lead to demolition in the future must be abandoned forthwith.

The importance of having a scheme in mind when inspecting the building it is proposed to repair is that it will focus the attention, not only of the conservator himself, but of all those who collaborate with him. To collect details aimlessly with the idea of acquiring information is to amass a dead weight of data without the possibility of assimilation. Imagination and research must go hand in hand, and it is better, even in the interests of the preliminary survey of the building, to make a scheme and then demonstrate its unsuitability than to make no scheme

at all. That a commission could possibly manage to act together long enough and perseveringly enough to survey, analyse, and compose a scheme of repairs for a complex building like St. Paul's is hardly within the range of possibility. Authority must be in the hands of one competent person who will set the problems for his expert advisers to work out in detail. In no other way can considerations of detail be kept in their subordinate place. Admittedly there are lions in the path, and if the details are all considered without reference to the direction and encouragement of some scheme which has at least the apparent promise of success no sufficient weapon will be found to combat them. Armed with a scheme it is a matter of profound interest to ascertain just how it can be applied, and it is only such a sustaining interest that can carry the conservator through the immense fatigue of the long investigation.

The scheme outlined above would be applied to the building in the following stages, the conservator would first examine all available data, and ascertain what part of the previously acquired information was, in fact, information to him.

Modern engineering is over-specialized in many of its formula, and methods of expression, and it is essential in dealing with an old structure in a state of partial decay that any statement of fact should be crystal clear to all concerned, and the more complex the subject the more pains must be taken to render its description concise. For this two principal means exist. The preparation of drawings upon which all divergencies from datum are drawn to scale and figured, and the use of experimental models. To stumble about above the vaults of St. Paul's Cathedral in the light of an oil lantern is not an ideal way of acquiring information. The presence of difficulties—the lions above-mentioned—may be taken for granted, and every means that will throw light must be used to render them less dangerous.

The conservator will aid himself in forming general ideas by testing his theories as to the building's line of action by applying pressures to experimental models. It is only in this way that the theories of the text-book can be amplified to apply to buildings in a state of partial decay. It must never be assumed that an ancient building, apparently symmetrical in plan, is symmetrical in respect to its structural action. To calculate the pressures of half an arch on the supposition that the other half is similarly stressed is to court disaster, and before any calculation can be put in hand it is necessary to know what the building is doing, and to be in a position to predict what it will do in the future.

Nothing must be left to chance or taken for granted and, as above-mentioned, the results of such a survey must be presented in a comprehensible fashion. One of the best ways of presenting the necessary information is to superimpose upon the same drawing the plans of two stages of the building's height, the ground plan being one of them. Fragmentary drawings of parts of the building and drawings made to distorted scales "for clearness sake" are highly deceptive, and do not convey that connected action of bend and drift which goes on throughout a whole building as it settles in response to the various destructive forces of gravitation, wind pressure, and vibration.

The reason why the bends and drifts of the building must be studied so closely is that the conservator proposes to anchor back with tensile reinforcement one drifting portion to another, which has an opposite tendency, or is at least sufficiently massive to justify the expense of the operations by a reasonable hope of success. The measure of drift can be estimated from the position of fractures in connection with the positions of deflections from regular

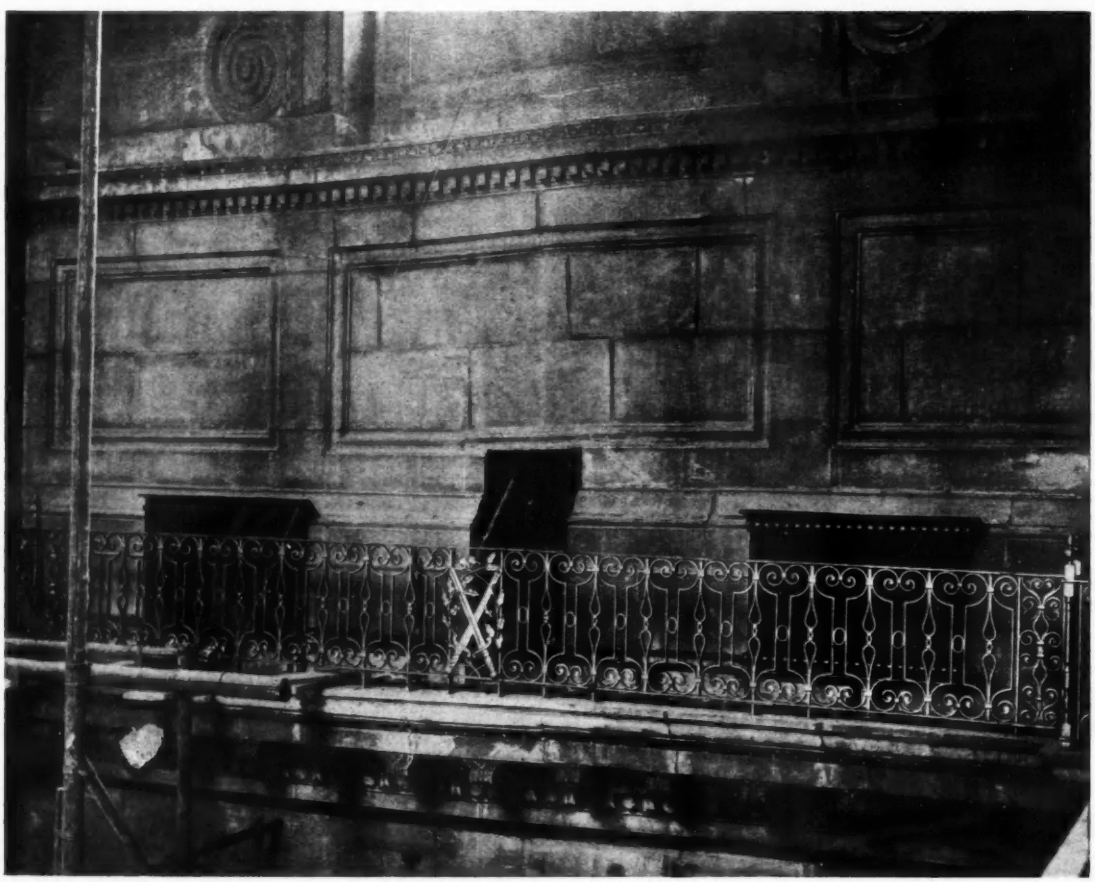


FIG. 6. A view showing the settlement in the drum of the dome at the level of the Whispering Gallery.

alignment and from the vertical, and it is important to mark the positions of all cracks and fractures, however small, upon the survey plan.

These plans should be drawn, in the first instance at all events, to a small scale in fine lines so that the whole building comes under review at the same time. In an approximately symmetrical building like St. Paul's a consistent deviation of all lines towards a single aspect might indicate a bodily sliding down hill, and the vexed question of subsidence through neighbouring deep digging might be settled by means of careful survey plans. By their use also the extent of former damage through whatsoever cause can be estimated, a matter which affects both the quantity and the position of the proposed reinforcement. In reading survey plans, models made either of uncemented blocks or of plastic material should be referred to, and movements in the structure whose causes have eluded analysis and have remained a mystery when presented in the form of a tabulated list give up their secret under the test of triple cross-reference to the building, the drawings, and the model.

The analysis of pressures is more difficult and less certain in an old building than in connection with a new one. The materials and quality of workmanship differ arbitrarily in different parts of the building, and resistances vary accordingly. Arch rings must generally be calculated as being separated from their supports right down to the springing, for where the loads are heavy, masonry that might act corbel-fashion at the impost is frequently sheared off as is, in fact, the case in some of the great arches of St. Paul's.

The recommendations of the text-book must be most carefully scrutinized in the light of the actual condition of the building, and a double check, in which a geometrical solution is placed side by side with one obtained by calculation, is distinctly advisable.

In the application of scientific works of repair the aim should be to achieve at least two ends with one effort, the anchor of one system of reinforcement may take the form of reinforcement in a return wall or mass, and reciprocally, or the main bar providing tension between large masses of the building may be made the means of uniting details of masonry traversed in its course.

The order of operations is frequently difficult to determine, but as the details of repair must be worked out in connection with the method of their application, much care must be devoted to arranging this part of the design.

The design of false work is also most important from the point of view of convenience as well as strength. At St. Paul's Cathedral lightness is also of the greatest importance, since the foundation is suspected of being weak.

In this connection the question of the spaces between the crypt piers might profitably be decided before any centering is erected, since the foundation for the centre might be executed as a permanent work forming a raft between the piers, unless the prospect of major works of underpinning should make this course impracticable. In any case the gantry and centering must be devised so as to afford access to the interior of the piers for recoring purposes, and the removal of false work has also to be thought of.

All the arches of the dome area will require centering, including the alcoves at its corners and the more distant arches above the aisles, that will be cut into by the arch-like supports of the new cone, and these last centres must be made in such a way that the new supports can be inserted without unduly disturbing them.

A cardinal principle of this art of the conservator is that no particle of the old work may be disturbed until something stronger than itself is at hand in perfect order to replace it, and this rule which must be followed unswervingly in the interests of safety to life and limb, as well as the safety of the building, controls the design of every detail. For a great deal of the reinforcement, which would be undertaken as soon as the centering was erected, standardized units could be prepared. The insertion of reinforcement in the tops of thick walls is not a difficult operation, nor is it particularly hazardous to place it in the side of a wall that is in reasonably sound condition, so that the preliminary scheme of encircling the building with reinforcement would offer great advantages at a reasonable expense in money and in design. The calculation of the reinforcement for the central hub would be prefaced by the design in detail of the cone in all its aspects, and this would present some extraordinarily interesting features. The actual operations would commence with the insertion of the arch-like supports in stepped seatings prepared for them in the bastions and the adjoining masonry walls. Whether it would be advisable to allow the cone to press directly upon the crowns of the great arches or to wrap them as far down the haunches as they are accessible is one of the details that would have to be decided in connection with the possible retention or alteration of existing staircases, sleeper-walls, and pavings above the vaults.

It is, of course, impossible to indicate these items upon a hastily-drawn sketch. The best method of underpinning the outer drum and of partially supporting the inner drum would also affect the construction of the cone and the nature of its reinforcement, the purpose, the material, and the method of its employment all demanding considerations before a satisfactory solution can be determined.

The erection of the cone would afford an opportunity for setting in order the thirty-two counterforts, now sadly defective, with which Wren surrounded the drums. The absence of any mention of these weight distributors from the Commission's report is an astonishing omission, since the diffusion of pressure is the crux of the whole problem.

In Praise of Sir Christopher

Wren has been in fashion and out of fashion, and now he is above fashion.

I had passed it (Chelsea Hospital), almost daily, for many years without thinking much about it, and one day I began to reflect that it had always been a pleasure to me to see it, and I looked at it more attentively, and saw that it was quiet and dignified, and *the work of a gentleman*.

THOMAS CARLYLE.

He was a very great man, of extraordinary patience with fools. THOMAS CARLYLE.

Sir Christopher Wren could not build a common brick house without impressing his own character upon it.

COVENTRY PATMORE.

In architecture, an art which is half a science . . . our country could boast at the time of the Revolution of one truly great man, Sir Christopher Wren; and the fire which laid London in ruins, destroying 13,000 houses and 89 churches, gave him an opportunity unprecedented in history of displaying his powers. The austere beauty of the Athenian portico, the glowing sublimity of the Gothic arcade, he was, like most of his contemporaries, incapable of emulating, and perhaps incapable of appreciating; but no man born on our side of the Alps has imitated with so much success the magnificence of the palace churches of Italy. MACAULAY.

Wren was one of the harmonic heroes of the world if ever there was one. Though he wrote his poetry in stone

and brick rather than in iambics and trochaics, he was not only one of the stateliest but one of the most direct, stimulating, and appealing of the poets: one of the noble band who purge our minds, who clear away the storms, and for whom we may thank God when once more the blue appears. Wren is one of the physicians of the soul. In his own day, perhaps, he was the greatest. Much as I love Dryden, and glory in Pope, delight, though with a shudder, in Swift, and own the enchantments of Purcell, I cannot help feeling that from 1670 to 1710 Wren reigns supreme in the arts—at any rate, in the arts of his native land.

JOHN ST. LOE STRACHEY:
The River of Life.

Nothing, I believe, so witnesses to the vigour of our love for Wren as the poignancy of our jealous disappointment if we find any work of his falling short of our perfect ideal of the Wren standard. . . . In any case, with so great a man we may, without undue blindness of devotion, look on these little shadows as the black splashes that make the ermine ermine, the spots in the sun that make it burn; but the heartaches are, after all, tributes.

A story, undoubtedly untrue, is told of a man whose first-rate critical faculty went hand-in-hand with a facility in second-rate verse. Such a man let loose in the Strand, for an hour of architectural meditation, returned to his study and penned these remarkable lines:—

Would God that Wren's immortal hand
And more than mortal brains
Had built St. Mary's-in-the-Strand
And not St. Clement Danes.

I could have written those lines myself. With that mythical critic I agree. I share his sore heart.

PAUL WATERHOUSE.
The Wren Banquet, 1923.

J.

Haystoun House, Peeblesshire

ORPHOOT, WHITING, and BRYCE, Architects

THE work here consisted of converting the old farmhouse and farm buildings for use as a small country house for Sir Duncan E. Hay, Bart. The old courtyard lay-out and the old walls had to be retained as far as possible. Like most of the houses of this district the walls were of local whinstone harled, and without foundations, massive, but in many cases very rotten. The whole had to be underpinned and provided with proper dampcourses, and a great part of it was, in the end, rebuilt. The smallish windows and rather wide, low doors of the old Scottish work were retained, the windows being provided with generous wood sashes.

All the floors were renewed, the public rooms with red deal and maple, and the kitchen offices with red quarry tiles. The roofs were mostly renewed with undersized Ballachulish slates. The old stone newel stair in the west wing is retained as a secondary stair, and a new stair has been formed in the south wing. This is partly of estate fir and partly imported, each story being in three easy flights round an open well. The twisted newels with grotesque finials and twisted balusters are all scumbled and stained to a dull greyish brown colour. The internal doors are broad and low, and have two raised fielded panels shaped at the heads, as found sometimes in old Scottish work, and more frequently in the French work of a rather earlier time, which inspired so much Scottish work. Open stone hearths with moulded stone jambs, lintels, and shelves are used almost throughout.

The picture-room and garage in the west wing have yet to be completed, as have also the low screen wall at the entrance to the court.

The furniture was made by a retired clergyman, the Rev. J. B. White, of Instow, Devon, and shows what can be done by an amateur with an amateur's appliances, with the assistance of the architects in design and drawing. It is further interesting as nearly all the timber is home timber. The settle is of oak from H.M.S. *Hamadryad*, one of the ships which convoyed Napoleon to St. Helena. It was broken up at Appledore. The trestle table is of Scotch oak, and, like the settle, is treated with a wash only to give the wood a pleasant cool colour; and the cabinet on turned legs is of English oak with inlay of manandra wood and armour-bright wrought-steel hinges, handles, etc. The French cabinet is of laburnum of a very beautiful warm, brown colour, not unlike kingwood, and used as a veneer over oak. The numerous woods of the inlay are mostly locally cut—apple, pear, berberis, ilex, holly, and many more. Only for the darkest of the bandings and inlays was it necessary to employ foreign timbers. The whole of the veneers are hand-cut on a small circular saw. The bronze mountings in this case are not home-made. These are made by Messrs. Fournier, of Paris. The marble top is Devon marble (Ashburton).

The following description of the house appears in "Peeblesshire County History," which is at present in the Press: "Haystoun House, standing on a steep bank overlooking the Haystoun Burn, 1½ miles south of Peebles, is one of the most beautifully situated houses in the County. The old L-shaped house which is built of whinstone harled, and roofed with Stobo slates is on the site of an old Peel tower or Border keep. Nothing now remains of this, unless it be some large stones visible at the base of the walls on the west side of the house, and the small, roughly-vaulted chamber in the north wing. The house was for many years occupied as a farm, when the usual outbuildings of a farm were added on the north side, forming three sides of a court about 80 ft. by 50 ft. Over the front door there is a finely-executed carving of arms bearing the date 1660. There was also another panel of arms built into the wall of the barn on the west side of the courtyard. The kitchen of the old house had a 9 ft. wide arched fireplace opening, which, however, had by successive modernizations lost its original meaning. Recently the house—no longer used as a farm—has been altered and enlarged. The courtyard plan has been retained, and the outside appearance not greatly changed."

The contractors for the conversion were as follow: Wm. Arnott McLeod, Edinburgh (mason and brickwork, and asphalt); subcontractors: Doddington Quarries (stone); Bath and Portland Stone Firms, Bath (carved stone work, chimneypieces); L. Grandison, Peebles (reinforced concrete construction, and plain and modelled plaster work); Wm. Anderson and Sons, Edinburgh (Ballachulish slates, etc.); Jas. Hogg, Peebles (plumbing and sanitary work); N. Grieve, Edinburgh (general joinery and flooring); Anderson and Munro, Glasgow (electric wiring and plant, and electric light fixtures); N. Grieve, and Scott Morton & Co., Edinburgh (special woodwork); Bell, Donaldson & Co., Edinburgh (door furniture); George Elliot and Sons, Reading (wood balusters, etc.); David Mitchell, Peebles, and Keble & Co., London (painting and decoration); John Ogilvy & Co., Ltd., Edinburgh (heating and ventilating).

The clerk of works was Mr. David Cowan, Peebles.

Modern Domestic Architecture. 106.—Haystoun House, Peeblesshire: The Entrance Court

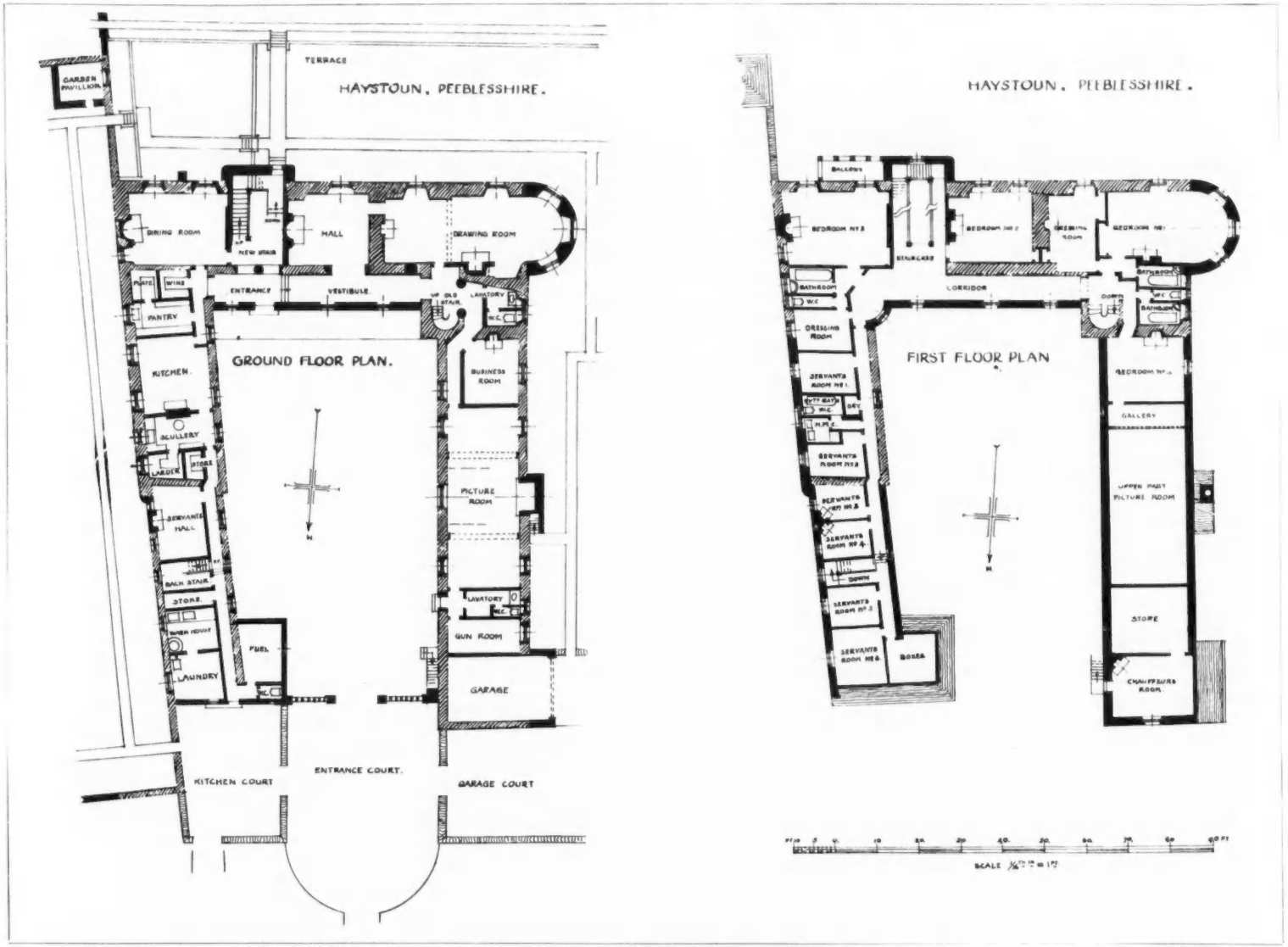
Modern Domestic Architecture. 106.—Haystoun House, Peeblesshire : The Entrance Court

Orphoot, Whiting, and Bryce, Architects

Haystoun House is an old farmhouse converted into a small country house. The old courtyard lay-out had to be retained as far as possible. The view shows the entrance court from the northern corner of the west wing.

The Eastern portion of the south front viewed from the new south terrace, showing on the extreme right the entrance to the south-western corner of the old walled garden with new steps, and the retaining wall below the old wall.

HAYSTOUN HOUSE, PEEBLESSHIRE. ORPHOOT, WHITING, AND BRYCE, ARCHITECTS.



HAYSTOUN HOUSE, PEEBLESSHIRE: GROUND AND FIRST FLOOR PLANS.
ORPHOOT, WHITING, AND BRYCE, ARCHITECTS.

Modern Domestic Architecture. 107.—Haystoun House, Peeblesshire: The Dining Room

Modern Domestic Architecture. 107.—Haystoun House, Peeblesshire : The Dining Room

Orphoot, Whiting, and Bryce, Architects

"The furniture in Haystoun House was made by a retired clergyman, and shows what can be done by an amateur with an amateur's appliances and the assistance of the architects in design."

Modern Domestic Architecture. 108.—Haystoun House, Peeblesshire: The Lower Flight of the Staircase

Orphoot, Whiting, and Bryce, Architects

This view is of the lower flight of the staircase, and below is seen the door to the south terrace. The staircase is partly of estate fir, and partly of imported, each story being in three easy flights round an open well.

Modern Domestic Architecture. 109.—Haystoun House, Peeblesshire : The Upper Portion of the Staircase

Orphoot, Whiting, and Bryce, Architects

This is the upper portion of the staircase as seen from the principal landing. The twisted newels with grotesque finials and twisted balusters are all scumbled and stained to a dull greyish-brown colour.

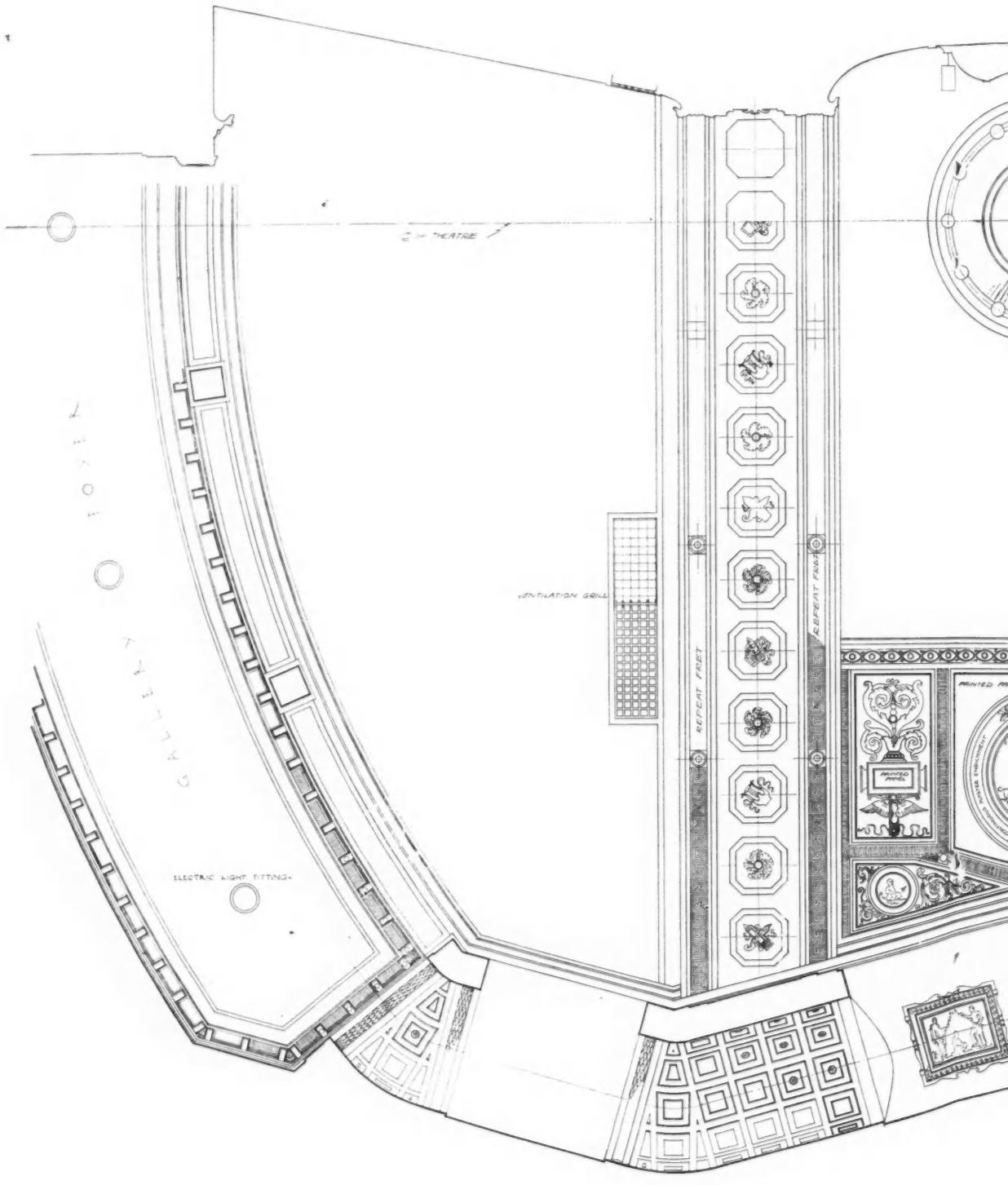
A CORNER OF THE HALL, LOOKING TOWARDS THE STAIRCASE VESTIBULE.

THE BALCONY ROOM, ONE OF THE PRINCIPAL BEDROOMS.

HAYSTOUN HOUSE, PEEBLESSHIRE. ORPHOOT, WHITING, AND BRYCE, ARCHITECTS.

Architects' Working Drawings. 92.—

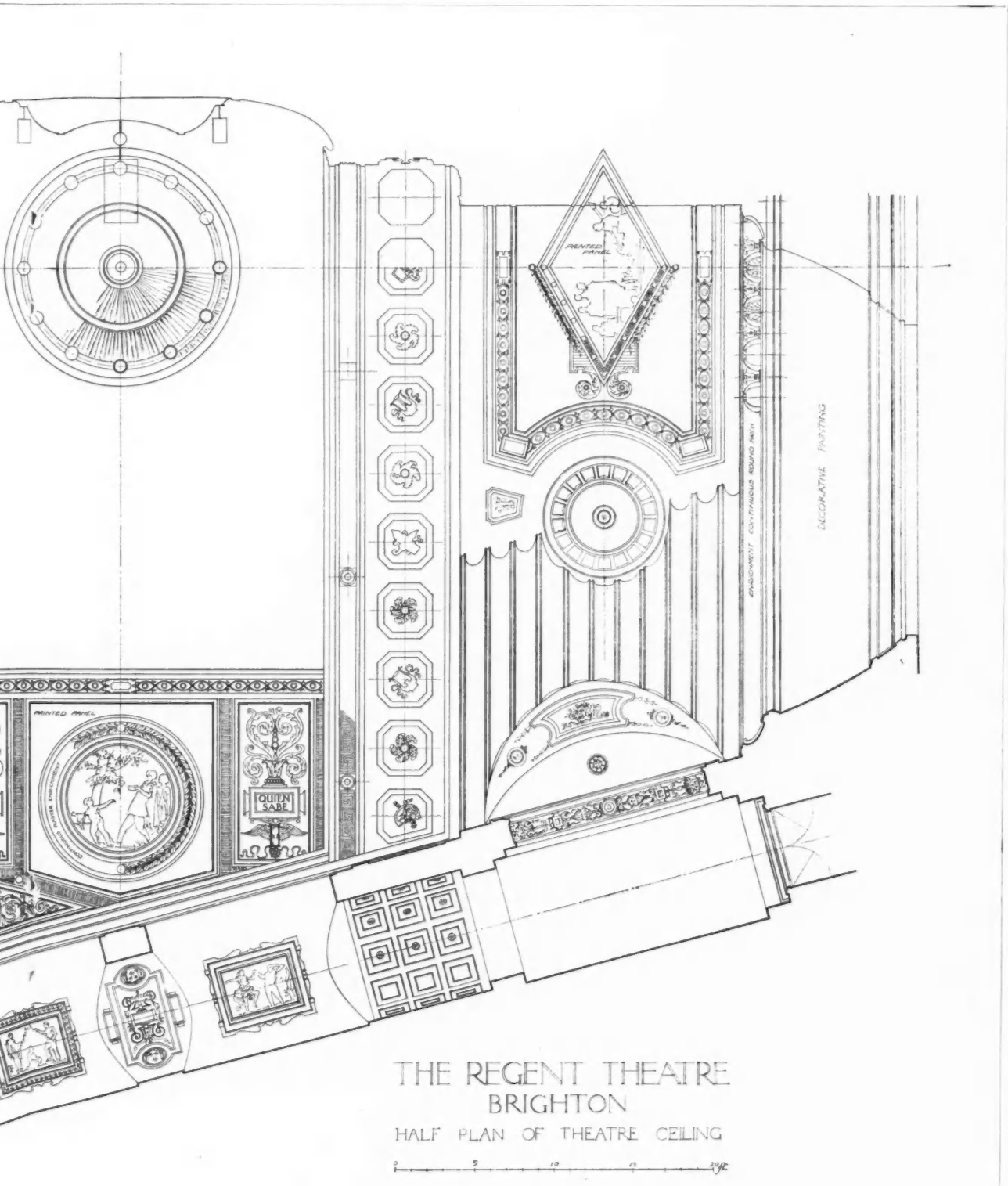
Robert Atkinson, F.R.I.



The theatre ceiling of the Brighton Cinema has painted p

92.—The Regent Cinema, Brighton

on, F.R.I.B.A., Architect



has painted panels in flat colour and others in full colour.

Training in Craftsmanship

(From a Correspondent)

THE instructions issued by the Building Industry Committee last week for the guidance of local building committees are of direct interest and importance to architects. It will be remembered that this Committee was set up by Mr. Wheatley last October to advise in the carrying out of the housing programme embodied in the 1924 Act, with special reference to developing the supply of skilled and trained labour. On November 27 of last year, when Mr. Chamberlain was interviewed by members of the Committee, as foreshadowed previously in THE ARCHITECTS' JOURNAL, he stated that he did not contemplate making any violent changes in existing legislation, as he wished to avoid reversals of policy, and that he would give the Committee every support possible. Thus the local Building Industry Committee have been able to proceed on their work with the assurance of the Government's backing.

Government assistance was certainly offered to stimulate craft training. It is an open secret that Mr. C. P. Trevelyan and Mr. Wheatley were framing together a policy for the extension of technical schools, so as to provide both day and evening classes for building trade apprentices, and that their proposals had been heartily welcomed by local education authorities. Lord Eustace Percy, the present president of the Board of Education, had also shown himself to be an enthusiastic supporter of the same policy. It is therefore all the more surprising to find that the Building Industry Committee, in their instructions, only give little space, and a somewhat lukewarm support to encouraging building education.

It is unnecessary here to enter into details of the schemes that were before them, except in so far as they affect the architectural profession. During the last four years a vast amount of material and memoranda have been placed before the leaders of the trade, and this particular Committee has further had the advantage of certain proposals, explaining how the proposed improved facilities for general education and technical training might be provided. Their object may be summarized by an extract from a report that was before the Building Trades Parliament in 1920, signed by Mr. S. Smethurst, which stated that the future of the building industry "lies in the supremacy of craftsmanship working in co-operation with art and technique."

While it was recognized in the proposals before the Building Industry Committee that in modern times the design of ordinary craft work in buildings has become solely the function of the architect, it was also pointed out to members of the Committee that under present circumstances the artisan rarely regards the artistic quality of his work as his personal concern. There may be occasional instances where a mason or a carpenter shows some originality in workmanship, but usually with deplorable results. Many an architect can give examples of such regrettable ignorance and lack of interest. Again and again his intentions are misinterpreted by craftsmen, who have no appreciation of artistic qualities.

It is therefore of importance from the architectural point of view that building craftsmen should be taught some art work, and in many junior technical schools three hours out of thirty hours a week is allocated to this aspect of craftsmanship. Practice in drawing on freehand lines is encouraged. It is urged, too, by those responsible for drawing up courses of instruction that young building apprentices should be taught to recognize good design in a building that may be beautiful, although it may have no ornamental features. The training also extends to a study of the effects of light and shade in moulding and foliated capitals.

In the senior technical schools of building, of which there are all too few in this country, drawing is continued as a fundamental instruction. It is officially stated, however, that "it should be clearly understood that the students are all to be trained for the building industry, and architectural drawing should be interpreted in its wider sense, and not as a subject leading to the architectural profession, or to architectural designs."

In the part-time courses for apprentices that are being arranged (notably in Liverpool, where a distinct advance has been made this month) the lads are taught that building has its own dignity and importance, and its place in national life. Those who have been through the training have wider interests, as well as the technical knowledge which enables them to understand far more fully the wishes of the architects who designed the buildings that they have to erect.

It will be seen from the above rough and summarized outline that the proposals that were placed before the Building Industry Committee were framed on broad lines. It was emphasized that the building industry depends in an exceptional degree upon the exercise of trained intelligence for its direction, and how it has suffered in the past owing to the lack of knowledge of the principles of science and art.

Compared with the demand for skilled craftsmen, the number of schools or classes, almost in every case organized by local education authorities, has been, unfortunately, small. However, arrangements were being made to secure more accommodation, better equipment, and more suitably qualified teachers. In fact the minimum programme put forward four years ago was being carried forward, aiming at the establishment of nine new junior technical schools of building, fifty new centres of part-time day classes for building apprentices, and three thousand new evening classes.

The replies sent by local education authorities to the circular issued by the Board of Education last September showed how ready local committees were to do their utmost to provide the facilities required. On the other hand, it is rumoured that some builders were not so well disposed, as they failed to realize the exceptional importance to-day of developing a national scheme of building education that would meet the expected expansion of the industry, and would ensure at the same time that the recruits would be properly trained as capable craftsmen.

This winter has shown a change of public opinion on the matter. Many of the classes of schools of building, hitherto badly attended, have been crowded by lads who have been sent to learn their craft by their parents. For many fathers have at last recognized that the building industry, however variable it may have been in the past, presents very definite opportunities in the future. There are a number of higher posts in the industry that have to be filled, and the present policy to place these within the reach of those operatives whose qualifications admit to positions of leadership make the building trade more attractive.

These facts are certainly recognized by the Building Industry Committee, but there are many who regret that a more definite lead was not given in the recently-published instructions. A chance has been lost. Architects, however, who will probably be called in to advise either the local committees or local education authorities, can do much to help. They can assist in encouraging master builders to send youths who are most likely to develop into capable craftsmen to technical schools. They can also urge that the training given should include, not only workshop instruction, building technology, applied mathematics, applied science, but also applied art, so that the students may learn to appreciate all that is good and artistic in building.

Book Reviews

Walnut Chest on Stand with turned legs and flat stretcher, William and Mary Period. Late 17th Century.

Walnut Tallboy with early cabriole legs and canted corners. Queen Anne Period. Early 18th Century.

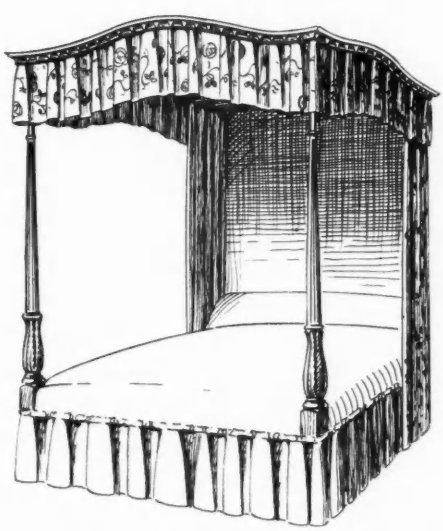
English Furniture.

This volume, commendably concise and compact, and the second in the series of which "English Architecture at a Glance" was the first, is described in its sub-title as "A Simple Review in Pictures of the Origin and Evolution of Furniture from the Sixteenth to the Eighteenth Centuries." Its author, Mr. Charles H. Hayward, very charmingly dedicates it to his mother.

As an introduction to the subject, and as an incentive to fuller study, so well catered for already in more portly tomes, nothing better could well be devised to combat the initial indiscretions of earnest, but inexperienced, collectors. When such knowledge has been acquired and duly digested, it may even lead to an interest in modern furniture, and so engender enough enthusiasm to produce something new, but yet traditional, as a refreshing antidote to incessant copyism and the production of purely period-furniture. It is only by such erudition that vital art of any kind can be evolved, though certain short-cut modern painters and decadent art critics, to whom they pander, seem to mistake a combination of eccentricity and energetic press-agency for sincerity in art.

Mr. Hayward has recognized—to use his own words—"the need for a small book which forms a general survey of the craft and shows how certain types of furniture came into being, sometimes as the result of a change in the national customs involving new requirements, in other cases as a development of the previous style, and it is for the purpose of supplying this need that the present work has been prepared."

The author's list of the historic periods (at a still quicker glance) is a good idea, even though some of them do synchronize with the reigns of monarchs whose dates we may or may not remember from our school days. He might, perhaps, have described the periods from 1603–1649 and



Mahogany Four-poster Bed, with fluted posts and serpentine-shaped tester. Hepplewhite Period. Second half of 18th Century.

Pine Side Table, finished with gilding. The frieze rail is carved with flutes. The whole is in the Adam style. Second half of 18th Century.

1660–1688 (with Cromwellian in between, of course) as early Jacobean and late Jacobean, instead of calling both merely Jacobean, but this is a minor quibble. The main point is that Mr. Hayward has been remarkably comprehensive within a limited compass, and has managed, in fourteen chapters, to give over one hundred illustrations of all the most important types of furniture. A word of praise is due to the anonymous draughtsman for the excellence of his work.

The introduction shows how contemporary fashion in architecture and the austerity of Cromwellian times, for instance, are reflected in furniture. The reader is taken alluringly along through the ages of oak, walnut, and mahogany, and is shown how little furniture—and only of the simplest kind—there was at first. Its early heaviness is impressed upon him, and then, through the over-ornate phase, he finally comes to and stops before the refinements of Queen Anne and Georgian characteristics were obliterated by nineteenth-century clumsiness.

Such individual craftsmen as Chippendale, Hepplewhite, the brothers Adam, and Sheraton came into prominence in the second half of the eighteenth century, and to greater renown since their day. All but the first named, who died in 1779, were working right up to the end of the Regency (1820). Subsequently taste gradually degenerated, but the period of ugliness rightly finds no place in Mr. Hayward's book.

The contents page fills one with pleasant anticipation, the sight of the illustrations—with their invaluable notes beneath—makes the book irresistible, and after one has succumbed to these fascinations there is the final pleasure of perusal still to come. It is doubtful whether anything of the kind has previously been so well done. The author not only knows his subject from A to Z, but he also knows how to condense; a real gift.

BASIL OLIVER, F.R.I.B.A.

"English Furniture at a Glance." By Charles H. Hayward. London: The Architectural Press. Price 5s. net.

A Great Engineer on the Preservation of St. Paul's.

A part of Sir Francis Fox's reminiscences of his sixty-three years of engineering is of immediate interest. It is that part concerned with the restoration of ancient buildings.

Sir Francis Fox was the engineer associated with the late Sir Thomas Jackson, as architect, in the restoration of Winchester Cathedral, and his conclusions, derived from Winchester and elsewhere, as to the proper procedure in restoration are definite.

> After preliminary shoring, centring arches and providing steel tie-rods where absolutely necessary, the walls should be grouted up in every portion, commencing from the base; and only when the fabric has been thus made, so to speak, "monolithic" and self-supporting, should under-pinning, with the necessary excavation, be begun.

In his account of the results of his detailed examination of the fabric of St. Paul's thirteen years ago, Sir Francis gives a description of the dome which is of interest to all those who have regarded it only from the ground.

"There is an internal dome, visible from the floor of the building, resting at about the level of the Whispering Gallery on a circular wall, which transmits the weight of this internal dome to the arches and piers below. There is also an external dome constructed of timber and lead; and this it is which is visible from all over London. The external dome is similarly carried by another circular wall on the same level, and the intervening space between these two great concentric walls is divided by thirty-two buttresses into a smaller number of chambers, each 10 ft. by 7 ft. Each of the thirty-two chambers can be entered only through a small aperture in the main wall (which is 4 ft. in thickness), 13½ in. in width, and 16 in. in height.

"The mode of entrance is peculiar; one cannot go through on hands and knees, since the height is so limited, nor can one wriggle through. A plank 12 in. in width is held level with the bottom of the aperture, the visitor lies down on the plank, and, drawing in his arms and knees, is pushed through into the chamber. Inside there is no light or ventilation, and nobody can remain for more than a few minutes. Once, indeed, a man stayed in too long, and became so heated that he was too large to go back. Buckets of water had to be thrown over him to cool him down, and thus reduce his size, before he could be extricated. He strongly objected to going in a second time.

"In order to ascertain the condition of the fabric it was necessary to enter all these thirty-two chambers and to take photographs of the walls.

"The depth to which the foundations had been carried was very shallow—only 4 ft. 6in. below the floor of the crypt and 12 ft. below the surface of St. Paul's Churchyard. The warehouses on the opposite side of the street are carried down 25 ft., and the sewer in Godliman Street runs 35 ft. below the street level; in each case wet gravel and quicksand were encountered. To make the cathedral secure against future buildings and excavations it should undoubtedly be under-pinned or carried down throughout into the blue London clay, otherwise the quicksand on which it stands may be drawn away. But much else calls for attention before this serious and difficult work can be undertaken.

"The dome of St. Paul's is carried on eight piers. In addition to these, four large bastions were provided to take some of the weight. It has, however, been ascertained that, owing to movements and cracks, these latter have broken away and do not assist the piers. The weight of the dome at the bottom of the footings has been estimated at 60,000 tons, or about 7,400 tons on each pier. Now the masonry on these piers, which any visitor to the crypt can see, seems at first sight to be of excellent Portland stone, apparently capable of carrying almost any load; but the inquiry brought out the startling fact that this fine masonry is only a thin veneer, in some places not more than 4 in. to 6 in. thick, and that the interior is filled in with badly executed rough rubble.

"The piers at crypt level are approximately 43 ft. in length by 20 ft. in width, with an average thickness of Portland stone veneer of 12 in. We are led to the conclusion that a kind of large rectangular bath was formed into which lime was thrown, and into this lime the stone débris from the former building was dumped anyhow, without any attempt to bed the material.

"All the eight piers have at some time or other moved, the degree of subsidence varying from 2 in. to 6½ in. Some have subsided on the 'toe,' others on the 'heel' of the pier, and enormous strains have thus been put on the superincumbent arches.

"The eight piers carrying the dome have been badly cracked, the four large bastions have been sheared off, and are not now carrying their load, and of the thirty-two buttresses which were intended to distribute the weight on to the piers and walls, twenty-three are badly fissured, and, in some cases, practically sheared. The drum of the dome is also cracked, and when the dome was plumbed in August, 1901, by Mr. Somers Clarke, it was found to be 4⅜ in. out of the perpendicular in a south-westerly direction. We measured this again in March, 1913, and found that the divergence had increased to 5¾ in."

Dealing with the problem of strengthening the foundations, Sir Francis describes the results of experiments made by sinking shafts in the vicinity of the cathedral and forcing cement into the sand and gravel, and he draws the conclusion that St. Paul's can be safely founded on the London blue clay without the expense and risk of actual excavation.

In one chapter there is given, for the first time, an authoritative account of the wonderful operation performed on Winchester Cathedral in the years 1905–12. Early in 1905 it was clear that the cathedral was sinking into the earth, and doing it faster at some places than at others, so that the masonry of the walls and vaulting was being fractured by the irregular strains thus exerted. The cracks and holes could, of course, be grouted at high pressure. But if the causes of the cracking were not removed the cracks would only widen. So the foundations had to be seen to.

Trial pits were dug outside the walls, and it was found that the foundations rested, at a depth of some 10 ft., partly on beech logs laid lengthwise and lying, in some places, on a second layer of logs laid crossways. Below these trees was found a depth of about 8 ft. of peat, so wet that, when a hole was dug in it, it filled with water. As the beech logs dated from between A.D. 1087 and A.D. 1093, some of them had rotted, though others had not, and the cathedral was foundering unevenly into the bog. Below the 8 ft. layer of peat there was found a fine solid bed of natural gravel and flints, with chalk under it.

One idea was to refloat the whole of the sinking building upon one vast slab of concrete. But this slab would probably have cracked under the diversity of local strains upon it, and perhaps given the cathedral a heavy new list. Another idea was to drive piles under the walls and rest the cathedral on these. But its whole fabric was already so far disintegrated that the vibrations of pile-driving would have shaken it to pieces. The weight of the cathedral had already pressed the layer of peat thinner by 3 ft. to 4 ft., and Sir Francis Fox was convinced that the whole cathedral must collapse unless all the peat under its walls could be taken out and cement or concrete inserted between their lowest stones and the firm bed of gravel, flint, and chalk below. In five years and a half the whole of this work was done by one man, a marine diver named W. A. Walker. Working in total darkness, he picked the peat out, by sections, from under the walls, brought down concrete and cement from the surface and stuffed them into the cavities thus made. He thus underpinned the entire cathedral firmly, so that it stands now on a bed of rock. J.

"Sixty-three Years of Engineering, Scientific, and Social Work." By Sir Francis Fox. London: John Murray. Price 18s. net.

Garden City Houses.

Books on small houses are always opportune, and this one is so in particular, because the examples illustrated have been chosen with taste and a wise discrimination.

The fourth edition of "Garden City Houses and Domestic Interior Details" retains the best of the contents of the earlier editions. It is divided into three parts, viz.: Section 1—Specification of a garden city house, with working drawings by Mr. T. Millwood Wilson; section 2—exteriors and plans; section 3—interior details.

Though only about eighteen pages of rather out-of-date pre-war illustrations from photographs, scale plans, and elevations are now omitted from section 2, their place is taken by exactly double that number of pages of post-war work. The difference in the character of the designs—with the third and latest edition before one—is quite striking. Modern tendencies seem to be all for the better. There is greater simplicity and breadth of treatment now, and, speaking generally, the planning is more symmetrical and more compact. Architects have, for some time, been getting away from fussy picturesqueness, partly from choice and partly from the strict necessity for economy, thus enforcing the rigorous elimination of non-essentials. It is to be hoped that future employers, for whose instruction this book is also intended, will appreciate the reason for this development in English domestic architecture, and that they will become, after studying its pages, more in sympathy with and appreciative of their architects' aims and ideals. The intending house-builder, more than ever before, chooses his architect—when he does not happen to number one amongst his acquaintances—from such publications as this, and he chooses him for the convenience of plan and for the style of design that takes his fancy. The ultimate building may be totally different, but once the choice of the designer is made, then it behoves the employer to put his trust in his architect, if the best result is to be achieved.

The new edition is unlike its predecessors in that a number of the best State-aided housing schemes are included. Architects, whose work is illustrated from working drawings and photographs, in this section are: Messrs. Adshead and Ramsey (a pair of houses, Government housing scheme, Totnes); Mr. T. Lawrence Dale (Banbury rural housing scheme); Messrs. Culpin and Bowers (Folkestone housing scheme, a group of three houses with a basement flat); Mr. W. Curtis Green, A.R.A. (the City of Winchester housing scheme); Messrs. Murrell and Pigott (Aylesbury housing scheme); Messrs. Harvey and Wicks, and Adshead and Ramsey, joint architects (the Newburn-on-Tyne housing scheme); Mr. Albert J. Thomas (the Brookfield housing scheme, Highgate), etc.

The frontispiece is a view of part of the L.C.C.'s housing scheme at Roehampton; one of the best of them all.

Typical houses at Welwyn Garden City by Messrs. Hennell and James, Louis de Soissons, and Allen Foxley, and new groups and individual houses at Hampstead, Gidea Park, and other garden cities are additional features of this well-arranged publication.

The final section of the book is devoted, as in previous issues, to most useful and essentially practical interior domestic details, clearly drawn with photographic illustrations inset. Characteristic work by such masters as the late Ernest Newton, R.A., Sir Edwin Lutyens, R.A., Professor C. H. Reilly, Messrs. Guy Dawber, E. J. May, O. P. Milne, Horace Field, T. M. Wilson, W. H. Bidlake, Geoffrey Lucas, Richardson and Gill, and others is to be found under the head of "Interior Details." This how-to-do-it section supplies, in a convenient form for reference, information lacking in the average book on building construction wherein the taste in design displayed too often leaves much to be desired.

One of the advantages of the book under review is that it is equally "safe" for the very young student and the uninformed layman, both of whom could only profit by its careful study.

BASIL OLIVER, F.R.I.B.A.

"Garden City Houses and Domestic Interior Details." Fourth edition. Revised and enlarged. London: The Architectural Press. Price 7s. 6d. net.

An Introduction to Regional Surveys.

This admirable publication, prepared at the instance of the Cities Committee at Le Play House, gives invaluable information about regional surveys, not previously published in this form.

The authors stress the importance of preliminary investigation and survey of a locality, as the facts thus gathered together and properly noted in graphic and descriptive form should be the basis of present and future civic effort.

Typical examples are given with regard to town and country surveys, with appropriate illustrations. There is a reproduction of a development plan for Northfield Village, prepared by the Birmingham Civic Society. This Society has done some of the best work in the country in the direction of civic betterment. Another example illustrated is the playgrounds and playing-fields of Liverpool, showing a "Survey of Place." Such a survey could be carried out in most districts with comparative ease, and the tabulated results would show to what extent public open spaces are used by the districts which they serve. Under "Surveys of Folk" we are referred to the Richmond survey, in which particulars of density of population and open spaces are given. In "Surveys of Work" the authors refer to simple steps which can be taken in the tabulation of various industries and occupations. Country surveys are no less important than those of towns; a useful example is given of an "Observer's Map" of the parish of Downe, Kent.

In the appendices there are notes on map-making and headings suggested for various types of survey; a list of useful books and much other information for those about to undertake surveys is also given.

The book is admirably printed and produced, and altogether it is one of the most attractive little works which it has been our pleasure to peruse.

T. A. LL.

"An Introduction to Regional Surveys." By Sybella Brandford and A. Farquharson. Le Play House Press. Price 2s. 6d.

London Traffic and Thames Bridges*

By W. R. DAVIDGE, F.R.I.B.A., F.S.I., A.M.Inst.C.E. V-P.T.P.I.

NO one can safely dogmatize as to the proper method of dealing with the daily increasing volume of London traffic, and on the question of Thames bridges, we know that even the most distinguished engineers may be at variance. Any suggestions, however, that may be put forward by the Town Planning Institute on this thorny subject, are sure of sympathetic consideration, and may in all probability form a useful basis for future action. The Town Planning Institute, comprising as it does the professions of the engineer, surveyor, and architect, can speak with authority on the technical aspects of this many-sided question, and our legal brethren will keep us away from the many pitfalls which beset the unwary enthusiast who seeks to tamper with property or landed interests for the general benefit of the community.

The Ministry of Transport have already in hand in Greater London no less than twenty-seven important arterial-road schemes, comprising in all about 165 miles of new roads and forty miles of widenings, the total estimated cost being over £12,000,000.

A number of these have already been completed and opened to traffic, and it is satisfactory that the modest programme put forward by the Arterial Roads Conferences of 1913–16, which at the time seemed almost impossible of achievement, is well on the way to completion and in some cases has already been exceeded and improved.

The further new arterial roads in the metropolitan area proposed to be constructed by the Ministry of Transport as relief works for the unemployed are :—

	Approximate Cost.
Grays and Orpington by-pass	£350,000
Watford and Barnet by-passes	1,895,000
Viaduct and approaches across River Lea near Upper Edmonton	140,000
Improvement of road connections between Croydon and Sevenoaks	234,000
Bexley Heath by-pass	381,000
	£3,000,000

The great development of road traffic of every kind which has taken place in the last six years has, however, shown that, even to keep pace with present needs, the consideration of a further programme is now necessary.

The following proposals are set out for consideration and discussion as a tentative beginning of what must eventually become a plan for the development of Greater London. Dealing first with the proposals which affect Thames bridges and the provision of new river crossings in their geographical order from Kingston downwards.

There can be little doubt that new Thames bridges will eventually be needed at both Twickenham and Teddington, the latter affording a very desirable direct route from Richmond Park to Bushy Park and Hampton Court, and thus affording an opportunity of by-passing much of the summer and holiday traffic which at present crowds the streets of both Richmond and Kingston and at the same time providing one of the pleasantest ways out of London. Both of these bridges are, I am glad to learn, receiving the consideration of the Thames Valley Regional Committee.

The new Chertsey Road is already well advanced within the district of Chiswick, but the road will be of little use until the new river bridge connecting with Mortlake is completed. Richmond Bridge is entirely unsuitable for through traffic, although it is to be hoped that the old bridge will long be preserved as a thing of beauty. For through traffic, the Ministry of Transport are wisely proposing the construction of an entirely new bridge just north of the present railway bridge, the new road by-passing both Richmond and Twickenham on its way to Chertsey. In view of the considerable amount of local traffic, one or more link roads are desirable on the Twickenham side to divert traffic onto the new route.

A valuable suggestion has been made by Mr. Rees Jeffreys that a new road should be constructed from the eastern end of the Great West Road (Brentford by-pass) at Chiswick High Road in a south-easterly direction to a point just east of Barnes Station, thus linking up with Putney and by the south circular road at Clapham with the south and south-east of London. This proposal would involve a new road bridge across the Thames about one-sixth of a mile north of Barnes railway bridge.

The present outlet from the new Chertsey Road into the Chiswick High Road can only be regarded as a temporary measure, and sooner or later a new river embankment will be required outside the existing river wall, thus providing a direct road outlet as far as Fulham Palace Road.

A connection from the new Chertsey Road with Goldhawk Road is also desirable.

The continuation of the new road eastward can probably best be done by covering in the line of the District Railway between Barons Court and West Kensington, and linking up with the west end of Cromwell Road, which would then form a new and unobstructed way out of London, avoiding the present congestion in Hammersmith.

One of the most important proposals to be considered for improving the southern approaches to London is the continuation of Chelsea Embankment to Putney Bridge. This will relieve the King's Road and Fulham Road, and enable traffic to go direct from Putney along the north bank of the river right into Westminster and the City. It would also afford an opportunity for a new road from West Hill, Wandsworth (in line with Wimbledon Park Road) crossing the river by a new bridge at the east side of Hurlingham, thus bringing the traffic from the Portsmouth Road on to the new Chelsea Embankment and so into London, by-passing both Putney and Wandsworth, and affording a direct outlet from London to Wimbledon Common.

In very many places in other parts of London the railways have taken possession of the best sites for roadways, but it is not too late to cover over the railway where in cutting and construct a broad highway 100 ft., or preferably 150 ft., in width. The best example is the case of the West London Extension railway which runs in cutting from Shepherd's Bush to Chelsea and then across the Thames to Battersea. This route affords an admirable opportunity for the construction of a West London by-pass road from the new Western Avenue north of Shepherd's Bush to Chelsea and across the river by a double deck rail and road bridge at Lots Road to Battersea, where, via Latchmere Road and the west side of Clapham Common, it would afford direct communication with the South Circular Road which has already met with official approval.

This is one of the most essential routes, and would form a by-pass road of immense value for all traffic coming from the north or west of London to the coast.

The improvement of Wandsworth Bridge by the construction of a direct road over or under the South Western Railway and linking up with Trinity Road has long been necessary, and should be put in hand at an early opportunity.

A new bridge at Nine Elms, between Vauxhall and Chelsea, connecting with Wandsworth Road and Clapham Road at Bedford Road, would give an entirely new route via King's Avenue to Streatham and beyond, possibly to the north end of the Croydon by-pass road.

* Extracts from a paper read before the Town Planning Institute on January 16.

The rebuilding of Lambeth Bridge is long overdue, and opportunity should be taken to form new approaches on the west side, and a new road via Page Street, Vincent Square, and Warwick Street to the southward of Victoria Station, connecting via Pimlico Road with the Chelsea Embankment.

The mud flats which exist at low tide along the south side of the Thames at its widest point near Waterloo Bridge have always offered a tempting opportunity for the town planner, not only to secure a fine improvement, but also to reclaim a large and valuable area for commercial purposes on the south side. To-day the pressing needs of London traffic demand that this obvious by-pass route, from Westminster to London Bridge, should not be neglected.

A public quay 40 ft. in width, provided through the foresight of Sir Christopher Wren, through the whole length of the City from Blackfriars to the Tower, actually existed for 150 years and only finally disappeared in 1821. There is no reason why a quay should not again be constructed outside the existing buildings, with a public thoroughfare at a higher level, thus eventually forming a continuation of the existing Thames Embankment from Blackfriars to Tower Bridge.

Drastic changes will be necessary in the railways of London in the near future and with the electrification of all suburban services, the need for railways to remain perched overhead among the chimney pots largely disappears, and with it the need for the two railway bridges at Charing Cross and Cannon Street and the long brick viaduct which spans between them on the south side.

There appears to be no reason why the electrified lines should not drop underground near London Bridge and pass under the river to Cannon Street or Blackfriars, then to Charing Cross and out again at Victoria, thus completing the loop in both directions.

If there is insufficient room along the present Thames Embankment for additional tunnels, the new embankment on the south side will provide ample room for both the Brighton and South Eastern sections of the suburban lines.

The present railway viaduct would then be free for an overhead roadway uniting the new Charing Cross Bridge with London Bridge.

The railway viaduct from Holborn to Herne Hill should also eventually become available for an overhead road.

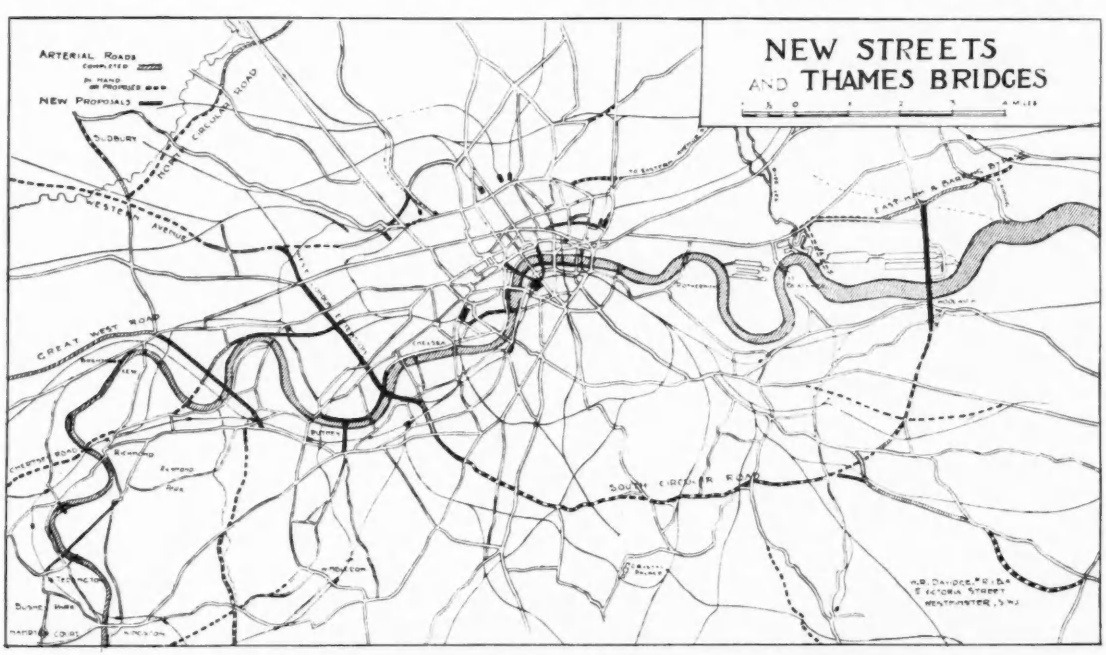
Further tube extensions are in hand in the north-west and are also contemplated in the south-west. The extension of the Bakerloo from the Elephant and Castle to New Cross and then by the existing lines to Blackheath and Woolwich is urgently needed.

In the case of the tube railways, as with other suburban railways, the mistake has been made of putting stations at too frequent intervals. The stations are responsible for nearly three-quarters of the total cost of a tube railway, and by halving the number of stations it would be possible to build a tube of considerably over double the distance for the same money.

The new Charing Cross Bridge depends on the elimination of the existing railway bridge, so that we are likely to have to wait until the general plan of the railway is settled and if, as part of the scheme, the overhead railway viaduct also disappears, an opportunity will at last arise for the completion of this great project. An essential requirement in the case of any new cross-river bridges between Westminster and the City is that the cross traffic shall not impede the east and west traffic.

The provision of another bridge at the eastern end of Aldwych would obviously remove the necessity for widening Waterloo Bridge. If constructed in a position approximately opposite to Australia House, it could be arranged not to interfere with east and west traffic by the simple procedure of the east-going traffic following along Aldwych whenever so directed by the police, leaving only the west-going traffic to use this part of the Strand, any vehicle being at liberty to turn left on to the new bridge as required. On the south side this bridge should terminate at Stamford Street, with a curved approach to Waterloo Station.

The Woolwich free ferry has been in operation since 1889, replacing a previous ferry owned by the Great Eastern Railway. A foot tunnel of 11 ft. diameter, similar to that completed at Greenwich in 1902, was opened in 1912, to overcome, to some extent, the inconvenience to pedestrians of the frequent interruptions of the ferry service by fog. The interference with the road traffic, however, is often serious, and the annual cost of the ferry is heavy. The time has arrived when a more suitable and permanent road-bridge or tunnel at Woolwich must be taken into consideration. The cost of a road tunnel would be almost prohibitive. It is quite within the bounds of possibility to construct a high-level bridge at the level of Woolwich Common, crossing both the river and Albert Docks and reaching ground level by an easy slope at the Northern Outfall Sewer at Beckton. Such a bridge would cost



A PLAN OF NEW STREETS IN GREATER LONDON AND THAMES BRIDGES.

approximately one half the amount of a road tunnel and would give far better facilities and easier grades for road traffic. By means of lifts in the bridge piers adjoining the docks, driest access would be obtained from the Albert Docks to the South Circular Road and also northwards to the Barking by-pass and North Circular Road.

To improve the approaches to the Victoria Docks and East London generally, the Ministry of Transport, on the advice of Sir Henry Maybury, has prepared an excellent scheme for a new bridge over the Lea at Canning Town and a new high-level road approach to the western end of the Victoria Docks. A heartfelt thanksgiving will be felt all over Dockland and Silvertown when this much-needed work is put in hand.

The Ministry of Transport have now under consideration a preliminary scheme for a road tunnel at Purfleet, and the proposal is one which should meet with hearty support.

One of the first duties of the new Traffic Advisory Board will be to devise some other method of dealing with the difficult question of traffic regulation at all important crossing places. The alternatives to be considered are :—

1. The diversion of through traffic as much as possible by new by-pass roads.

2. The diversion of local traffic into parallel routes wherever possible.

3. The avoidance of interruption of the streams of traffic, where crossing is unavoidable.

(*a*) by circular regulation, or general keeping to the left round all open spaces at important street intersections when sufficient space exists for a general circular movement of traffic in a single stream; or

(b) by the construction of an overhead bridge or underground subway for one or other of the streams of traffic.

The circular or gyratory system of traffic regulation, which has been advocated for many years, is only suitable where ample space exists, but there are many places in London where this method is well worthy of trial.

In Trafalgar Square, for instance, the north-going traffic could without difficulty follow the west side of the square, the east-going traffic the north side and the south-going the east side without interruption.

Oxford Circus is probably too small to allow sufficient turning space, but the diversion of the east-going traffic along Wigmore Street and down Great Portland Street would probably achieve the same result and leave the Circus itself free of at least half its present traffic.

The construction of an overhead bridge or an underground subway is not a matter to be lightly undertaken in an already congested street. Such overhead ways as are constructed must be part of a general plan of relief roads at different levels and not patchwork additions on the present streets of London.

There can be little doubt that sooner or later high-level roads, limited to motor traffic, will have to be constructed as by-passes to relieve the points where congestion is heaviest. It will be obvious, too, that such motor-ways must therefore either form part of a new highway or have special tracks of their own. In view of the limited space available in the City, the latter course is the more probable.

Among the routes suitable for a road of this character are the following :—

Holborn Circus to Liverpool Street.

1. Passing over the line of the Metropolitan Railway and reaching ground at the side or rear of Broad Street and Liverpool Street Stations. (By-passing Newgate Street and Cheapside.)

2. A road in continuation of the above from Holborn Circus to Aldwych, passing at the back of the Law Courts. (By-passing the Strand and Chancery Lane.)

3. A short length of tunnel, built on the cut and cover system, from Berkeley Square under the site of Devonshire House and along the eastern boundary of the Green Park connecting with the Mall and Pall Mall is worthy of consideration before the new buildings on this site are actually put in hand.

In addition to the above roads which affect the traffic of the various Thames bridges, the following suggestions may be made for the construction of relief roads :—

North of Oxford Street and Holborn.

1. Goodge Street to Guilford Street via Russell Square. This would afford a continuation of Wigmore Street and Mortimer Street to Gray's Inn Road and the Angel, and afford valuable relief to Oxford Street and Holborn. The continuation of this route through the City by the road mentioned above would give a complete alternative route from the West End to the City.

Streatham By-pass.

2. The continuation southwards of King's Avenue, Brixton, by a link road on the east side of Tooting Common (already referred to in the note on the Nine Elms bridge) would afford a by-pass for Streatham Hill and Streatham, and is worthy of further investigation.

Clapham Common to Garratt Lane and Wimbledon.

3. Nightingale Lane and its continuations (Bellevue Road and Burntwood Lane) at present end abruptly on the east side of the Wandle. If these were connected by a short link across the Wimbledon sewage works and South Western Railway to Wimbledon Park Station and to Ridgeway, Copse Hill, and the Kingston by-pass, valuable relief would be afforded to the Tooting and Balham High Streets.

The above outline suggestions are put forward for consideration and discussion, in the hope that definite steps will be taken to put in hand the long-delayed but essential plan for the future development of London. The works outlined will not all be done at once, but only as opportunity and finance permit. It cannot be considered unreasonable to prepare a definite programme extending over say, twenty years—surely not a long period in the life of such a community as London.

The Annual Convention of the American Institute of Architects

The president of the R.I.B.A. desires to bring to the notice of all members of the R.I.B.A. and of the allied societies the following letter which he has just had the pleasure of receiving from the president of the American Institute of Architects :—

The American Institute of Architects,
Washington, D.C.
November 28, 1924.

DEAR SIR,—The American Institute of Architects extends to you and all members of your organization a cordial invitation to attend the fifty-eighth annual convention of the Institute. The convention will occur in New York City, April 20 to 24, 1925. In conjunction with the convention an architectural exhibition will be held from April 20 to May 2.

The Architectural League, painters and sculptors, landscape men and town-planners, and, in fact, also the building industry, are joining hands with the Institute to arrange an "Exposition of Architecture and the Allied Arts," which promises to be unique. Our brother architects of other countries, we hope, will be interested to have some of their best work represented, and to have some of their ablest members present.

Following this formal invitation it is our desire, if it please you, that further detailed information shall be sent you regarding convention programme and the exhibition as well.

Hoping that we may have the privilege of welcoming you and other representatives of your society, I beg to subscribe myself,

Faithfully yours,

(Signed) D. EVERETT WAID, President.

J. Alfred Gotch, Esq., F.S.A., President, R.I.B.A.

It is hoped that a substantial number of British architects will be able to take advantage of this most welcome invitation, and that they will in due course send their names to the secretary of the R.I.B.A. for transmission to New York.

Contemporary Art

The Society of Wood Engravers.

The recent exhibition at the St. George's Gallery was a brilliant indication of the extent to which one of the oldest forms of reproductive art has revived in recent years. The most satisfactory aspect of it was the abundant evidence that the new wood engravers understand the true basis of their art. It is direct drawing by means of the white line; the line made by the tool in its passages over the surface of the wood-block. It was the mistaken endeavour of the engravers of the years from 1840 onwards to imitate the style of the metal engravers, even more than the introduction of process-work after the 1860's, that was responsible for the decay of the art.

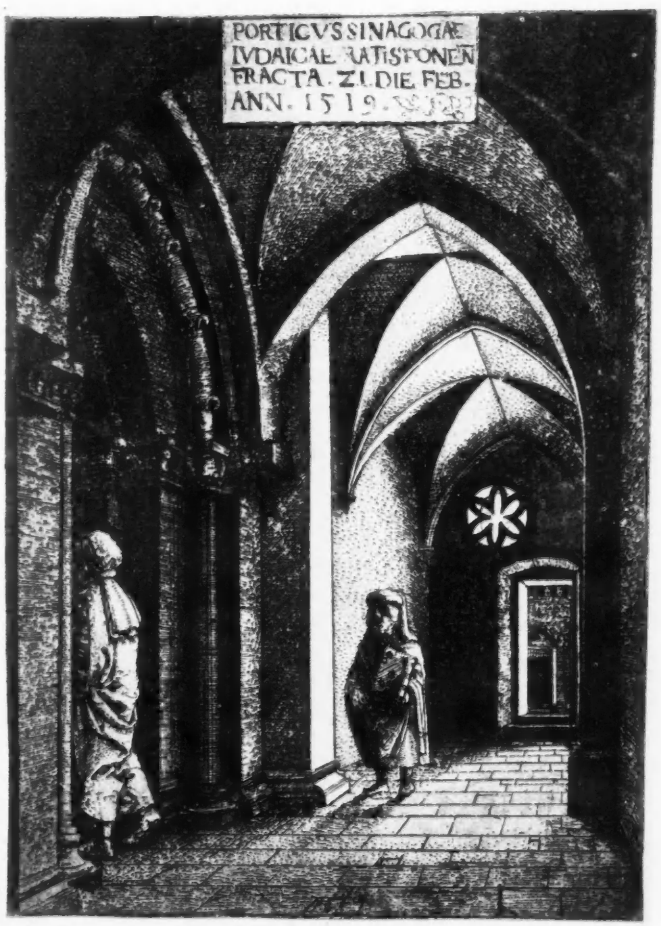
The attempt was doomed to failure by the very consistency of the material used. A wood-block print is essentially one which shows the drawing as a sunken cut that comes out white for the purpose, the rest remaining black, or, if slightly tooled, grey, for tone. But tone is undesirable in a wood block, which should be direct black and white for perfection. The drawing in a wood-block is the un-inked part of the surface; in a metal engraving the tool-cut holds the ink, an exactly opposite effect. A wood-block prints like type, the ink adhering to the surface left in relief; an etching surface is cleaned of ink before printing, and only the ink left in the cut-line is transferred to paper. These things are realized to the full by every member of the Print Society—hence its success.

The most easily understood prints in this respect are those by Eric Gill. They are wonderfully simple; they are almost silhouettes, but modelled drawing is achieved by a charming process of serrated outline in white which breaks up the solid blocks of black form. It is an uncompromising use of the white line principle. Most of the prints are of figure-subjects in pure and solid form, untouched by any approach to tone or even chiaroscuro, and they demonstrate more definitely than has been done before the peculiar quality which wood-cutting yields to essential draughtsmanship.

The wood-block is equally facile for the expression of buildings in masses, and not as mere flat drawings. Used properly it produces a satisfying effect of volume, and there are fine examples in Ethelbert White's "St. George's, Hanover Square," in G. F. Greenwood's "Conistone Road," "The Market, Constance," by Norman Janes, and "The Duck Pond, Rottingdean," by Cicely Griffiths. In particular, the wood-block suits Ethelbert White's architectonic style. The process of cross-cutting is illustrated in the "Three Nudes," by C. Marion Mitchell.

Nowhere in the show was the supreme danger of refinement shown. Wood-engraving is a thing of broad masses, and fine lines in black led to its ruin. The pliancy of wood does not lend itself to the fine line of the metal-engraver, which is produced, moreover, by an entirely different method, the intaglio as opposed to the raised cameo.

As if to confirm the action of the members of the Society of Wood Engravers, Professor Selwyn Image has brought out a new edition of Thomas Bewick's Autobiographical Memoir,* finished a week before the engraver's death in 1828. This book contains sixty of Bewick's woodcuts, all done consistently in the white line, which the artist established once and for all as the one and only way of engraving on the wood-block. It confirms incidentally the necessity of relying upon Nature for true feeling in art. Bewick had a natural love for drawing, a natural aptitude for the engraving tool, but, above all, a deep reverence for Nature. It was the combined force of these three factors that gave to the world the "Quadrupeds" and the "Birds." It is an absorbingly interesting human document that has once more appeared, and one that the world will not willingly let die.



THE ENTRANCE HALL OF THE RATISBON SYNAGOGUE, 1519. BY ALBRECHT ALTDORFER. ETCHING.
(*Cotswold Gallery.*)

Wood Engravings and Etchings.

An interesting exhibition was held at the Redfern Gallery, largely representative of the younger print makers. A feature was the collection of proofs on India paper by John B. Souter, of good architecture delicately rendered. Three etchings of Spanish subjects by Ian Strang were strong and characteristic, and the four French building subjects by Iain Macnab were very good. Among other subjects, Percy Smith's dramatic work was seen in his "Three Scythers" and "The Dying Tramp," and Elsie Henderson's animal lithographs were admirable.

The Cotswold Gallery has issued its sixth catalogue of original engravings, woodcuts, and etchings by old and modern masters, and mezzotints from the *Liber Studiorum*.

It is a valuable catalogue, beautifully illustrated. (Published at 59 Frith Street, Soho, W.1. 1s.)

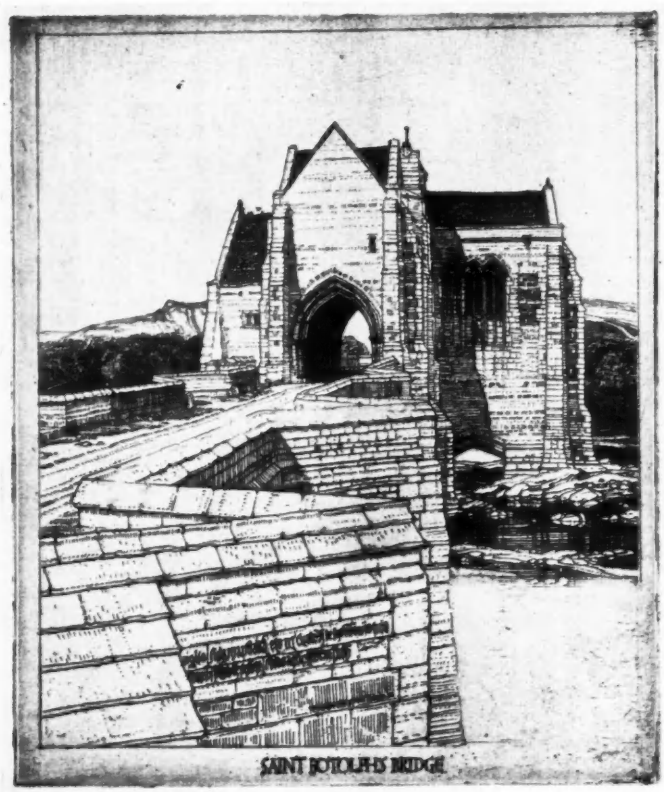
The New English Art Club.

Two important things are signalized in the seventy-first exhibition of the New English Art Club: its own arrival at middle age, for it was born in 1886, and the birth of a new art gallery in London. Both these things are reassuring, for recent exhibitions of the club have included dubious work, and the closing of galleries for exhibition purposes has caused dismay in the art circles of London. The present occasion, therefore, is very happy, and in its details it is very brilliant. There are considerably more than 300

* Memoir of Thomas Bewick, written by Himself. London: John Lane. Price 10s. 6d.

fine pictures exhibited. At least half a dozen fine artists emerge triumphantly—Henry Tonks, William Orpen, Augustus John, Wilson Steer, Walter Sickert, and John S. Sargent, and Whistler goes into eclipse. It is the high level of accomplishment of the whole show, however, which is so astonishing. Old and new, whatever is there, is good; big or little, everything is of some importance, and three women at least, with nothing to show in their works that they are women's, align themselves with all the men there—Grace Wheatley, Fairlie Harmar, and Gwen John, and three others almost equally distinguish themselves—M. Sargant, Florence Ethel Walker, and E. Beatrice Bland. The two decorative pieces for walls by M. Sargant and Florence Ethel Walker are things to think over.

There are some works there that are good in themselves, but are sad to look on for the reason that they are better than those their authors are doing to-day. This is inevitable, no doubt; it is inevitable that in some cases a reputation grows while the work that founded it gets no better. The proportion here is not considerable, and what is happy is the fact that so many of the men who in the eighteen-eighties began to exhibit have grown into great artists outside the walls of the Academy, which is now glad to welcome them within. Generally speaking the work of the individual artists is representative, but there are a few deplorable exceptions, and the most conspicuous is that of Ambrose McEvoy, who exhibits nine delightful and accomplished works, but is not properly proclaimed by any one of his finest things. This is indeed the case with Sargent and John, too, while Sickert, Steer, and Tonks are all magnificently there; the most bewildering revelation being that of Tonks. Here are masters indeed, while shyly peeping from the walls, Walter Russell with "The Blue Dress" invites a similar recognition. Where so many masterpieces are gathered together it is difficult to refer to individual ones, but reference is imperative in the case of Wilson Steer's "Panama Hat" if only to compare its brilliance with the same artist's "Poole Harbour," not only the finest landscape in the show, but one of the great landscape works of the period. There are but few outstanding examples of such dual mastery in the history of art. Altogether there are sixteen of Steer's pictures—an exhibition in themselves!



ST. BOTOLPH'S BRIDGE. F. L. GRIGGS, A.R.A., ETCHING.
(Cotswold Gallery.)

There are some surprises; things forgotten during the years; architectural pictures by George Thomson, Walter Sickert, W. Y. MacGregor; interiors by Orpen, Sargent, and Fred Brown, and beautiful things in both these directions, as well as in landscape portraiture, and figure work by the younger men, such as Maresco Pearce, F. H. S. Shepherd, John Wheatley, and Charles Ginner. Two very lovely works are there to recall the genius of Edward Stott, and Brabazon, Conder, Strang, and Furse are also recalled, with some few other dead artists.

There is a fine collection of small drawings, largely by the younger generation, led by Henry Rushbury and Randolph Schwabe, and Muirhead Bone makes a satisfying contribution of eight delicious renderings of buildings. In all there are 110 exhibitors, and their work is hung well and with discretion in the quite adequate new Spring Gardens Gallery at Trafalgar Square, a most valuable and welcome addition to the private exhibition galleries of the metropolis. Seeing that the New English Art Club has never concerned itself with sculpture, would it not be a good idea to have a purely sculptural exhibition to succeed the present one? England would like to know what modern British sculpture really is.

An Architect's Pictures.

A. Baylis Allen is a teacher of art of standing, and he now proclaims himself at the Redfern Gallery as a very charming practitioner. His show—too comprehensively called "From the Thames to the Nile"—includes a number of yachtsman's drawings, and at least three interesting ones of buildings.

Drawings of the sea and ships, vigorous and original in style, have been on exhibition in the school of architecture at the Polytechnic. They are by Frank Theodore, and were made during the imperial cruise of H.M. Special Service Squadron. Architectural features of a modern description—cranes, jetties, and other metallic erections are interestingly shown. Young architectural designers should get busy over the industrial design competitions of the Royal Society of Arts, which were a failure last year so far as architecture was concerned.

KINETON PARKES.

Foreign Office Art.

The old decorations of the Secretary of State's room at the Foreign Office have been restored after sixty years.

The ceiling is picked out in diplomatic pinks, semi-official blues, considerable browns, and gold bosses, which seem to represent brilliant despatches couched in a gentlemanly tone.

The walls are of more sombre "crisis green," powdered, however, with bright emblems, standing, no doubt, for those "satisfactory turns" which have redeemed so many situations.

The room looks grave, dignified, and worthy.

THE DAILY MAIL.

Building Materials

Although the Government has decided not to proceed further with Mr. Wheatley's bill to control the price of building materials, says the London correspondent of "The Manchester Guardian," the Ministry of Health is co-operating with the manufacturers to maintain prices at the lowest possible level. Mr. Chamberlain has welcomed the promise of both manufacturers and suppliers of building materials to set up a committee, one of the functions of which will be to supply a shortage in one district out of an excess in another. Precise terms of reference to this committee are being drafted in order that its functions may be settled quite definitely.

The Ministry of Health view is that every effort should be made to secure a continuous demand, which can best be secured by maintaining steady prices. It will be remembered that the manufacturers early in the year promised that they would not increase their prices of materials for housing schemes except when this was necessary owing to increased cost of production.

Enquiries Answered

Enquiries from readers on points of architectural, constructional, and legal interest, etc., are cordially invited. They will be dealt with by a staff of experts, whose services are specially retained for this purpose. If desired, answers will be sent direct through the post. In no case is any charge made for this service. Whenever diagrams accompany an enquiry, they should be clearly drawn and lettered and inked in.

A COMBINED LIVING-ROOM AND KITCHEN FIRE.

"Baulked" writes: "Please give me the name and address of the makers of a range by means of which cooking is done in the kitchen from an open fire in the living-room."

—The apparatus our correspondent has in mind may be the "Back-to-Back" grate, which is a production of Messrs. Allan Ure & Co., of Springbank Foundry, 355 Keppochhill Road, Glasgow.

THE WEATHERING OF PORTLAND STONE.

"Clerk of Works" writes: "1. Does hand-dressed Portland stone weather better than machine-dressed? 2. If so, for what reason? 3. Have any tests been made, and if so, where, and by whom?"

—I am not aware of any data showing that hand-dressed is more weather-resisting than machine-dressed Portland stone, or vice versa. No tests to prove the point have been made, so far as I know.

J. A. HOWE.

COST OF ROADS ON NEW ESTATE.

"J. G. M." writes: "What is the approximate cost of forming roads on a new estate that will answer for ordinary purposes until such time as they are taken over by the local authority? I presume that sewers must be laid by the party developing the estate, while gas, water, and electrical supply will be laid by the respective supply companies."

—The actual cost of laying out a new road for building purposes depends so much on local circumstances and on the facilities for obtaining local materials, that this question is a very difficult one to even approximately answer. Before the war the writer built several roads at about £1 10s. per yard run—and including sewers and loss of land, the cost of a metalled and kerbed macadam road cost about £120 to £180 per acre of land developed.

Nowadays it will probably cost more than double these sums. Provision should be made for: (a) sewers; (b) surface drainage; (c) kerbs and channels; (d) earthworks; (e) foundation metalling; (f) surface metalling (probably following later on). The gas, water, and electric light mains are usually the subject of bargain with the companies concerned—they will not put them in for nothing!

F. S. I.

COMPETITION DRAWINGS.

"Out-of-touch" writes: "What is the best and most up-to-date way of finishing competition drawings other than wash or monochrome over the whole sheet? The latter is not the clearest way in plan for buildings of a utilitarian character. The old method of hatching in ink the shadows, windows, and slate roof seems to have gone out of fashion. Is it correct to give plans a light wash, with darker walls, elevations ditto, with darker for shadows, windows and roof, and leave rest of paper white? Is the information to be found in any book?"

—The method of finishing competition drawings is nowadays nearly always dictated by the conditions of the competition, and as a general rule drawings are asked for washed in monochrome, with shadows cast at an angle of 45 deg. Plans are generally required to have their walls blacked in solid, though in cases where washes of different tints are called for on the plans (e.g., to show different departments), walls are allowed to be left white. The method of rendering, therefore, becomes a matter of following the competition conditions. To make a monochrome rendering of an elevation a very light wash is generally put over the whole sheet after the shadows have been correctly cast in pencil. The usual practice is then to put in a rather dark background which will show up the building as white. Graded washes are then put on the windows and openings and finally the shadows are cast in their correct values. The object of rendering is to show the planes and modelling of the building as it would appear in reality, and the only method to attain proficiency is by practice. There is a book on architectural rendering by, I think, Van Buren Magonigle, called "Architectural Rendering in Wash," published in 1921, which should give your correspondent very sound notions on the presentation of drawings in general.

H. R.

DAMP ON NORTH SIDE OF NEW HOUSE.

"Subscriber" writes: "A detached house was completed in July, 1923, and since then it has been occupied. The external walls are 9 in. thick. They are built of 'third stocks,' with ¾ in. cement rendering on the outside, and covered with 'Sirapite' plaster on the inside. In spite of constant fires, both the internal and external walls of the two rooms on the ground and first floors facing north are extremely damp for the whole height of the two-story building. The damp is more pronounced on foggy days. No other rooms in the house are affected in the same way. Under the ground floor room there is an air space of about 3 ft. in height, and this is well ventilated with air bricks at the bottom and at the top. So far as is known good pit sand only was used for the mortar and plaster. Can you suggest a remedy?"

—Though 1924 was so thoroughly wet and sunless, yet one would expect a house built in 1923 to be fairly dry by this time if its windows have been opened at all—draught dries out new brickwork much more rapidly than do fires. Presumably the south and west sides of the building are constructed in the same way as the north front, and yet one hears no complaint about these exposed sides (which would have been much more likely to show signs of damp). I am of opinion that the north side will right itself after a fairly dry summer—provided always that it is lived in, is properly aired, and is not kept shut up because it is a cheerless part of the house. The occupier can do more for it than the builder.

F. S. I.

WHITE PORTLAND CEMENT AS A WASH.

"G. M." writes: "I propose to use a cement slurry in lieu of oil-paint upon some exterior paintwork. The work is wood and artificial stone with a paint surface. Can you offer any suggestions as to the mixing of a suitable wash, and tell me whether this will withstand driving rain as effectively as paint. Also, can Atlas White be used in the composition of same?"

—Mr. Frederic Coleman, of the Adamite Co., Ltd., writes: The use of a cement slurry in the manner in which your correspondent plans is waste of time and money. So far as I have been able to discover in the past four or five years there is no paint, with possibly one exception, which might be applied to a concrete surface successfully. The only paint I have found which seems to me to be worth the bother and expense of applying to concrete work is one which the makers declare costs 2s. 9d. per yard super, and must be renewed every three years. To use "Atlas White" Portland cement as a wash is throwing money in the road. Your correspondent might just as well use lime whitewash. I have in one instance compromised, but that was under very peculiar circumstances. A job had to be done where plasterers could not, for local labour reasons, be employed. To get around that we used "Atlas White" in what might be described as a slurry or wash. This slurry was made up of one "Atlas White" to 2½ coarse white silica sand, mixed into a quite thick soup. Heavy brushes were dipped into a bucketful of this soupy mortar, and it was spread on the surface in a thickness of ⅛ in. The next day the operation was continued, rather more than ⅛ in. in thickness being put on in the second coat. When the job was finished the surface had been in one sense painted, and in another sense a slurry had been applied. In still another sense there was rather more than a ¼ in. of thickness of real white concrete on that wall. We try to impress customers with the fact that "Atlas White" Portland cement is of no possible use except as one of the ingredients of white concrete.

"DORIC" FACING BRICKS.

"R. E." writes: "Can you give me the name and address of the manufacturers of 'Doric' facing bricks?"

[—Would one of our readers kindly supply this information?—Ed. A.J.]

Correspondence

The late Mr. Benjamin Hannen

To the Editor of THE ARCHITECTS' JOURNAL.

SIR,—May I add a word of personal testimony to that of Mr. Arnold Mitchell regarding the late Mr. Benjamin Hannen? During the four years that I served under Mr. MacVicar Anderson, I was privileged to meet and to know Mr. Hannen, and I am realizing more and more how exceptionally fortunate I was at the commencement of my career to come under the influence of both these men: whilst future generations will remember them by the buildings which remain as their monuments, those of us who were associated with them will think rather of the graciousness and charm of their personalities.

London. G. TOPHAM FORREST.

The Pass Pantry

To the Editor of THE ARCHITECTS' JOURNAL.

SIR,—I note with interest in your issue for October 8 an article relating to the "Pass Pantry," which is described as a "new feature in domestic planning."

It may interest your readers to hear that this feature has, to my knowledge, been in universal use in European-style houses built in China for the last twenty years at least. The general arrangements are very much the same as those shown in the article mentioned.

B. C. G. BURNETT.

Tientsin.

R.I.B.A. (Archibald Dawnay) Scholarships

On the recommendation of the Board of Architectural Education, the Council of the R.I.B.A. have approved the following revised scheme for the above scholarships:

In accordance with the terms of the will of the late Sir Archibald Dawnay, the R.I.B.A. offer annually, for competition between students of recognized schools, two scholarships, one of £75 per annum for one or two years, and one of £50 per annum for one or two years.

The scholarships are intended to foster:

1. The advanced study of all forms of construction, not necessarily steel work and reinforced concrete.
2. The economic, skilful, and practical use of materials.
3. Work in which the main structural elements shall find their logical expression in the architectural design.

Candidates are advised that the completion of comparatively simple problems in all their structural aspects is to be preferred to the superficial treatment of ambitious schemes. These problems are to be those normally set in the second and third years. The note-books dealing with construction in those two years may also be submitted.

The competition is open to all students of recognized schools who are in the third year of their school course. Successful competitors will be required to register as students of the R.I.B.A. before taking up the scholarship awarded. In the first instance, applications must be made through the principals of the various schools, who will nominate candidates and submit evidence of study as above on behalf of the student or students nominated. The applications should reach the Board by the end of July in each year. The award will be made by a jury nominated by the Board of Architectural Education.

The scholarships will be tenable at any recognized school selected by the successful candidates, who will be required to devote their time particularly to the object of the scholarship specified above. Two-thirds of the amount of the scholarship awarded will be paid to the successful candidate when he starts his year's work at a recognized school, and the remaining one-third after he has submitted satisfactory evidence of his studies during the past year.

Applications for renewal of scholarships must be made by the students direct to the Board not later than the end of July in each year, and be accompanied by evidence of study during the past year. In all cases the tenure of the scholarship for a second year will be subject to approval or revision by the Board. The scholarships are open to all subjects of Britain or the British Dominions, but are tenable only in the British Isles.

Law Reports

Structure on Wheels—Temporary Building Question

Garstang District Council v. *Wade.*

King's Bench Divisional Court. Before the Lord Chief Justice and Justices Shearman and Salter.

This matter, which had previously been before the court on a rule, now came up for argument; the appeal being by the Garstang District Council, through its surveyor, Mr. F. Rodwell, against the dismissal by the local justices of an information preferred by them against Mr. Jas. Wade, with regard to a certain structure at Knot End, on the Esplanade.

The point raised, through the rule and the appeal, was what is a temporary building within the meaning of section 9 of the Public Health Acts Amendment Act of 1907, which provided that before a person set up a building he had to apply to the council for permission to do so. Mr. Wade, without seeking any permission, had set up a wooden structure on wheels, which, the appellant contended, came within the Act so as to make it liable to rating. When the matter was heard before the justices they came to the conclusion that it was a caravan, and did not fall within the ambit of the Act.

For the appellant it was contended that the justices had misdirected themselves on the evidence before them, and that upon that evidence they were wrong in saying that the building was a caravan.

The court dismissed the appeal, without calling upon counsel for the respondent, with costs.

The Lord Chief Justice said that on the facts before them, the justices had not misdirected themselves. They had addressed their minds to the right findings, and there was evidence upon which they could come to the conclusion they did.

Justices Shearman and Salter concurred.

Habitable Repair: Question of Costs

The King v. *The Minister of Health: ex-parte Rush.*

(Jan. 13. King's Bench Division. Before the Lord Chief Justice and Justices Avory and Acton.

This matter came before the court on a question as to counsel's costs.

The Attorney-General, Sir D. M. Hogg, K.C., said in this case he appeared to answer a rule directed to the Minister of Health to show cause why he should not hear and determine by whom counsel's costs should be paid. The applicants, Mr. and Miss Rush, owned two houses in Walterton Street, Paddington, and notice was served on them by the local council to put the houses into proper repair to make them habitable within twenty-eight days. The work was not done within the specified time, so, about three months afterwards, the council did the work and charged Mr. and Miss Rush with the expense. By raising a belated technical point (similar to the one in the case of Ryan v. Hart) Mr. Rush got the High Court to say that he should not pay because the notice was not sufficient and now he objected to the fact that the Minister, in his jurisdiction, had said he should pay the costs incurred in the litigation. He said as he had won the litigation the Minister had not jurisdiction to deprive a winning party of his costs. Counsel agreed with the Lord Chief Justice who asked whether the Minister could not say: "Here is a negligent landlord who has let his houses get into a shocking state and when the council has done the work of repair gets out of the expense by raising a belated technical point. He has no merits and should not have his costs." Counsel submitted that the Minister had exercised his jurisdiction properly and dealt with the matter fairly.

The court discharged the rule in favour of the Minister of Health and gave costs as against Mr. and Miss Rush.

The Lord Chief Justice pointed out that the powers of the Minister were to be found in the Housing and Town Planning Act, 1909, and under that Act he had full discretion in the matter of costs. In his opinion there was no ground for suggesting that the Minister had failed under the Act to perform his duty.

Competition News

Mr. Braxton Sinclair.

Mr. Wm. Braxton Sinclair, F.R.I.B.A., whose winning competitive design for the Southport Christian Science Church and Sunday School was illustrated in our last issue, was articled to the late W. Goldsmith, A.R.I.B.A., F.S.I., of London. He attended the Architectural Association schools, and for some years held a staff appointment in the architects' department of the London County Council under Mr. W. E. Riley, R.B.A., F.R.I.B.A. In 1910 he commenced practice in London, and from that year until 1914 he carried out a number of works which included a good deal of domestic and commercial work, and the reconstruction of the thirteenth-century timber tower and spire, and the restoration, of the church of Great Greenford, Middlesex. He also carried out similar restoration works to St. Mary's Church, Northolt, near Harrow. He served in the army from 1914 to 1920. In 1915 he was drafted to India and Burma with the 18th Battalion, The Rifle Brigade, and in 1918 he was appointed to the Army Staff, and held positions as staff captain and D.A.Q.M.G. to the Burma Division. He studied Burmese architecture, particularly the renowned eleventh-century city and temples of Pagan on the Irrawaddy, and contributed an illustrated paper on this subject to the Burma Research Society. In June, 1920, he returned to London, and was appointed district architect to the Ministry of Agriculture, a position he held for about twelve months. In 1922 he recommenced practice in London, and has recently carried out a number of domestic buildings on the Hampstead Garden Estate at Golders Green; restored the fifteenth-century farmhouse at Harvel, in Kent; designed the complete architectural treatment and internal arrangements for the Fashions Fair Exhibition of 1923; the All-Metal Pavilion at the British Empire Exhibition, 1924, and various exhibition stalls, and carried out further restoration work to the nave and chancel of Northolt Parish Church, Middlesex. His recent minor work includes various shop premises in London and suburbs, residences at Willesden Green, and alterations to country houses at Taunton, Hatfield, and Kenley.

MR. W. BRAXTON SINCLAIR, F.R.I.B.A.

The R.I.B.A. Prizes and Studentships

At the meeting of the R.I.B.A., held at 9 Conduit Street, on Monday evening last, the awards of prizes and studentships were announced as follows :—

The Essay Medal and £50.

FRANK PENTLAND CHAMBERS, B.A., "Pali," 18 Alleyn Park, West Dulwich, S.E.

Certificate of Honourable Mention:
MARTIN SHAW BRIGGS.

Owen Jones Studentship (£100).

Miss L. PAINE.

R.I.B.A. Alfred Bossom Travelling Studentship (Gold Medal and £250), and Silver Medals.

Gold Medal: F. E. BENNETT, A.R.I.B.A.

Silver Medals: FRANK H. HEAVEN, 30 Coronation Street, Aberkenfig, Glamorgan. C. T. BLOODWORTH, 138 Derby Lane, Stoneycroft, Liverpool.

Grissell Gold Medal and £50.

ARTHUR E. CAMERON, 18 Eastwood Road, South Woodford, E.

Ashpitel Prize (Books value £10).

GEOFFREY REYNOLDS.

R.I.B.A. Silver Medal for Recognized Schools.

Miss ELSIE ROGERS, Manchester Univ. School of Arch.

Measured Drawings Medal and £50.

RICHARD W. BRIGGS, 46 Alexandra Road South, Alexandra Park, Manchester.

Certificate of Honourable Mention:
J. M. COIA, 88 Drumsther Drive, Parkhead, Glasgow.

Pugin Studentship (medal and £75).

D. H. McMORRAN.

Godwin Bursary and Wimperis Bequest (medal and £130).

L. H. BUCKNELL.

Tite Prize (£100).

D. H. BEATTY-POWNALL, Architectural Association.

Certificates of Honourable Mention:
JOHN F. D. SCARBOROUGH, 49 Bernard St., Russell Square, W.C.
ALISON SLEIGH, 16 Gordon Square, W.C.

List of Competitions Open

Date of Delivery.	COMPETITION.
1925 Feb. 16	Designs are invited for a library to be erected at the Compton Road estate, Leeds. Assessor, Mr. Percy S. Worthington, F.R.I.B.A. Premiums of £35, £20, and £15. Apply Town Clerk, Leeds.
*Feb. 28	Art gallery and museum of art for the City of Manchester. Assessors, Professor C. H. Reilly, and Mr. Percy S. Worthington. Premiums £500, £300, £200, £100. Apply with payment of 5s., which is not returnable, to Mr. P. M. Heath, Town Clerk.
Mar. 28	Competitive designs are invited from qualified architects, being British subjects, for proposed New Railway Offices to be erected in Nairobi, Kenya Colony. Assessor, Mr. William Dunn, F.R.I.B.A. Premiums £200 and £100. Designs must be received at the Offices of the General Manager, Uganda Railway, Nairobi, Kenya Colony, not later than February 28, 1925. Apply, with deposit of £1 1s., to The Crown Agents for the Colonies, 4 Millbank, Westminster, S.W.1, not later than February 1.
*Mar. 31	Bethune War Memorial. Assessor, Sir Aston Webb, P.R.A.
*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.
*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.
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.

* Date of application passed.

The R.I.B.A. Final Examinations

Alternative Problems in Design

Following is a list of the problems in design for the year ending December 31, 1925.

Instructions to Candidates.

1. The drawings, which should preferably be on uniform sheets of paper of not less than Imperial size, must be sent to the Secretary of the Board of Architectural Education, Royal Institute of British Architects, 9 Conduit Street, W., on or before the dates specified below.

2. Each set of drawings must be signed by the author, and his full name and address, and the name of the school, if any, in which the drawings have been prepared, must be attached thereto.

3. All designs, whether done in a school or not, must be accompanied by a declaration from the student that the design is his own work and that the drawings have been wholly executed by him. In the preparation of the design the student may profit by advice.

4. Drawings for subjects (*a*) are to have the shadows projected at an angle of 45° in line, monochrome, or colour. Drawings in subjects (*b*) are to be finished as working drawings. Lettering on all drawings must be of a clear, scholarly, and unaffected character.

LXXIX.

(*a*) "A Gateway and Screen." A quadrangle has buildings on three sides, and these are of fine architectural character, the style assumed being left to the students. The wings of the buildings are 120 ft. apart, and are to be connected by some form of screen which should not entirely obstruct the view of the quadrangle.

A design is required for the screen, which should have a central feature consisting of an entrance gateway or gateways allowing access for carriages and pedestrians. No accommodation for a gate-keeper is required. The gateway and screen are to be erected as a memorial.

Drawings required: Plan from wing to wing to $\frac{1}{8}$ in. scale; elevation with wing blocks indicated to $\frac{1}{8}$ in. scale; cross section through the central feature to $\frac{1}{8}$ in. scale; $\frac{1}{2}$ in. detail of some portion of the central feature.

(*b*) Working drawings for subject No. LXXVII (*a*) "A Boys' Club." The design for the boys' club may, after it has been approved, be re-submitted with the addition of one complete section through the whole building passing through the staircase and a complete $\frac{1}{2}$ in. detail of the portion of the front where the section is cut.

LXXX.

(*a*) A design for a "Doctor's House in a Country Town" on a corner site 60 ft. by 120 ft. at the junction of two main roads.

Accommodation required: Entrance hall; cloak room; drawing room; dining room; kitchen and usual offices; patients' entrance; waiting room; consulting room; small dispensary; lavatory accommodation; five or six principal bedrooms, including day and night nurseries; two maids' rooms; bathrooms, etc.; garage for one car, which should not be too near the house.

Drawings required: Plans of each floor, to $\frac{1}{8}$ in. scale; two elevations, to $\frac{1}{8}$ in. scale; two sections, to $\frac{1}{8}$ in. scale.

The lay-out of the garden is not required, but the north point must be indicated.

(*b*) Working drawings for Subject No. LXXVIII (*a*) "A Small Shop."

The design for a small shop may, after it has been approved, be re-submitted with the addition of: $\frac{1}{8}$ in. elevation of part of the front; $\frac{1}{2}$ in. section through the front wall, which should include a portion of the roof; explanatory plans of different levels.

LXXXI.

(*a*) A design for an "Airway Customs' House." This building is to be erected in a large aerodrome adjoining the landing ground.

The accommodation generally should consist of: An ample vestibule, open or closed; two customs' rooms for the examination of baggage, one for arrivals, and one for departures, about 600 sq. ft. each; in addition, one or two small offices for the customs' officials, toilet accommodation for men and women passengers, small separate waiting room for ladies; buffet; waiting hall about 1,000 sq. ft.; small service kitchen; store rooms; staff lavatories.

Drawings required: One plan to $\frac{1}{8}$ in. scale, two elevations to $\frac{1}{8}$ in. scale, two sections to $\frac{1}{8}$ in. scale.

(*b*) Working drawings for Subject No. LXXIX (*a*) "A Gateway and Screen."

The design for a gateway and screen may, after it has been approved, be re-submitted with the addition of: $\frac{1}{2}$ in. elevation, section and plan of the whole or a part of the central feature, all sufficient to show the construction.

LXXXII.

(*a*) A design for a "Riverside Bathing Establishment," which it is proposed to erect on a level site on the bank of a river in wooded country on the outskirts of a country town.

It is approached by a public road which is parallel to the river and 50 ft. from it.

It is proposed to deepen the river at the point where the establishment is situated and to form an embankment which is 4 ft. above the average height of the river.

Steps and diving boards should be included in the scheme.

Accommodation required: Entrance hall with pay-box and attendants' office; store for deposit of valuable articles; towel and costume store; 30 dressing boxes for each sex; 4 shower baths for each sex; lavatory accommodation for each sex.

Above the hall and dressing boxes there is to be a terrace for tea, part of which is to be permanently covered, accessible both for bathers and for the public. Convenient kitchen and services are required for the preparation of refreshments.

Drawings required: Plan to $\frac{1}{16}$ in. scale; two cross sections to $\frac{1}{16}$ in. scale; two elevations to $\frac{1}{16}$ in. scale; $\frac{1}{2}$ in. detail of central portion.

(*b*) Working drawings for Subject No. LXXX (*a*) "A Doctor's House in a Country Town."

The design for a doctor's house may, after it has been approved, be re-submitted with the addition of: $\frac{1}{2}$ in. section through the principal staircase; $\frac{1}{2}$ in. part of front elevation to show window and door.

LXXXIII.

(*a*) A design for a "Private Chapel." On the edge of a lofty terrace, from which the ground slopes steeply down to gardens at a lower level, it is proposed to erect a private chapel. The chapel is connected with a large house by a covered way, but an additional entrance should also be provided. The congregation would not usually exceed fifty. An organ, font, and small vestry should be provided.

Drawings required: $\frac{1}{16}$ in. scale small block plan showing the relation between the chapel and the house, covered way and terrace; $\frac{1}{8}$ in. scale plan of the chapel and of a portion of the covered way; two elevations to $\frac{1}{8}$ in. scale. One of the elevations should show the side towards the terrace; two sections to $\frac{1}{8}$ in. scale; $\frac{1}{2}$ in. detail of one of the entrance doorways.

(*b*) Working drawings for Subject No. LXXXI (*a*) "An Airway Customs' House."

The design for an airway customs' house may, after it has been approved, be re-submitted with the addition of: $\frac{1}{2}$ in. scale elevation, section and plan of part of the building, all sufficient to show the construction.

LXXXIV.

(*a*) A small industrial firm wishes to erect a "Garage" adjoining the factory and facing the main road. The site is 100 ft. road frontage and 60 ft. in depth.

Accommodation required: Ground floor: garage room for five lorries and two private cars; work-room; store; lavatory accommodation; a portion of the site should be arranged to provide washing space; the part reserved for lorries should be top-lighted as far as possible. First floor: Two chauffeurs' flats entered separately from the street.

Drawings required: Two plans to $\frac{1}{8}$ in. scale; two sections to $\frac{1}{8}$ in. scale; front elevation to $\frac{1}{8}$ in. scale.

(*b*) Working drawings for Subject No. LXXXII (*a*) "A Riverside Bathing Establishment."

The design for a riverside bathing establishment may, after it has been approved, be re-submitted with the addition of: $\frac{1}{2}$ in. detail of a portion of the exterior towards the river; $\frac{1}{2}$ in. cross section through the centre, sufficient to show the materials and treatment.

Dates for Submission of Designs in 1925.

Subj. LXXIX .. Feb. 28	Subj. LXXX .. Apr. 30
,, LXXXI .. June 30	,, LXXXII .. Aug. 31
,, LXXXIII .. Oct. 31	,, LXXXIV .. Dec. 31

The Week's News

Housing at Dover.

Thirty-five houses are to be erected by the Dover Corporation.

Conway Rural Housing.

The Conway Rural District Council are negotiating for the purchase of sites for the erection of forty-two houses.

A Fulham Housing Scheme.

The London County Council are to build a terrace of working-class houses on Lillie Road, Fulham, fair ground.

Proposed New Parish Hall for Acton.

The congregation of St. Mary's, the parish church of Acton, propose to build a new rectory and a parish hall.

Proposed Improvements to Fulham Council Chamber.

The Fulham Borough Council are to consider spending £1,300 on improving the council chamber.

River Boulevard for Shrewsbury.

The Shrewsbury Town Council are buying 16 acres of river-side land for a recreation ground and river boulevard.

Manchester Ship Canal Improvements.

New sheds costing £200,000 are to be built at the Manchester Ship Canal Docks.

Rugby Housing Scheme.

The Rugby Rural District Council Housing Committee have a new housing scheme under consideration.

Manchester Sewerage Scheme.

The Manchester City Council propose to construct a new sewer from Didsbury to Withington at a cost of £26,000.

New Headquarters for South Nutfield Boy Scouts.

New headquarters are to be built for South Nutfield, Surrey, Boy Scouts.

Proposed New Bridge over the Ouse.

The West Riding (Yorks) County Council are promoting a Bill for power to build an Ouse bridge at Boothferry to connect the East and West Ridings.

Housing at Lexden and Winstree.

The Lexden and Winstree Rural District Council have decided to apply to the Ministry of Health for permission to build 124 houses.

House Building in Bradford.

The Bradford Corporation have decided to apply to the Ministry of Health for a further sum of £40,000 for the payment of subsidies to the private builders of houses.

New Churches for Watford.

The Watford Urban District Council have sold sites on the housing estate for Anglican, Wesleyan, and Roman Catholic churches.

A Devonshire Road Scheme.

The Bideford and Northam (Devon) Rural District Councils have prepared a £30,000 scheme to make a connecting road by using part of an old railway track.

Housing at Chesterfield.

The Chesterfield Rural District Council are seeking the sanction of the Ministry of Health to erect 100 houses at Higham.

1,000 *New Houses for Thorne.*

Arrangements have been made for 1,000 houses to be erected as quickly as possible at Thorne, a village near the Harworth Pit, in the Doncaster area, where coal has just been reached.

More Houses for Northampton.

The Housing Committee of the Northampton Town Council are proceeding with the erection of a further twenty-eight Type B3 houses at a total cost of £14,756.

Portsmouth Housing Schemes.

Provision for another 800 houses is made in a scheme which is shortly to be brought before the Portsmouth Corporation by the Health and Housing Committee.

A Bathing Pavilion for Torquay.

The Torquay Corporation have prepared a scheme, to cost about £8,000, for the provision of a bathing pavilion, with cubicles on the ground floor, with steps to the beach, and a café and roof garden on top.

More Houses for Wrexham.

The Wrexham Town Council have sanctioned the arrangements made with the Ministry of Health to erect 356 houses in Acton Park within two years; £1,000 is also to be spent in reconstructing the Corporation swimming baths.

Montreal Bridge Scheme.

The building of a second bridge over the St. Lawrence at Montreal has now assumed definite form, and an advisory committee has been constituted to settle the details as to its exact situation and to draw up the necessary plans.

Thorne Sewerage Scheme.

The Thorne Rural District Council have instructed Messrs. W. H. Radford and Son, of Nottingham, to prepare plans for a sewerage scheme, to include provision for the new colliery village. The estimated cost is £32,500.

A Brighton Church Extension Scheme.

Sir Giles Gilbert Scott, R.A., recently gave advice with regard to the building of an apse at St. Bartholomew's, Brighton. The congregation have now issued an appeal for £20,000 to enable them to complete the work.

New Municipal Offices for Lytham St. Annes.

The Lytham St. Annes Council have decided to proceed immediately with a scheme for the erection of new municipal buildings and public offices at an estimated cost not exceeding £60,000.

Workmen's Dwellings for Pontefract.

The Pontefract Corporation have resolved to erect fifty-six houses on land in Love Lane, to be followed immediately by forty-four others on a site to be acquired, with at least 100 more in 1926–7.

Extensions at the Foreign Office.

Preliminary work has been begun on the extension of the Foreign Office. When it is completed additional accommodation of about 5,500 ft. will be provided. This is to be effected by adding another floor to a part of the roof of the existing building.

Bath's £20,000 Scheme.

The Bath Corporation have sanctioned a scheme providing considerable improvements and extensions to the hot mineral baths, involving an expenditure of about £20,000. The scheme includes the restoration of one of the oldest of the eighteenth-century baths.

Big Robert Gordon's Colleges Scheme.

An important scheme for the provision of buildings and equipment to enable the governors of Robert Gordon's Colleges to establish degree and diploma courses in engineering, in co-operation with the Aberdeen University, has been agreed to by the governors. The estimated cost is £50,000.

1,000 *Houses Proposed for Newport.*

The Newport Corporation are considering an offer from the Allied Building Corporation to build at their expense 1,000 houses on suitable sites to be provided by the council and approved by the building corporation, at a rate of twelve houses to the acre, and to let such houses when completed at a rental to 1,000 persons to be nominated by the council.

A New Bridge for Gateshead.

It has been found necessary for the erection of the new bridge at Gateshead to take 200 sq. yd. of the churchyard of St. Mary's Parish Church, which dates from the thirteenth century. Only three burying places, used between 1756 and 1825, will be affected, and the remains are to be removed to other consecrated ground.

The Week's News—*concluded.*

Extension of Bagthorpe Institute, Nottingham.

The special committee appointed by the Nottingham Board of Guardians to consider the extension of the Bagthorpe Institute have considered preliminary plans and provisionally approved those for the nurses' home at the infirmary and for the erection of a staff home at the institution. Plans have yet to be prepared in connection with the Children's Hospital at Bagthorpe.

Demonstration Steel Houses in Twenty-five Towns.

The Ministry of Health announce that arrangements have been made with Lord Weir for the production of a number of demonstration steel houses which are to be erected in twenty-five different districts, as follow : London, Liverpool, Manchester, Sheffield, Leeds, Nottingham, Birmingham, Cardiff, Swansea, Southampton, Plymouth, Bristol, Newcastle, Rotherham, Stoke-on-Trent, Bolton, Hull, Brighton, Wakefield, Whitehaven, Salisbury, Grantham, Colchester, Easington (Durham), St. Albans.

Proposed Thames Boulevard at Hampton Wick.

A proposal for the formation of a boulevard by the side of the Thames from Hampton Wick to Hampton Court has now taken active shape. A conference is to be held shortly between representatives of the Thames Conservancy, the Corporation of Kingston, and the District Councils of Surbiton, the Moleseys, Hampton, Esher and Dittons, and Hampton Wick to see if terms can be arranged for carrying out the suggestion. The Thames Conservancy estimate the cost of protective works at £21,500, and they are willing to join with the local authorities in seeking for a grant from the unemployment fund towards the cost.

Obituary

Mr. S. Henbest Capper.

Mr. Stewart Henbest Capper, a member of the European Department of the Ministry of the Interior, and formerly Professor of Architecture at McGill and Manchester Universities, died suddenly in the Anglo-American Hospital, Cairo, on January 8, from heart failure, after a brief illness. Mr. Capper, who did invaluable work in the Intelligence Department during the war and the subsequent local troubles, was very popular with all communities and will be sorely missed.

The second surviving son of the late Jasper John Capper, he was born in December, 1859, at Upper Clapton, but educated mainly in Edinburgh, where he was "Dux" of the Royal High School in 1875, and in 1880 took first-class honours in classics at the university. He was also for one session at the University of Heidelberg. From 1879 to 1883 he acted as private tutor, and part of the time as private secretary, in the household of the late Sir Robert Morier, both at the British Legation, Lisbon, and at the Embassy in Madrid. Thereafter he studied at the Ecole des Beaux Arts, Paris, in preparation for his chosen profession of architecture.

For a time he practised his profession with success in Edinburgh, but a temporary breakdown in health led to his appointment as the first Macdonald Professor of Architecture at McGill University, Montreal, when the chance unexpectedly came his way. He held the chair for seven years, until, in 1903, he was chosen, again as the first occupant, for the Chair of Architecture at the Victoria University, Manchester. Here he remained until 1912, when, under medical advice, he was obliged to seek a more congenial climate.

He was an Associate of the Royal Institute of British Architects, and a Fellow of the Society of Antiquaries, and in 1899 was elected a Royal Canadian Academician. He was unmarried. Combining sterling worth and unselfishness with a lovable disposition of singular sweetness and charm, he attracted new friends everywhere, and friends once made he never lost.

The funeral was numerously attended, and among those present were Captain Gisborne, representing Lord Allenby, the British High Commissioner; Ali Pasha Gamal-ed Din and Helmi Pasha Issa, Under-Secretaries of the Interior, representing Ismail Pasha Sidky, the Minister of the Interior; Mr. Keown Boyd and Mr. Graves, respectively Director-General and Assistant Director-General of the European Department.

Societies and Institutions

Examination for the R.I.B.A. Diploma in Town Planning.

On the recommendation of the Board of Architectural Education, the Council of the R.I.B.A. have approved the following revised regulations for the examination for the R.I.B.A. diploma in town planning :—

Candidates applying for admission to the examination in town planning must be either : (a) Fellows of the R.I.B.A.; (b) Associates of the R.I.B.A.; or (c) Licentiates of the R.I.B.A.

The examination will be held annually in July, and candidates must make application to sit before March 1 in any year.

Candidates must submit in support of their applications :—

1. An original study, illustrated by sketches, of an existing town or part of a town.

2. An original scheme for site planning, town planning, or town development, with a description.

3. A written thesis on a subject pertaining to town planning, accompanied by a plan or plans.

On the application being approved by the Board of Architectural Education, the candidate will be required to prepare a thesis and scheme to a special subject, which will be set by the examiners. The subject will be the lay-out of an actual area, of which ordnance sheets will be supplied to the candidate, together with set conditions. The candidate must hand in this thesis and scheme at the beginning of the written examination.

Copies of the forms of application, which contain the regulations and syllabus for the examination, may be obtained free on application to the secretary R.I.B.A.

Restoring the Abbey.

How the Abbey of the Empire has been repaired against the ravages of time was described by Mr. Lawrence E. Tanner in a paper read before the Surveyors' Institution. Throughout the seventeenth century, Mr. Tanner said, work was in progress on its outside to repair the ravages caused by the London atmosphere. This work had been going on ever since. Fortunately, at present, no such problems had to be faced and overcome as at Winchester, Lincoln, and elsewhere. What had been accomplished at Westminster had been the remarkable feat of replacing the decayed exterior stone by stone. The result was that there was scarcely a single original patch of stonework on the outside. "Externally . . . the church is a copy, not by any means faithful, of the original."

The Bucks Society of Architects.

The fourth of the series of informal meetings held by the Bucks Society of Architects took place at Oakley House, Slough, when Mr. A. Reid read an interesting paper on "Estimates and Estimators." He first summarized the making of an estimate by trade, and gave some figures showing the totals for an ordinary house. A comparison of the prices of 1912 with the present day revealed some vast differences. A comparison of the cube method for rough estimates with the detailed pricing of a bill evoked much discussion. After the delivery of the paper many items of interest were considered. The use of quantities for tendering was opposed by Mr. Reid, whilst Mr. Cooper defended the cube method of estimating. A vote of thanks to Mr. Reid was moved by Mr. G. H. Williams, and seconded by Mr. A. Cooper.

The Building Surveyors' and Inspectors' Association.

At a meeting of the above association, held at the College of Technology, Manchester, a paper was read by Mr. F. E. Drury, M.Sc.Tech.M.I.Struct.E., etc. (lecturer on building construction, Manchester University, head of building department, College of Technology, Manchester) on "Reinforced Concrete : Some Points of Importance in Practical Design." In his opening remarks the lecturer expressed his favourable opinion on the formation of an association such as the one he had the pleasure of addressing, also his willingness to give at any future date the best of his technical support in furthering the projects of the Association. The secretary reported that the membership was steadily increasing, and that the Association was now in a position to formulate an examination scheme, as the Council of the R.I.B.A. had agreed to the slight modification of their building surveyors' examination syllabus. This standard has now been set as the qualification of membership, and a committee has been appointed to arrange the examination scheme, particulars of which may be had from Mr. M. Crossland, organizing secretary, 45 Town Street, Armley, Leeds.