Wednesday, January 28, 1925 Vol. LXI. No. 1569.

THE ARCHITECTS' JOURNAL & Architectural Engineer

With which is incorporated "The Builders' Journal."

FROM AN ARCHITECT'S NOTEBOOK.

PROUT'S SKETCHES IN FLANDERS AND GERMANY.

I well remember going with my father into the shop where subscribers entered their names, and being referred to the specimen print, the turreted window over the Moselle at Coblentz. We got the book home to Herne Hill before the time of our usual annual tour; and as my mother watched my father's pleasure and mine in looking at the wonderful places, she said, "Why should we not go and see some of them in reality?" My father hesitated a little, then with glittering eyes said—"Why not?" And there were two or three weeks of entirely rapturous and amazed preparation.

RUSKIN: "*Praeterita*"

9 Queen Anne's Gate, Westminster.

Drawings of Architecture. 18.—Guildford

(From a pencil sketch by Harold Falkner.)

THE

ARCHITECTS' JOURNAL

9 Queen Anne's Gate, Westminster.

Wednesday, January 28, 1925. Volume LXI. No. 1569

The Response to an Appeal

ON Thursday, January 8, an appeal was made for a sum of money declared to be essential for the strengthening of the piers supporting the dome of St. Paul's. The amount required was estimated by the Commission of Inquiry at from £120,000 to £140,000. A fortnight later the higher of these figures had been exceeded, and at the close of last week the fund amounted to over £170,000. Subscriptions had thus averaged over £10,000 a day. As "The Times" (through whose columns the appeal was conducted) remarks, never in so short a time has a sum so large been contributed for such a purpose. "Without preparation or organization of any kind, men and women of all classes and of almost all Churches have hastened to make their free offerings for an end which appeals to them all. From the King to the poorest of his subjects they have all been eager to give practical testimony of their affection for the mother church of the British Empire." What is the secret of this response?

Architects may say that not only is St. Paul's the central object and the most prominent feature of modern London, but that it is its finest building. They will feel that architecture is an art that has still a popular appeal. The churchman will say that St. Paul's to-day, as in the past, is to thousands a living centre of spiritual life, to multitudes conscious or unconscious, a witness that our daily business and pleasures are not all. The soldier and the statesman will say that St. Paul's is a monument evoking crowded memories of our past and of the famous men who made it; memories kindling aspirations and high resolves that in our day we shall not be unworthy of either. They will point underfoot to the very spot at which the cross points down—to the tomb of Nelson, the human heart of the edifice. For ourselves, we would say the appeal is chiefly architectural—it is THE DOME. If Wren had given St. Paul's no dome, would the imagination be so completely captured? So firmly is it associated in our minds with the metropolis, that no view of London seems complete without the grey dome in the distance, towering—like St. Peter's at Rome—over the surrounding streets and spires. The history of St. Paul's, like the history of the Abbey, is almost the history of England, and the great events in the domestic annals of the people cluster round it. All seem to be implied, all seem to be remembered and signified and guarded over by the dome. The great names and the great events are gathered under it and about.

Summarising its history, "The Times" points out that the folkmoot of the citizens was held within its precincts before the Conquest; the first "ecclesiastical parliament of England" was assembled within the walls of an earlier church on the site. The dome rises over a spot "consecrated by the devotions of thirty generations"; the constitution of the church in England, as it remained to the Reformation, was framed at St. Paul's by archbishops and papal legates. To a gathering of the barons in St. Paul's, when Langton produced the charter of Henry I, we owe Magna Charta. In St. Paul's King John purported to surrender this realm of England to a papal legate as a fief of the Holy See. The wars with France and the wars of the Roses wrote their history there when a French king came there a prisoner, and when, within a few weeks, the bodies of Henry VI and of Warwick, "the Kingmaker," were exposed to view beneath its roof. At the approach of the Reformation the interest about the cathedral deepens. The whole story may be traced there from the citation of Wycliffe to the trial of the Seven Bishops and the flight of James II. The old religion is renounced, restored, renounced again. There are burnings in Smithfield, and first among the victims is a prebendary of St. Paul's. There are hangings and butcheries at Tyburn, and the Dean is sent to engage in controversy with a doomed Jesuit, fresh from the rack. With the Civil War evil days fell upon "the proud, popish, and heathenish edifice," for whose utter destruction Lord Brooke, the Puritan General, prayed. The Parliament confiscated the stones and the scaffolding which had been made ready for repairs, and Cromwell quartered a regiment of horse in the church. And it is as if all these leaves of history on which are to be read the names of kings and kingmakers, cardinals and archbishops, had been gathered and bound up in a dome.

The effect of such a symbol upon the mind of man—and his mind is still grateful for a sign—is incalculable. To us it seems that, for the salvation of St. Paul's, the dome is its greatest appeal.

"Si monumentum requiris, circumspice"—for the lovers of architecture, the dome is the Great Mind of Wren. "It dominates everything," says Bond, "——not only the church, but London. Every part of the vast building gathers up into the all-compelling unity of the central dome. Inside, St. Paul's is all church; outside, it is all dome. Into this exterior has grown in concrete embodiment all Wren's aspirations: his aspiration for grandeur, massiveness, and power; for monumental stability, for unity, for harmony, for symmetry and proportion, for beauty of curve and line. . . . See, too, how the lantern, domical above and colonnaded below, sums up the composition of the dome beneath; and how the western steeples prepare the eye for the transition from the rectilinear colonnades of the great façade to the swelling curve of the dome—itself reproduced in the north and south circular porches and in the apsidal choir. St. Paul's 'is a house at one with itself.'"

We do not suggest that if St. Paul's were a poor building,

its history would be altogether forgotten, but we say that its associations would not be so freshly remembered, and that its final appeal is to the eye.

As when, before we have seen the sea, but have heard of the great ships and the great sailors, and the wide waters and the storms and the calms, so, on beholding it, are all "the wonders of the deep" summed up for us in the wave which laps at our feet, and by the lighthouse which rises up from the rocks. J.

Architects on St. Paul's

Opposition to the tentative measures suggested by the Commission on St. Paul's for the preservation of the cathedral is steadily growing. We note, in particular, a letter which has appeared in the Press signed by Sir Reginald Blomfield, Mr. Basil Champneys, Mr. J. Alfred Gotch, Mr. W. Curtis Green, Sir Giles Gilbert Scott, and Mr. Walter Tapper, who observe: "It appears from the report of the Commission that they contemplate the ultimate necessity of rebuilding the piers supporting the dome of St. Paul's, but hesitate to advise this 'larger operation' on the ground of its great cost and inconvenience, and recommend that, meanwhile, the process of grouting the piers should be continued. The Commission have had to deal with a problem of very great difficulty and responsibility, and no doubt felt bound to take into account these considerations of cost and inconvenience; but the one essential consideration is to secure the safety of the fabric. If there is reason to believe that the process of grouting may not, in fact, secure that safety, we submit that no consideration of cost and inconvenience should stand in the way of that larger operation which the Commission seems to think may finally be necessary, that is, of shoring up the dome and rebuilding the piers. Great though the expense and inconvenience would be, it would be little to the expense and inconvenience of the collapse of the dome. Instead of spending money on what may prove to be an unsuccessful expedient, we submit that the issue ought to be faced here and now. A generous response has been made to the fine appeal organized by 'The Times.' What is wanted to complete that appeal is the assurance that steps taken are such as will secure the safety of the fabric once and for all. We see no reason to doubt that this can be done without taking down the dome." In this view the signatories to the letter have the support of a great body of architectural and engineering opinion. We hope that every practical alternative will be thoroughly investigated before it is decided either to continue grouting or to pull down the dome. The aim should be to preserve the building so far as possible as Wren left it.

"Stint and Period"

It has been observed, with more picturesqueness than accuracy, that "it never rains but it pours." Occasionally, however, like all aphorisms which are half truths (and how many are anything more?) this one achieves completion and justifies itself. It has a distinct ring of truth just now. It began to pour (and here we abandon metaphor) when Westminster Abbey suddenly threatened to fall down if it were not at once attended to. Hardly was the scaffolding placed around when Waterloo Bridge subsided with a groan. Observing the plight of its near neighbours, Parliament House began to grow nervous, and let fall a pinnacle or two. Looking across from its eminence on Ludgate Hill, St. Paul's was not slow to observe these indications of senile decay in others even younger than itself, and, growing alarmed, began to call loudly for support. The contagion spread. Lincoln Cathedral, six hundred years older than St. Paul's, promptly displayed cracks six times as wide as the widest to be found in the London building. Then Wakefield began to grow defective in its beams, and Peterborough disclosed a serious affection of dry-rot. It would seem almost as though all the venerable buildings of the country had resolved on simultaneous collapse. Each, in fact, has come perilously near the end of its tether, for, as Sir Thomas Browne observes: "Men's works have an age like themselves; and though they outlive their authors, yet have they a stint and period to their duration." It is our duty and our privilege to renew their youth. We must never leave them to the fate that overtook the Wonderful One-hoss Shay.

"Molesworth"

There are names which are household names, and, by reason of their greatness, are never thought of as belonging to any one man. "Mrs. Beeton," "Whitaker," "Burke"——the name is the book. Among such names known to architects there are "Molesworth," "Hurst," "Laxton," and "Kidder." Sir Guilford Lindsey Molesworth, whose death was announced last week, was the author of the commendably small, and gigantically great, "Pocket-book of Engineering Formulæ"—a pocket-book in size, encyclopædic in its range. It was one of those books the possession of which made one want to be an engineer. In it there were tables giving the velocity of winds—the speeds of zephyrs and mighty hurricanes—the force per square inch of waves, according to their height; the effects of explosives, the weight of air. Fascinating formulæ that stirred the student's heart! With this pocket-book, a knife, and a piece of string one felt that one could travel round the world. Or be marooned for months on uninhabited islands, or be the last man left alive upon the earth. It was in November, 1862, that the famous pocket-book was first published, and it went through six editions in the first twelve months. Its striking success compensated its author for the chaff of intimate colleagues in Simla, who were wont to begin conversations with him by the formula, "Few are gifted with a memory so retentive as not to require," etc., this being the opening sentence of the original preface.

The Abbey Monuments

Every now and again the subject of the monuments in Westminster Abbey crops up—like a weed in the lawn that is cut and cut again. Presumably it will continue to crop up until it is uprooted, and when that will be none shall prophesy. Mr. C. R. W. Nevinson, who has just re-called attention to the subject, describes the Abbey rather rudely as "a departmental store," and suggests that "the proper course is to get rid of some of the ecclesiastical junk. I think," he adds, "it could be cleared out without offending anybody's susceptibilities." Perhaps, but it would be very difficult to know where to begin and where to draw the line. Monuments to all and sundry are found within the Abbey walls, and who shall say precisely where eminence is divided from nonentity, worth from unworthiness? One might as well try to fix the division between day and night. The courageous course would be to remove all this great collection of monumental masonry from the Abbey to a building that could be specially erected for its reception near by. But imagine the public outcry—the wild charges of desecration and vandalism! We fear the Abbey must be left to its huddled display of "storied urn and animated bust."

"Hope Deferred——"

As long as we can remember it has been the custom, at the R.I.B.A., to announce the awards of prizes and studentships on the occasion of an ordinary general meeting, and invariably *after* the reading of the paper arranged for that particular evening. One is naturally reluctant to question an established practice, but to the impartial observer it does seem a little cruel that numbers of students who have come specially to the meeting to know their fate should be kept on tenterhooks some two or three hours while a paper of no immediate interest to them is read and debated. Would it not be possible to announce the awards *before* the reading of the paper? If the ever-considerate secretary of the R.I.B.A. could suggest this little reform to the powers-that-be, the students would rise up and call his name blessed.

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

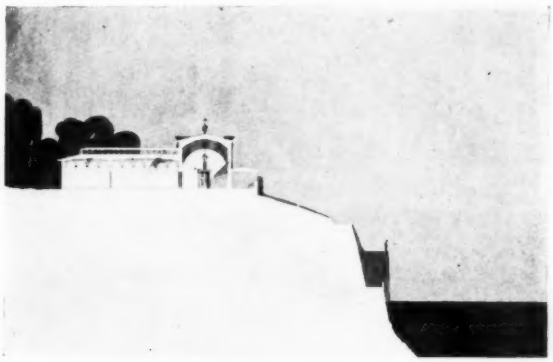
The Exhibition of Drawings

By S. ROWLAND PIERCE

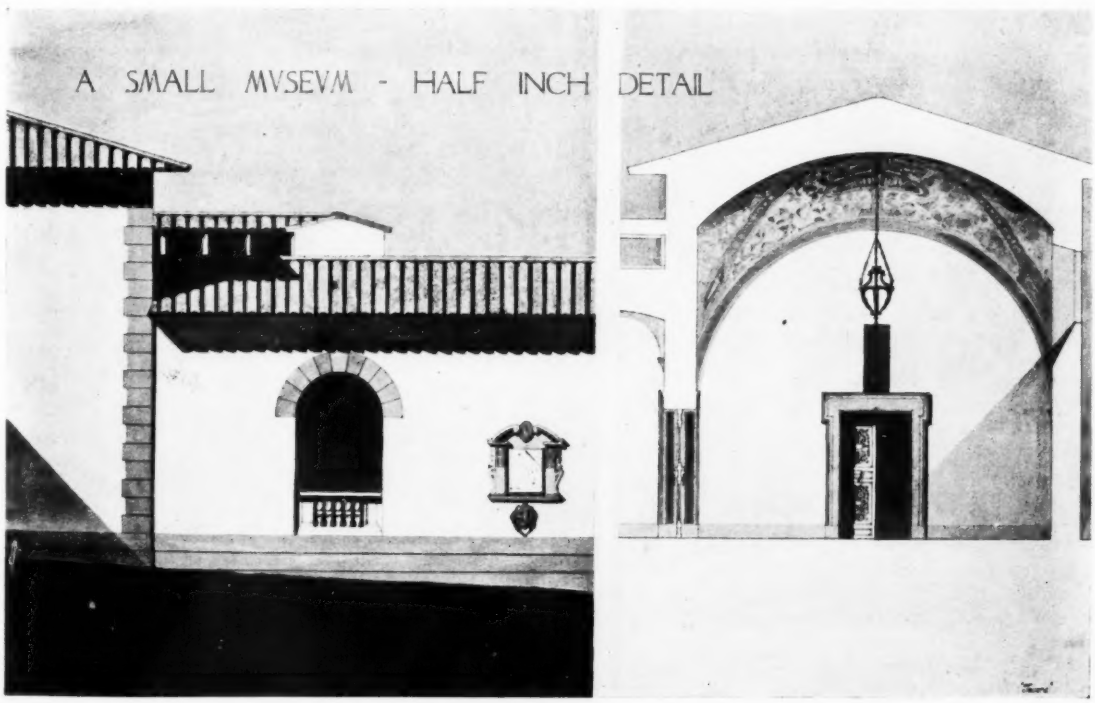
THE entries for the R.I.B.A. prizes (now on view at Conduit Street) show an increase in numbers, and in their quality a better standard than has been the case for several years. The most notable increase is shown in the number of schemes submitted for the Tite Prize; and as this award always creates, with the Soane Medallion, the highest interest, as being one of the chief studentship prizes of the year for architectural design, we may be excused, perhaps, for giving primary consideration to it.

The "Tite"

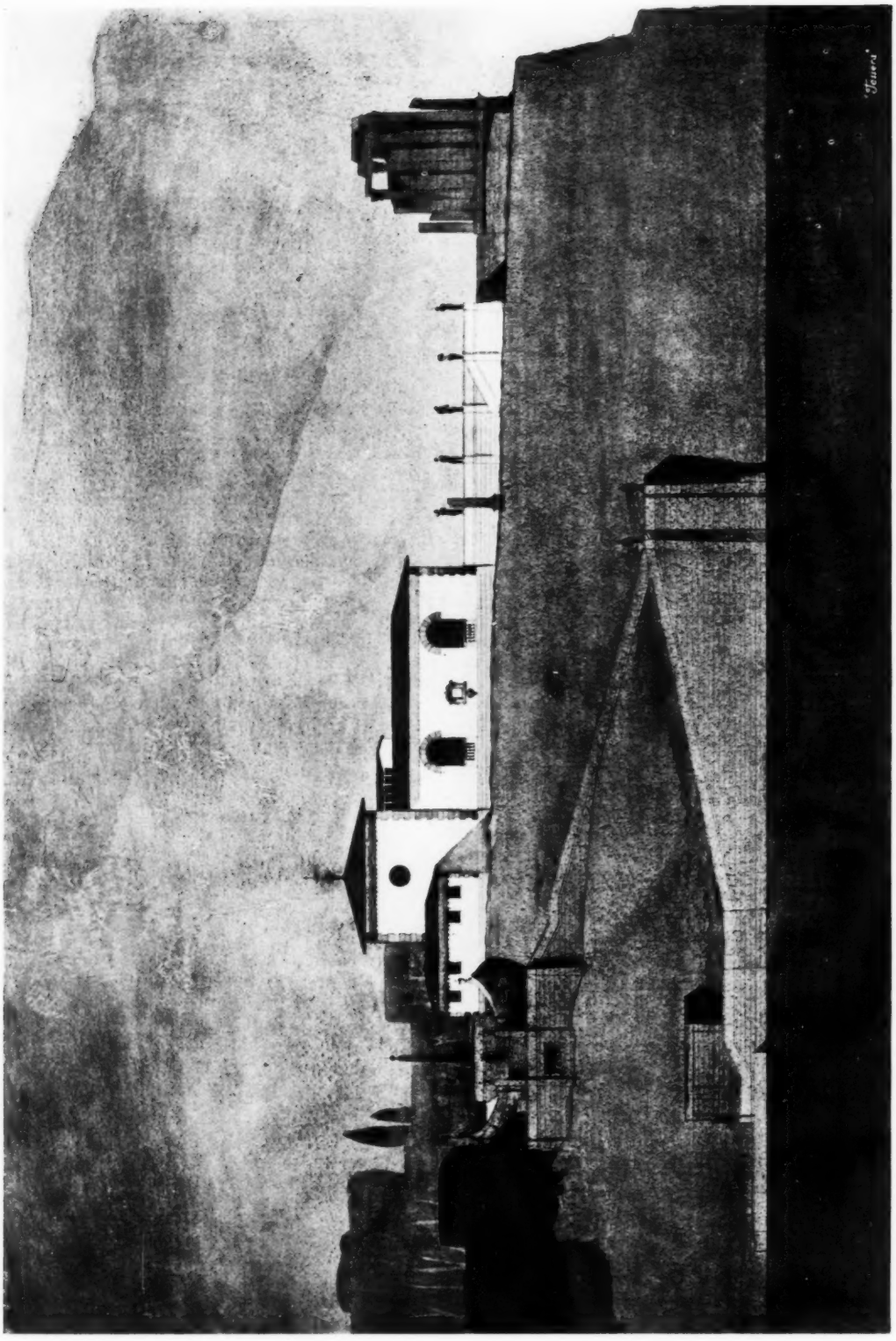
The subject set for the Tite Prize was an exceedingly interesting one, and one which possessed a fresh piquancy, to which a proportion of the competitors have certainly responded. Before examining the designs in detail, it is necessary, perhaps, to discuss the programme; it calls for a "Design for a small Museum" on a small and rugged lake-side promontory (area 60,000 sq. ft., and 60 ft. above the lake level) to house the more important discoveries made during excavations of ancient remains on the site, among which is included a Temple of Vesta, which, in part, still stands. Approaches were required both from the water and from the excavations, and the building was to contain a central hall, three spacious galleries with a loggia to contain the larger sculptures, and rooms for a curator and for students were to be provided; "the general disposition of the site is left to the competitors." It is to this last clause that criticism may be applied; it left the competitor open to too much latitude in the choice of the position of the excavations and the temple, a latitude of which it might almost be said that half the programme had been left to the competitor to settle. That this has led to confusion is evident from the many positions to which the excavations and temple have been allocated; the temple (which would make in almost any position a very definite element in the composition of both plan and elevation) appears behind the museum, in front of it, and below, and in some cases, above its level. Thus it happens that there is room for adjudication to be made, not only on the solution of a definite problem, but on the quality of imagination shown by competitors in the matter of designing a startlingly attractive site or one that is particularly easy to deal with. In order not to be entirely negative in criticism, it might be suggested that



A CROSS-SECTION.



THE TITE PRIZE: THE WINNING DESIGN.
BY D H. BEATY-POWNALL (ARCHITECTURAL ASSOCIATION).



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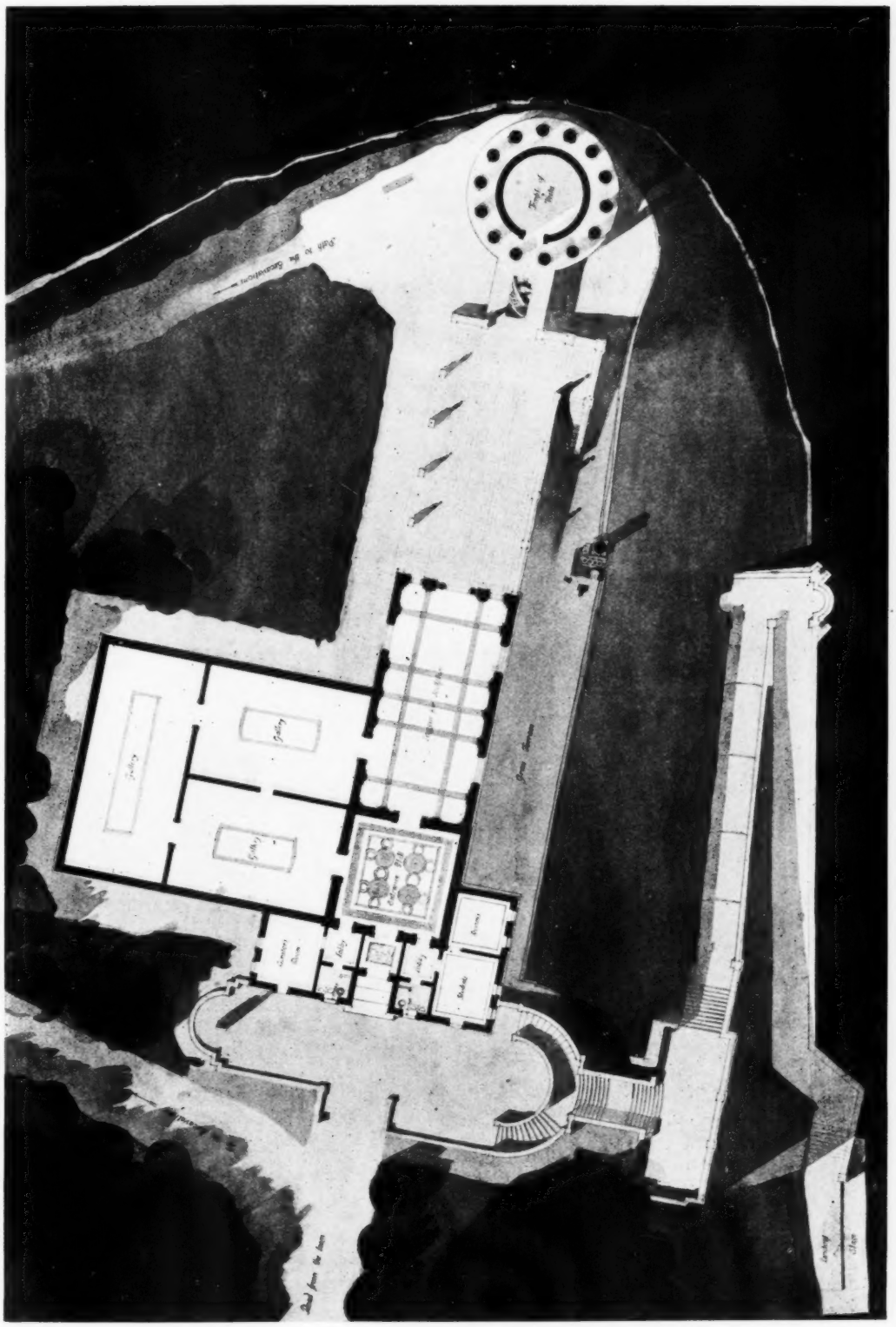

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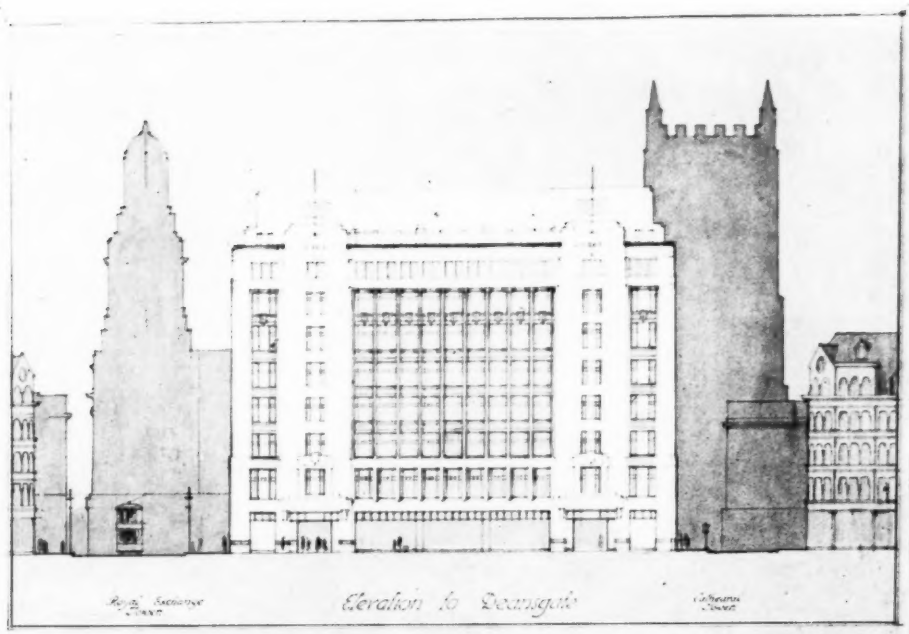
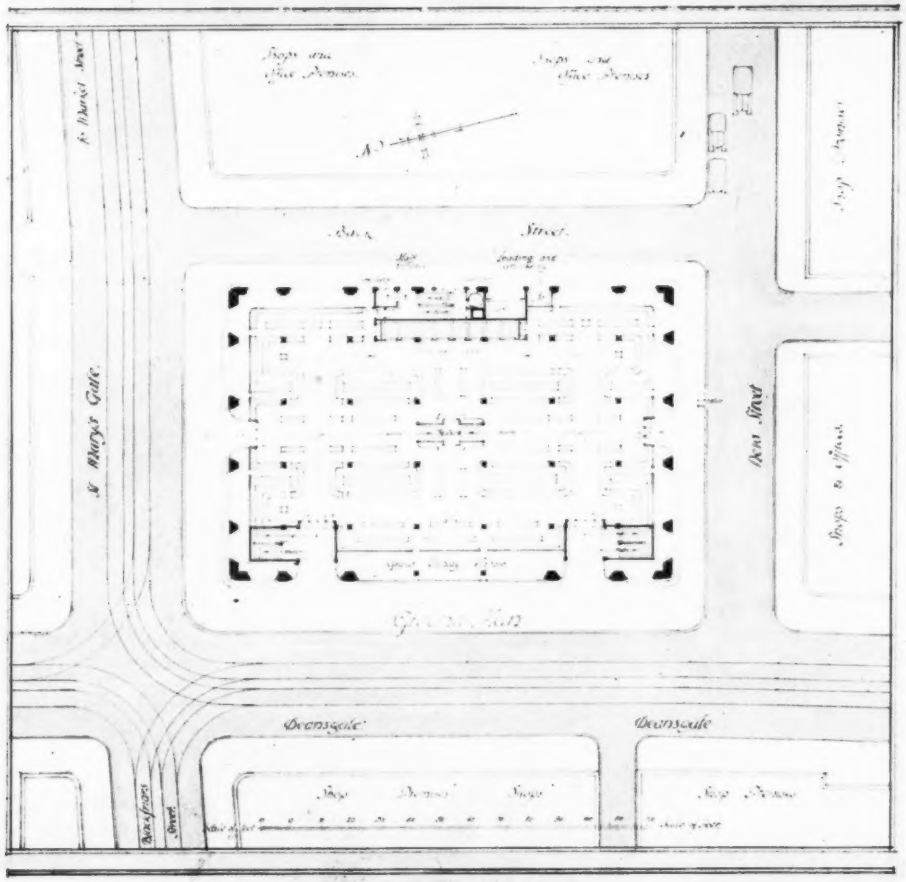
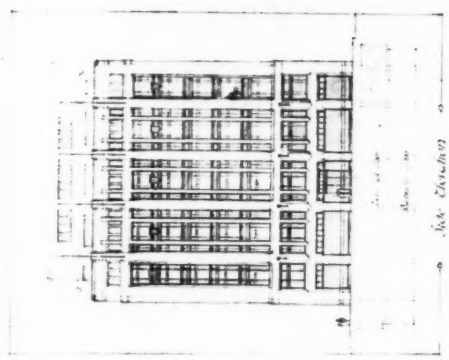
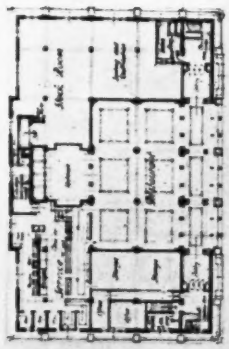
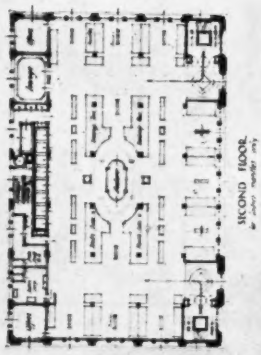


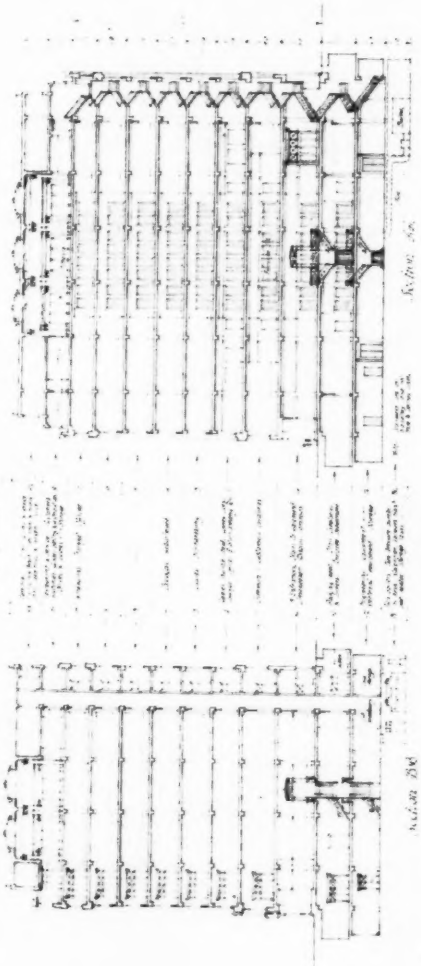


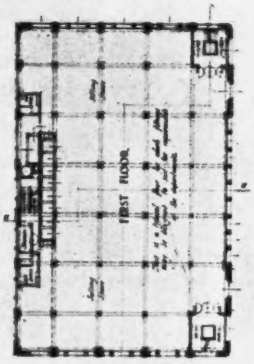
THE R.I.B.A. ALFRED BOSSOM STUDENTSHIP: THE WINNING DESIGN. BY F. E. BENNETT, A.R.I.B.A.



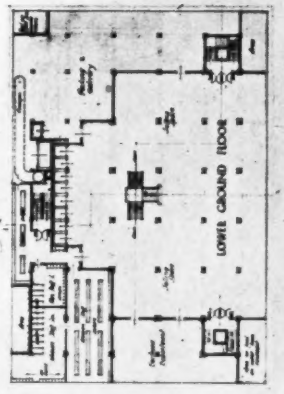


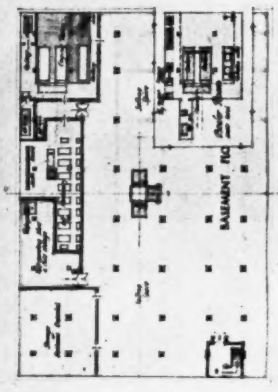






THE R.I.B.A. ALFRED BOSSOM STUDENTSHIP:
THE WINNING DESIGN.
BY F. E. BENNETT, A.R.I.B.A.





where a site of such definite characteristics is chosen, a site plan with contours and the existing buildings, etc., indicated, should form part of the conditions. One other curious point occurs to a visitor to the exhibition, and that is, that either the scale given for the plans ($\frac{1}{8}$ in. to 1 ft.) is too great, or that the desire of the jury for uniformity in the sizes of sheets has extended too far; for nearly all the plans are compressed in design to fit the sheets, or are cut off from their full development by the edges of the paper.

The winner, Mr. D. H. Beaty-Pownall, of the Architectural Association Schools, must be congratulated on a design which shows many excellent points. In plan, both of the building and its surroundings, it has achieved the signal success of being both the simplest and the best in the room; asymmetrical in treatment, it presents none of the complications so often found in non-balanced plans. All the elements introduced into it seem necessary to its proper composition, and the circulations of the actual building, and through it to the grounds beyond, are excellent. The elevations possess a character which seems to be inherent to the problem in hand, a quiet and studious air, that does not seek to overwhelm either the excavations or the landscape around by the obtrusive pompousness that marks so many of the other designs; among the worst offenders in this respect, both in plan and elevation, are those of "Blat," "Ogee," and "Isis." There are, however, some slight changes in scale in the winning elevations which render them less pleasing upon closer examination; and in this respect it is questionable if the entrance elevation of the building would be so satisfactory as the one shown. The sections show careful thought for lighting the exhibits, and are pleasant in form; though the rendering of the sections and the $\frac{1}{2}$ in. detail is much below the standard of the other sheets.

Two honourable mentions have been awarded in connection with this prize; one to Miss Alison Sleigh, of the Architectural Association Schools, who presents an excellently drawn and rendered set of drawings, which deal with a larger area of the site than has been imagined by many of the other competitors. The plan is reminiscent in part of the garden front of the Villa Papa Guilia, without the beauty of its screening buildings, or the strength of its simple semicircular sweep. The other "mention" is accorded to Mr. J. F. D. Scarborough, whose drawings are weaker in general presentation than Miss Sleigh's or Mr. Beaty-Pownall's; there is a dreamlike quality about them that does not seem to indicate so direct and positive appreciation of the problems to be solved. Among the other sets submitted that signed "Brink" deserves some note; a good composition in plan and elevation, it has been needlessly complicated in several places, especially in the elevations, which are the weakest part of the scheme; this is one of the few designs in which the museum has found itself between the lake and the ruined temple.

Space does not permit of detailed mention of the other entries for the Tite Prize, except to add that the general standard of the designs may be said to be of a fairly high average.

The "Alfred Bossom"

The other outstanding award of the year, by reason of it being the year of inauguration, is that of the Alfred Bossom Travelling Studentship. In addition to the drawings required in connection with a given programme for a commercial building on an island site 150 ft. by 100 ft., the competitors were asked to present a report connected with the business and legal aspects of the problem, which should indicate the advantages of their schemes from such standpoints. Three sets only are shown in the exhibition, and it would have been enlightening if the unpremiated designs submitted to the local juries could have been hung for comparison with the winning sets. The studentship (£250) and the gold medal have been awarded to Mr. F. E. Bennett (of the Architectural Association Schools), to whom we extend our congratulations on being the first "Bossom student"; and in comparison with the other designs shown, there can be no possible doubt that the problem in all its details has been considered exhaustively by Mr. Bennett. The plans present a workmanlike appearance, and are well expressed in the elevations; the latter show a distinct competency in the handling of the problem of the modern street façade. The designs submitted by Mr. F. H. Heaven (a former Grissell prizeman) and Mr. C. T. Bloodworth (of the Liverpool University School of Architecture), which receive silver medals, are of a somewhat lower standard, both in design and presentation, and it would seem that, although these are the first awards to be made in this scholarship, and consequently competitors are without the guidance of precedent, such a standard is not sufficiently high for so important a prize.

Only one set is hung in connection with the Grissell Prize, and the award has been made to the author, Mr. A. E. Cameron (of the Architectural Association Schools), whose drawings show so excellent a level that it would be difficult to imagine that they could be surpassed even had they been confronted with numerous rivals.

The "Owen Jones"

There are three entries for the Owen Jones Studentship, and it goes this year to Miss Leonora Payne, of the London University School of Architecture; the drawings submitted by Miss Payne make a versatile set, which covers a wide field of study, from fabrics to mosaic, and they are executed with an element of freedom and a feeling for texture that is often lacking in such studies. It is somewhat to be regretted that in the original design submitted by Miss Payne there is so strong a flavour of that crude and heavy detail evinced in the more recent designs for ecclesiastical subjects emanating from the École des Beaux Arts. Of the other two entrants, Mr. J. Hollinshead and Mr. E. Dinkel, the former is the better; his draughtsmanship is particularly excellent.

Measured Drawings and the "Pugin"

The two outstanding exhibits of work for the measured drawings medal are undoubtedly those premiated: they have no serious rivals among the other three sets submitted. Both competitors take for their subject a single building. The winner, Mr. R. W. Briggs, of Manchester University School of Architecture, presents a complete set of drawings of the Pantheon in Paris, shown in an immaculate set of pencil drawings which are masterly in a clear and simple way. An honourable mention has been gained by Mr. J. A. Coia, of the Glasgow School of Architecture, for a set of drawings, which show in very exhaustive detail the Church of Santa Maria della Salute at Venice. They are not such careful examples of draughtsmanship as those of Mr. Briggs, but in their completeness they present what is, possibly, a more useful piece of work, which rather raises again the vexed question as to whether this is a competition in draughtsmanship and surveying, or an award for a contribution to the storehouse of historical and architectural knowledge, reasonably well presented; the conditions say the medal is awarded for "the best measured *drawings*," and describe in some detail how they should be finished, so we must assume that it is the former quality that decides the issue.

The Pugin Studentship has been awarded to Mr. D. H. MacMorran. His drawings are executed in a mannerist style that seems to accord ill with the subjects in hand, the delineation of Gothic architecture, its materials, and its detail; it is a style, the heavy hardness of which we deemed to have been generally discarded some years ago. The set submitted by Mr. Williams for the same prize, though perhaps less "slick," seem to show serious study of the subjects treated, and are notably interesting for the Gothic colour studies, which include a very delightful and spirited copy of one of the screen paintings at Ranworth.

The Awards

Following is the official list of the awards :—

The R.I.B.A. Essay Silver Medal and £50.

This is awarded for the best essay on a subject of architectural interest which may be chosen by each competitor.

Awarded to Mr. Frank Pentland Chambers, B.A.(Cantab.). of Pāli, 18 Alleyn Park, West Dulwich, S.E.21, for his essay on "The Æsthetics of the Ancients."

A certificate of honourable mention was awarded to Mr. Martin S. Briggs, F.R.I.B.A., of 9 Winterstoke Gardens, Mill Hill, N.W.7, for his essay on "The Architect in History, his Training, Status, and Work."

Five essays were received.

The R.I.B.A. Measured Drawings Silver Medal and £50.

This is awarded for the best set of measured drawings of an existing building, which may be chosen by each competitor.

Awarded to Mr. Richard W. Briggs, B.A., A.R.I.B.A., of 46 Alexandra Road South, Alexandra Park, Manchester, for his measured drawings of the Pantheon, Paris.

A certificate of honourable mention was awarded to Mr. Jack Antonio Coia, A.R.I.B.A., of 88 Drumother Drive, Parkhead, Glasgow, for his measured drawings of Chiesa della Salute, Venice.

Five sets of drawings were submitted.

The Tite Prize and £100 for Design.

The subject set for this year was "A small Museum." The prize was awarded to :—

Mr. D. H. Beaty-Pownall, c/o Architectural Association, 34 Bedford Square, W.C.

Certificates of honourable mention were awarded to Mr. John F. D. Scarborough, of 49 Bernard Street, Russell Square, W.C.1, and Miss Alison Sleigh, of 16 Gordon Square, W.C.1.

Twenty-six designs were sent in.

The Pugin Studentship. A Silver Medal and £75.

For the study of mediæval architecture of Great Britain and Ireland.

Awarded to Mr. Donald Hanks McMorran, of 34 Butler Avenue, Harrow-on-the-Hill, Middlesex.

A certificate of honourable mention and £10 was awarded to Mr. Edwin H. H. Williams, of 136 Lewisham Road, Lewisham, S.E.13.

Four applications were received.

The Owen Jones Travelling Studentship and £100.

A certificate and £100 for ornament and coloured decoration.

Awarded to Miss Leonora F. M. Payne, of 28 Norbury Crescent, W.11.

Three applications were received.

The Godwin Bursary and Wimperis Bequest.

A silver medal and £130 for the study of works of modern architecture abroad.

Awarded to Mr. Leonard Holcombe Bucknell, A.R.I.B.A., of 34 Bedford Square, W.C.

Two applications were received.

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

A gold medal and £250 for the study of commercial architecture in America.

Awarded to Mr. Frank Edgar Bennett, A.R.I.B.A., of 42A Markham Square, Chelsea, S.W.3.

Silver medals were awarded to :—

Mr. Frank Edgar Bennett, A.R.I.B.A., of 42A Markham Square, Chelsea, S.W.3.

Mr. Frank Henry Heaven, A.R.I.B.A., of 39 Coronation Street, Aberkenfig, Glam.

Mr. Charles Thomas Bloodworth, of 138 Derby Lane, Stoneycroft, Liverpool.

The Grissell Gold Medal and £50.

For the encouragement of the study of construction.

The subject set for this year was "A Dance Hall," and the prize was awarded to :—

Mr. Arthur Edwin Cameron, 18 Eastwood Road, South Woodford, E.18.

One design was submitted.

The Ashpitel Prize, 1924.

This is a prize of books value £10, awarded to the candidate who has most highly distinguished himself among the candidates in the final examinations of the year.

Awarded to Mr. Geoffrey Reynolds Barnsley, of 3 Paper Buildings, Temple, E.C.4.

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

This is awarded for the best set of drawings submitted at the annual exhibition by post-graduate students of the recognized schools exempted from the final examination.

Awarded to Miss Elsie Rogers, of 23 Albert Road, Whalley Range, Manchester.

The competition drawings will be on exhibition in the R.I.B.A. Galleries, 9 Conduit Street, W.1, until February 2, between the hours of 10 a.m. and 8 p.m., Saturdays 10 a.m. to 5 p.m. (Sundays excluded.)

The Travelling Students' Work.

Godwin Bursar, 1923.—The Council have approved the report of Mr. W. T. Benslyn, A.R.I.B.A., who travelled in America.

Owen Jones Student, 1924.—The Council have approved the work of Mr. J. H. Sexton, who travelled in Italy.

The Winner of the R.I.B.A. Alfred Bossom Studentship

Mr. F. E. Bennett, A.R.I.B.A., the winner of the R.I.B.A. Alfred Bossom Studentship, served for a period of five years during the war as a lieutenant in the Middlesex Regiment. In 1920 he commenced the study of architecture at the Architectural Association, and in 1923 passed the A.R.I.B.A. examination. He has worked for short periods in various London offices, and is now completing the diploma course of the Architectural Association.

MR. F E BENNETT, A.R.I.B.A.

The Troubles of the Building Trade*

By MAURICE E. WEBB, D.S.O., F.R.I.B.A.

"FOOLS step in where angels fear to tread," but at the request of the Editor I am venturing, with some hesitation, to tread on the slippery slope which leads to controversy and perhaps even to disillusionment. I do it only on the understanding that these are personal opinions, and opinions that can in no way commit our Journal, our Institute, or our members to any views contained in this brief article.

If the subject is ventilated, discussed, and freed from the smoke-screen of secret intrigues and diplomacy, some good may result. That is the one hope. There is another proverb which is applicable to this case, and that is: "Outsiders see most of the game." In all disputes and troubles between masters and men in the building trade, architects are unfortunately outsiders, but they do hear one way and another, in spite of this disability, some of the inside difficulties of both sides.

Now I claim, at the expense of being called egotistical, to have had some experience of another side, as well as the purely professional one; and in writing these notes, I do so in the sure knowledge that hundreds of the younger generation of architects have shared the same curious experience. On the outbreak of war we left our professional pursuit of architecture, where we had been accustomed to a very happy condition of affairs. Builders signed contracts and carried them out according to plan, and with little difficulty in respect to their labour. We got to know the men working on the job; we knew their foremen and the senior hands as well; there was no trouble, no difficulty. An occasional strike—a slight whisper in the breeze; spells of unemployment; a firm hand by the masters; and back to work by the men—a little sullen, but back to work. We didn't think enough, perhaps, or we thought these little grumbles were inevitable in every walk of life.

Then came the war. Hundreds of us joined the Forces in every kind of capacity, and many of us served as privates, N.C.O.'s, and officers, and during that service heard many things which we should never have heard otherwise. In the ranks, in a squad, in a barrack dormitory with a bricklayer or a plumber among its occupants, opportunities arose for learning something of the conditions under which British workmen labour that probably would have been impossible without precisely such opportunities. In an officers' mess, when a master builder happens to be a second lieutenant, secrets are divulged which throw a flood of light upon the conditions which govern his outlook upon the building trade. The result of these experiences has altered our outlook completely.

In the old days we were accustomed to the real master builder—the man who knew his trade, worked at it, loved it, and was satisfied with a reasonable profit. We were also accustomed to the real workman, who knew his job, loved it, and laid as many bricks as he could lay properly in a day; or floated, as the case may be, as many yards of plaster ceiling as he could float properly in the time at his disposal. Both sides were satisfied that each was an integral part of the business, and each depended on the other. The war unfortunately gave an impetus—it was inevitable, everyone will admit—to the replacement of the builder by the contractor on a large—perhaps too large—scale, a movement which had begun before the war.

There is a great difference between these two. The builder's object is to make a reasonable living for himself and his descendants by building generally good buildings. The building contractor too often makes money for his own and his descendants' benefit largely by exploiting—or shall I say financing?—the building trade.

The men, before the war, were quick to perceive the difference; and after the war they used it to set up the now so well-known ca'-canny attitude in self-defence. Each side thinks that the other is trying to get the better of it, and a trade which is centuries old is riven through and through with dissension and strife.

If ever there was a trade in which there should be no taking sides as between masters and men, it is surely the building trade; it does not depend, and never will, except to a comparative extent, in England, on machinery or modern inventions which the ignorant are apt to think will cut out labour and therefore get us out of all difficulties. It depends, and always will, on the goodwill of the man who lays the bricks, pours out the concrete, fixes the windows and doors, lays the floors, or makes the joints in the leaden pipes. Goodwill is the essence of the whole business and must, as far as I can see, always be so.

To revert to the war and its lessons: those of us who got to know the men who work with their hands—whether in the building trade or any other trade—know that they are capable of any heights when properly led. When we come back to civil life and see five years of continual strikes and troubles in the trade with which we are intimately concerned, we can only think that they are not being properly led now. There is and must be something wrong somewhere. Men of this spirit, who have proved their love of country, do not strike and fight and sulk with their employers at home for nothing. What is wrong? That is the question.

In the building trade the whole trouble now seems to be a wrong spirit between master and men, fostered on one side by the ca'-canny methods of the men and stupid restrictive rules of the trade unions, and on the other by the brutal system of employment by the hour which the employers insist on adopting—entirely alien to that of the old master builders.

If it rains, if it snows, if it freezes, the outside men are sent away from their work without pay for the rest of the day at the behest of a foreman's whistle. We have seen this happen over and over again, as we have all since the war seen men idling at their work. If the employers will sit down with the men to evolve a solution of this difficulty, and devise some system whereby a craftsman can secure a reasonable continuity of employment, I believe the men will, in spite of the trade unions, give up their ca'-canny methods and will even encourage other men to join their trade. That they would not do so immediately after the war, when the ex-Service scheme was attempted, was because of a deeply felt grievance of the unfairness of their position, and very properly they did not wish to encourage anyone to join a trade which has to work under such unfair conditions.

If architects, as outsiders who know something of this tragic game and see most of it, could help, I am sure there would be no dearth of volunteers willing to assist in arriving at some solution of the troubles which beset the building trade. But masters and men are now full of their own difficulties, and so ridden with unions and rules on both sides, that it seems there is no chance of outside help being invoked to try to find a way to peace.

Was the war in vain?

We, as architects—and, indeed, members of the general public—can, it seems, do no more than express a pious hope that the difficulties will be overcome and wish to the building trade a speedy solution of its problems.

* Reprinted, by permission, from the R.I.B.A. Journal.

Harley House: A Modern Block of Flats

WILLIAM and EDWARD HUNT, FF.R.I.B.A., FF.S.Arc., Architects

THIS building was completed at the end of last year. It contains twelve flats planned on six floors, and spare service-lift gear and box-rooms, fuel and other compartments on the lower ground floor. The façade to Marylebone Road is faced with Portland stone, and has some wrought- and cast-iron work; the roof is laid with stout, green Welsh slates, and copper hips and ridges; and the casements are of steel. The elevation to Macfarren Place is partly of Portland stone and hand-made red bricks; and the central areas are faced with glazed bricks. As the main entrance of the adjoining block of Harley House was planned to be used in conjunction with the new building the main façades had to be designed without entrances. Entrance to the rear flats is obtained through circular lobbies formed at angles joining the new building to the existing block of Harley House. Access to the trade entrances at the rear of the building is obtained by means of the trade roadway.

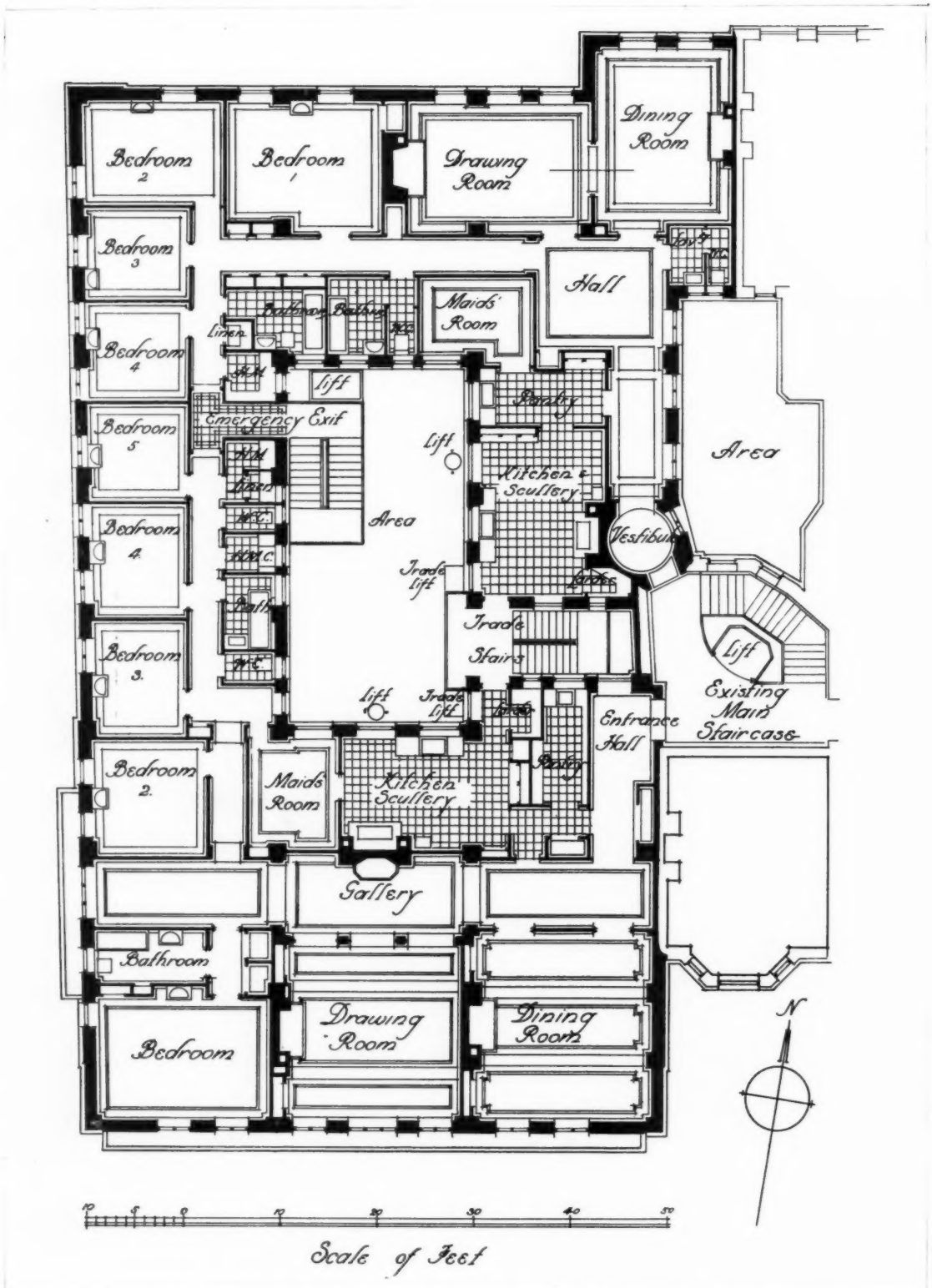
The accompanying typical plan shows two flats on each of the floors. The kitchen and service are planned adjacent to the flat entrances, the trade entrances, and the dining-room. In the front flats the No. 1 bedrooms have bathrooms *en suite*, with lobby and wardrobe compartments, and the galleries are lighted at the ends, thus forming a useful apartment for entertaining. The front drawing-rooms are arranged with hung glazed screens, so that the drawing-rooms can be opened to the gallery.

Maids' sitting-rooms are provided to each flat adjoining the kitchens. All the flats are well lighted in every part, and are simple and dignified in architectural character. The floors are sound-proofed by a simple device.

Electric passenger, furniture, luggage, and trade lifts are installed, the last being supplemented by hand lifts for small articles. Central heating is provided to all the apartments by accelerated low-pressure hot-water radiators, which are enclosed in the principal rooms; electric and gas points are provided as alternative means of heating as well as fuel stoves to the principal rooms, which have open fireplaces designed with marble and Delft faïence. Central hot water is also provided to all points, including the bedrooms, all of which have lavatory basins, as well as alternative provision for fuel, gas, and electric cooking, and new labour-saving and service arrangements. Various compartments are provided for cloaks, wardrobes, wine, brooms and brushes, spare china, glass, and other uses.

The central heating chamber has been contrived under the tradesmen's roadway at the rear of the premises, with descending flues, and the engineering plant has been

A DETAIL AT MAIN CORNICE LEVEL.



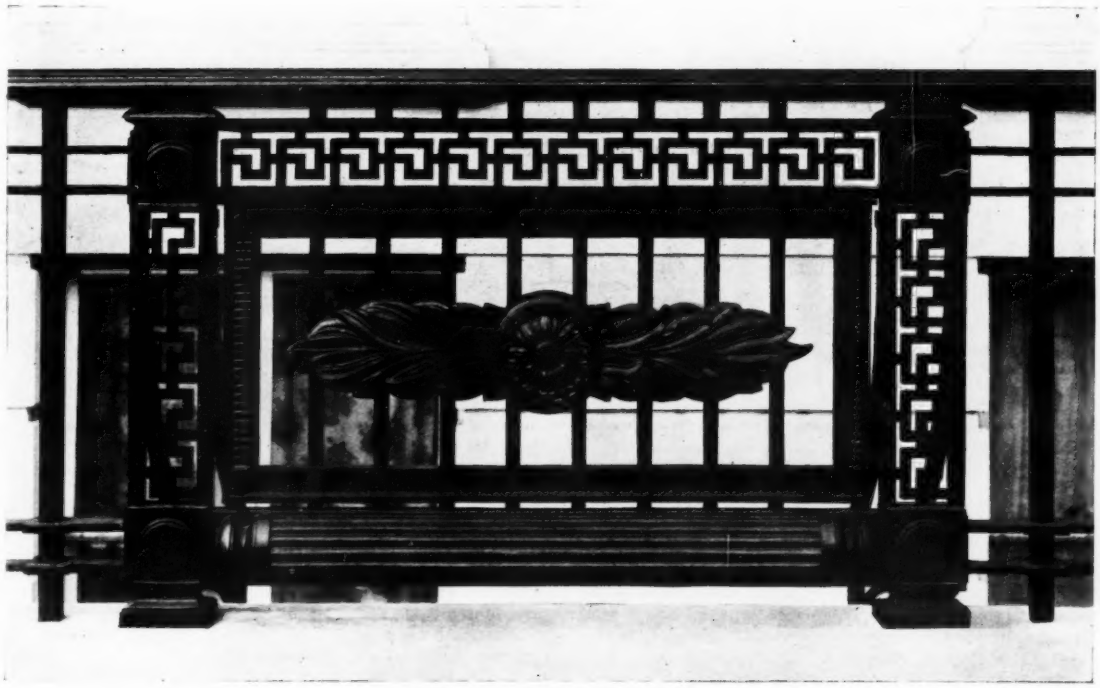
HARLEY HOUSE EXTENSION, MARYLEBONE ROAD, LONDON: PLAN OF A TYPICAL FLOOR.
WILLIAM AND EDWARD HUNT, FF.R.I.B.A., ARCHITECTS.

Modern Domestic Architecture. 110.—Harley House Extension, Marylebone Road, London

William and Edward Hunt, FF.R.I.B.A., Architects

This building contains twelve flats, planned on six floors. The façade illustrated above is faced with Portland stone. The roof is covered with green Welsh slates, and the hips and ridges are of copper. Steel casements are fitted.

A DETAIL OF THE FIRST-FLOOR BALCONY.



A DETAIL OF THE AREA RAILING.

HARLEY HOUSE EXTENSION, MARYLEBONE ROAD, LONDON. WILLIAM AND EDWARD HUNT, FF.R.I.B.A., ARCHITECTS.

admirably equipped, and is carried on in a most efficient and economical manner.

The whole of the building was carried out by the Law Land Building Department, Limited, under the direction of Mr. M. E. F. Crealock, who is also responsible for the maintenance and service upkeep of this and a large number of flats and office buildings in London. It is notable that all the flats were let before the building was finished, and at higher rentals than was at first anticipated.

The clerk of works was Mr. W. Barford.

The sub-contractors were as follows: C. J. Marston (stone masonry); John Lineham (carving); Roberts, Adlard & Co., Ltd., and the French Asphalte Co., Ltd. (roofing); Dorman, Long & Co., Ltd. (steelwork); Ames and Finnis (facing bricks); The Air Vent Heater Co., Ltd. (engineering plant for heating and hot water installation); Smith, Major and Stevens, Ltd. (lifts); H. C. Tanner (marble pavings); John Tanner and Son (stuc-work); Cashmore Art Workers, and Harold Cooper & Co. (wrought- and cast-iron work); Comyn Ching & Co., Ltd., and James Gibbons, Ltd. (bronze fittings and locks); Humphries Jackson and Ambler, Ltd. (metal casements); A. Bell & Co., Ltd. (faïence work to fireplaces); Samuel Elliott and Sons, Ltd. (oak floors and general joinery); B. Finch & Co., Ltd. (sanitary fittings); Haywards, Ltd. (external staircases).

A Fable

THE INTRODUCTION.

DURING the past five years the housing question appears to have been so thoroughly thrashed out by the experts that there can remain practically nothing more to be said on the subject. The final word will doubtless come from the committee which is to report on new materials and methods of construction for working-class houses. When this report is at length laid before authority, what "Avenue" will be left unexplored? If houses do not materialize even then, it would seem that the task of housing the poor is a hopeless one.

But here is a curious and noteworthy thing. It will be generally agreed that the bottom of the whole trouble is money, and not enough of it, and yet no one in authority ever suggests that there may be something wrong with our system of finance to account for this apparent shortage. And yet this must surely be so, for having the materials for houses, the potential labour to put those materials together, and the pressing need for its being done, it can only be owing to some flaw in the credit system that the money is not there to act as flux. Until it is there, there will never be enough working-class houses, and it will never be there under the existing system of bank or other interest-bearing loans.

Our system of credit finance is the stumbling block, though it alone of all the factors in housing is never questioned. Everybody and everything has been blamed in turn, from the politician to the weather, without satisfactory result.

The remedy is a simple one. If the nation really wants its workpeople properly housed it can give the credit necessary for the work to be done without having recourse to expensive loans which kill the good work from the start.

We have land, materials, labour (actual and potential) waiting to be put in use, and we have the enabling credit, too, if we look in the *right* place for it.

THE FABLE.

The British Empire occupies a very large portion of the habitable earth, and it probably controls the waterways between its various parts.

It contains within itself enormous wealth in fertile lands, minerals, and industrious people; and it possesses potentialities that would seem to be inexhaustible.

It has tools and machinery of every sort for the rapid production of the things necessary to civilized life, for the giving out of power and heat, and for multiplying the labour of the individual a thousandfold.

Sjvmmnu (a visitor from another planet, who was inquiring into conditions on the Earth) noting these things, and comparing the opportunities of the people of this Empire with those of the Earth's few remaining primitive peoples, was astonished to learn that the former find a difficulty, almost an impossibility, in getting and putting together the materials to form even the smallest of houses for themselves.

He quickly dismissed from his mind a hastily-formed conclusion that the people must indeed be lazy, for one glance at the frantic rush and worry of the large towns convinced him that they are far otherwise. So he continued this investigation in order to solve this extraordinary puzzle.

"All the material and acquired advantages and yet no houses!" said he. "There must be a mistake somewhere; a sort of brake that should be eased; a hole in the pot."

On further inquiry he discovered that the apparent busyness of the people was set and kept in motion, or checked, by a wonderful system of finance, of credit, and interest, of money breeding money. He said: "Here, surely, is the grease wherewith to ease the brake, the material with which to stop the leak!"

Eagerly he pointed out to the rulers that here was a means to get all the houses and other things that the people required. "You have unlimited resources," he said, "and all you need in order to get what you want is money; then why not manufacture the money?" But they told him of the evils of inflation, and bemused him with theories of economics, so that at last he turned sadly away and journeyed back to his own planet.

* * * * *

When he arrived home Sjvmmnu reported thus to his own people:

"I found on Earth a people which controlled a great part of that planet.

"They had at their command everything they might require for their comfort and bodily wellbeing. They were intelligent and industrious, most of them working always for their life's sake at least a third part of their day—though their machines, if rightly used, should make it unnecessary for them to do so for more than a half of that time.

"They had a wonderful and convenient invention called money, which, as I understand it, consisted of small metal tokens of various values in relation to gold, which they used in everyday barter. They had also a system of creating money values on paper, which was called credit, meaning the potentialities of their people and country.

"All these things they had and yet, by reason of some force which I never rightly understood, but suspect, they could not get together enough stuff to build houses for their poorer workpeople; a thing that caused much unhappiness, discontent, and sickness.

"I inquired diligently why this was so, but could get no satisfactory reply; some said the workpeople were lazy, others that there was not enough money, but most of them did not seem to care one way or the other.

"Now I know from my own observation that those peoples are not idle, and I think the trouble lies with the misuse they make of their credit. They allow this commodity to be controlled by small groups of people, it being sold by them to individuals—who wish to use it in paying for work to be done—at a profit, but in addition it must always be given back again whole within a limited time. Now this is curious, because these people, by their work and potentialities, really create the credit themselves, but the groups take the profit.

"I asked the rulers why *they* did not issue the money and

credits—which it seems to me belonged to all the workpeople through the work of their brains and hands—instead of asking the groups for it, and so save paying those large profits and make it easy to build the houses? But they said it would 'inflate' the price of all goods. I told them that it would not be impossible to control these prices, for such a system had been practised very successfully during a great war which they fought quite recently; but they did not reply.

"I observed that the credits which were issued by the groups were used in paying the cost of wages to the workpeople, but that the things these people made were always to be sold for much more than they cost in order to pay the profit to the groups. In this way it is impossible for those workpeople as a whole ever to buy the things they make.

"Another curious thing that I noticed was that it was necessary always to keep some workpeople out of employment, for if all were at work their wages would grow greater, and then the profit to the groups could not be paid. And how can these people pay for their houses if they earn no money?

"I think that if the rulers were to take care of the credit and issue it—without the profit so necessary to a group—to its workpeople in order that they might buy houses for themselves, the builders would soon provide them with what they want, for it is not in the nature of the Earth folk to leave good gold waiting to be got.

"This credit would soon be repaid by the dwellers in the houses, for it would ease them of half the burden by reason of their not having to pay the profit to a group. The rulers need have no fear that the credit would be lost, for a house would be there for them to take if the dweller did not pay back the cost of it.

"Unless these peoples are shown these things by their rulers, I fear they will continue to go houseless and discontented."

* * * * *

THE MORAL.

The wise man gathers the fruit from the bush, rather than beat around it.

ARTHUR WELFORD.

Modern Foundations

Dr. OSCAR FABER at the R.I.B.A.

At a meeting of the R.I.B.A., held on Monday evening of last week, Dr. Oscar Faber, O.B.E., D.Sc., M.Inst.C.E., read a paper upon the above subject. Dealing with "Theory" in the first part of his paper, the second part of the paper was devoted to "Practice."

The design and construction of foundations (said Dr, Faber) has been subject to gradual growth and development as fresh problems presented themselves with the taller and heavier structures which are now demanded, and also as a result of comparatively modern materials such as steel and reinforced concrete.

The author in his practice has been much impressed with the virtues of ferro-concrete rafts in many situations for solving foundation problems. As ferro-concrete itself is for practical purposes only from twenty to thirty years old, such construction may legitimately be considered to be modern.

Among the principal advantages of concrete rafts as foundations may be included the following:—

1. The pressure is distributed over the maximum possible area of soil, and therefore the pressure per square foot is reduced to a minimum.

2. Any tendency to unequal settlement is minimized, as a raft properly designed has a certain power of bridging over soft places and applying the loads to those parts best able to receive them.

3. The raft also forms a tie preventing the lateral spreading of foundations which is sometimes important.

4. In the case of buildings with deep basements, where the lower floor is frequently far below water level, some sort of raft construction is necessary to receive the upward water-pressure and prevent it from flooding the basements. In these cases the raft and the retaining walls form together a box which, by means of asphalt or other means, is rendered watertight.

Reviewing these points in detail, it frequently happens nowadays that a soil which would be quite insufficient with the normal pressures which isolated foundations would produce on the soil can be founded quite safely under a well-designed raft, and so avoid the necessity for sinking to great depths to secure a foundation of sufficient carrying capacity. The saving will, of course, depend on the depth at which this better foundation is found, and is, of course, enhanced when special difficulties such as water and perhaps the necessity of underpinning surrounding buildings are entailed in this process of digging to great depths. It frequently happens that a concrete raft can also be used as a floor in the building, and so increased economy is obtained. It sometimes requires a good deal of courage to found on soils which in the ordinary way would be considered quite dangerous, and the the author's experience is so favourable with these concrete rafts when properly designed as to give him a great deal of confidence.

Perhaps one of the most interesting applications of rafts of this kind is to the large and important buildings being erected in Shanghai. The soil here consists of a sandy clay brought down by the Yangtze River quite recently, geologically speaking, and contains so much water still as to be properly described as soft mud. The top 6 ft. has dried out a little more than below. Boreholes have been sunk to a depth of over 400 ft., but instead of coming across more solid strata the material remains soft mud for the whole of this depth. The amazing thing is that on this soil magnificent large modern buildings, equal in size and magnificence to anything we are erecting in England, are being built. The construction in every case takes the form of a reinforced concrete raft spreading the load over the whole area of the site and somewhat beyond it. This raft takes a certain proportion of the weight of the building, and the rest is carried by piles driven into the ground before the raft is built. These piles do not rest on anything more solid, but add considerably to the resistance in virtue of the additional skin friction between them and the mud, or, looking at it from another point of view, they transfer part of the pressure from near the surface where the carrying capacity of the soil is low to a lower level where the soil is quite as soft, but has a higher carrying capacity by virtue of its depth.

I would like to refer to one or two special examples of small rafts which, in spite of their being small, have special points of interest. One of these is represented by the rafts for the laundry and power-house at Marlborough College, for which Messrs. W. G. and H. A. Newton were architects.

This is founded on very soft, low-lying soil, and it was desired to keep the ground floor 18 in. above the general level of the ground owing to the risk of floods. A raft foundation was used, the portion near the walls being about 9 in. thick, and the top level with ground level. The portion between the walls is raised up above the ground so as to form the ground floor and actually rests on hard core rolled on to the mud to receive it. In this way the

raft also forms the ground floor, and so makes a considerable economy, and deep foundations below water-logged ground were entirely avoided. There has been no settlement, in spite of the fact that heavy engines supplying both the college and the town with electric light are founded on the raft and produce considerable vibration.

A specially interesting raft was used in the Harrow Music School. This structure, which was some fifty years old, was built on the side of a hill at Harrow on yellow clay, which in Harrow is particularly treacherous. The building was originally built on brick tiers averaging 14 ft. to 16 ft. below ground floor, and spread on concrete piers averaging perhaps 5 ft. square. At the date when I was interested in it, a year or two ago, settlements in the building were so pronounced as to render it dangerous, and the settlements were proceeding. Some repair work had been done a few years previously, but had not stopped the settlement. Calculations of the bearing pressure under the piers showed that these pressures, though only amounting to about 1⅔ tons per square foot, were more than the clay would resist without settlement, in spite of the depth of the piers. Underpinning would have been a very hazardous and expensive operation, and I recommended the construction of a concrete raft only 8 in. thick to be constructed as a basement floor and chased into the existing piers so that no further settlement could take place without taking the raft with it. This raft had to be constructed at various levels owing to the slope of the ground, and was an inexpensive operation, and I am told that no further settlement has taken place.

The effect of the raft was to reduce the pressure down to only 1,100 lb. per square foot, which practically any soil will resist without settlement.

Leaving rafts now, I would like to say a word in connection with concrete piles. Up till quite recently piles for carrying buildings were practically always of timber. This material has all sorts of advantages, but unfortunately one very serious drawback, viz., that even under favourable circumstances it cannot be relied on for more than 100 years, and where the timber is exposed to both air and water this period may be reduced to twenty years or even less.

It therefore has serious disadvantages in modern building construction, and though I understand timber piles were recently used in a very large and important building in London I cannot imagine that this will be the practice of the future.

In the case of concrete piles, we have an excellent application of reinforced concrete where it probably has no equal. One of its objections until quite recently was the length of time which it takes to harden sufficiently to stand driving. This disadvantage has recently been practically obviated by the great advances made in the manufacture of cement. Not only has there been a gradual but marked improvement in ordinary cement over the last twenty years, but remarkable advances in the last year or so are still more noteworthy.

While on the subject of concrete piles it is perhaps interesting to mention that there are in existence about ten formulæ for determining the safe carrying capacity of a pile from the weight of the monkey, its drop, and the final set per blow. These formulæ all give greatly differing results and I have known cases where these results have differed as much as from 20 tons to 140 tons. It is clear they are all quite unreliable, and, indeed, they all fail to take into account some of the important factors on which the carrying capacity of the pile depends; one of these, perhaps the most important one, is the "taking up," as it is called, when the pile is allowed to rest after driving.

The Menin Gate in Ypres for which Sir Reginald Blomfield is the architect has foundations consisting of roughly 25 ft. of quicksand with blue clay below. The foundation consists of about 500 ferro-concrete piles 40 ft. long extending through the quicksand and roughly 15 ft. into blue clay. A 3-ton monkey dropped 3 ft. produces on these piles a set of somewhere between ¼ to ⅜ in. per blow.

An interesting test was made on some of these piles by leaving them for a month or so and then applying the same blows to a pile as had produced ⅜ in. set per blow during driving. The effect of twenty blows on the pile was nil, and the pile absolutely refused to drive after a period of rest. This taking up depends very much on the nature of the soil and is accounted for as follows :—

When the pile is first driven the soil immediately surrounding it has its cohesion shattered by the vibration of driving, and therefore driving proceeds comparatively easily. After a period of rest the soil is pressed against the pile owing to the hydrostatic pressure existing in the soil, and this cohesion is gradually built up again. In other words, the pile sticks to the clay or surrounding earth and this cohesion has to be broken down before further movement of the pile will take place. The whole of this cohesion is available for supporting the pile, and is a very large element of the total resistance. This additional cohesion or "take-up" is greatest for blue clay and least for dry sand, and therefore any pile formula which fails to take into account the nature of the material through which the pile is driving can obviously only be misleading.

Discussion.

Mr. H. D. Searles-Wood, F.R.I.B.A., moving a vote of thanks to Dr. Faber, said that his subject was one in which all architects were deeply interested, and Dr. Faber had treated it in a way which all of them, even those not versed in mathematics, could understand.

Mr. E. Fiander Etchells, Hon. A.R.I.B.A., seconded the vote, and said that Dr. Faber's paper dealt in masterly style with a very complicated subject.

The problem the lecturer had discussed was one of the utmost difficulty, and would probably never be solved to the satisfaction of everyone. With regard to Rankin, he thought perhaps they could not blame Rankin in connection with his experiments in clay, as he had to use Scotch clay, which was absolutely dissimilar from London blue clay. The paper generally, however, certainly removed many problems from the realm of opinion to the realm of fact. The formula for foundations included extreme cases—there was no general rule—it therefore added austere beauty to the method. Surveyors, when speaking of hydrostatic pressure, usually said they could have a pressure of four tons if they went down deep enough, otherwise they must be content with two tons or less.

Mr. Ewart S. Andrews said he had been working on similar grounds to Dr. Faber, and would like to draw attention to the fact of his high academic distinctions. They could not, however, fail to see running through his paper evidence of vast practical experience, and it should encourage the younger men to pursue their theoretical studies. The lecturer could not have chosen a more important subject for his address to the Institute; it was a subject which had been somewhat neglected by engineers. There was one point he would like to mention, and that was, it seemed to him that the pressure you could safely put on a given foundation depended on the size of the foundations.

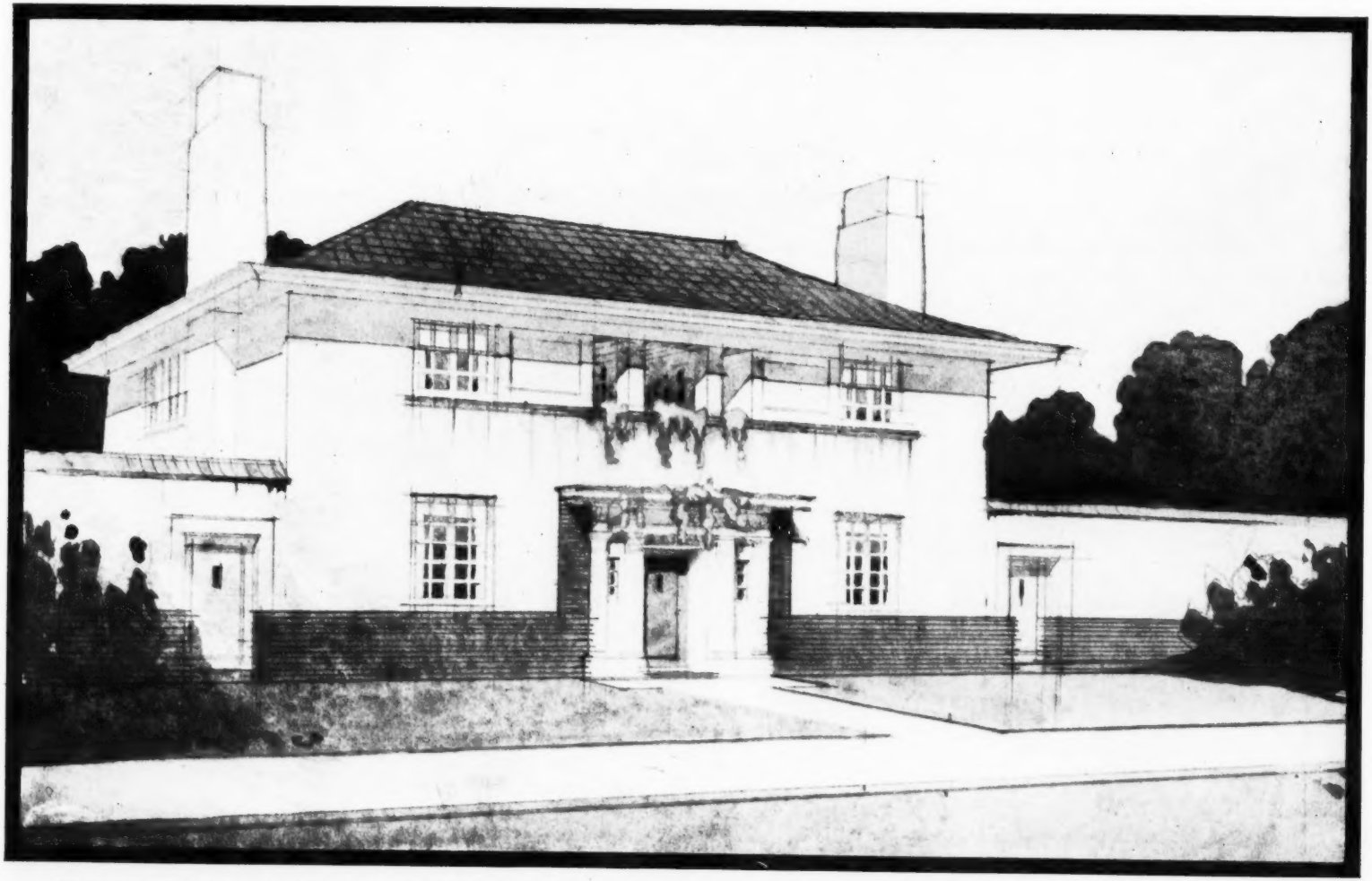
Mr. Gower Pimm said the time had now come when theory and practice should be brought more into harmony. The best definition of theory, which he had heard from Mr. Etchells, was that theory is "meditation upon practice." The lecturer had touched upon the relationship of the architect and the engineer, and he considered the time was not far distant when their relationship would be one of more dignity. The lead had been given by the Government, and engineers felt strongly about it.

Mr. H. Kempton Dyson and Mr. P. J. Waldram also spoke.

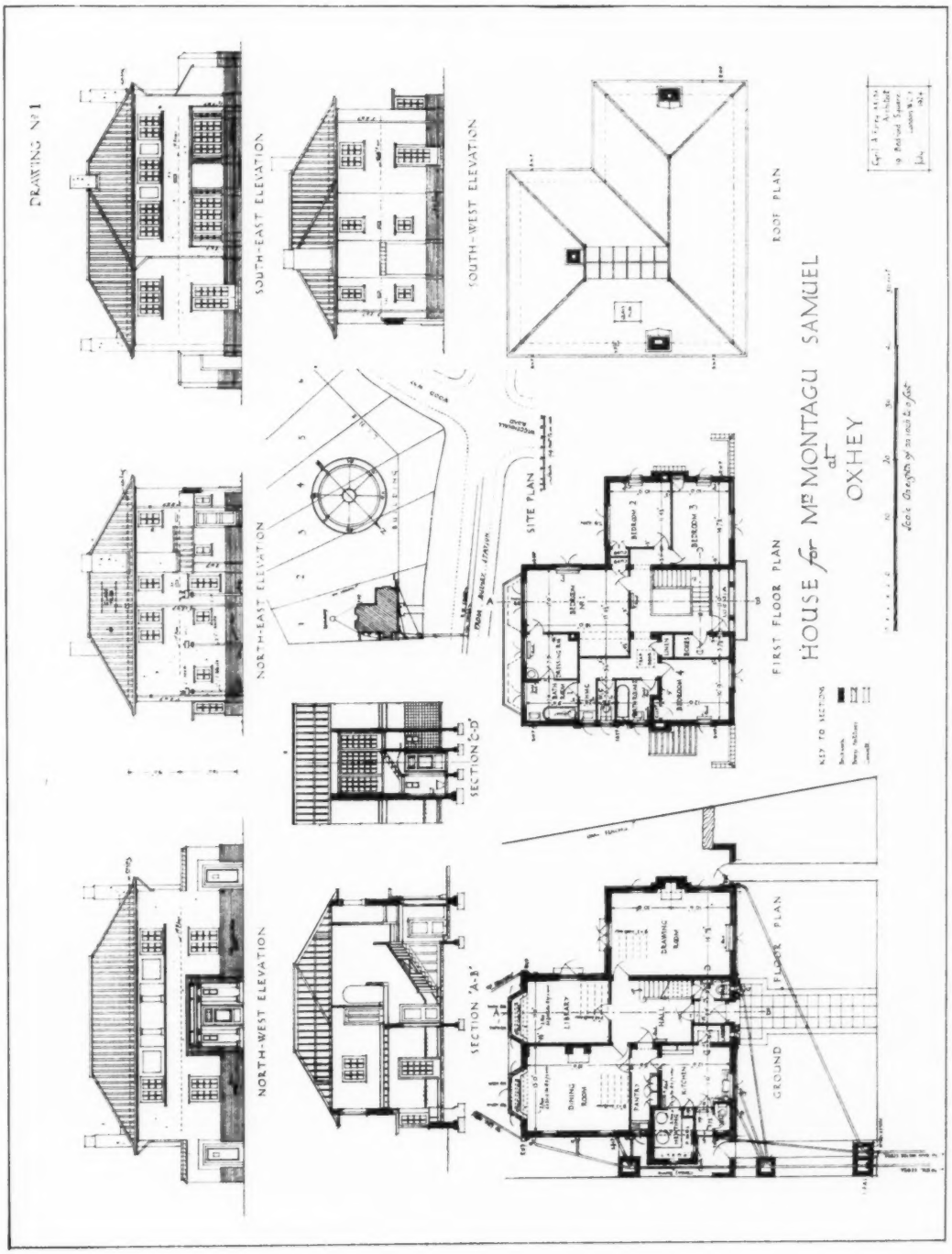
Dr. Faber, responding, said that when we spent so much money on buildings it was really ridiculous how little trouble was taken to test the ground for the foundations. A hole was dug, and the foreman struck a bar into the earth, and pronounced it all right, or not all right, no heed being paid to what might lie underneath, although there might be a bed of floating mud.

Modern Domestic Architecture. III.—A Proposed House at Oxhey

Cyril A. Farey, A.R.I.B.A., Architect



This house provides the following accommodation: On the ground floor, entrance hall, drawing-room, dining-room, library, kitchen, and pantry; and on the first floor, four bedrooms, dressing-room, bath-room, etc. The walls are of hollow brick rough-cast above the level of the plinth, with dressings in Portland cement, smooth finished. (*See also pages* 193, 194, and 195.)

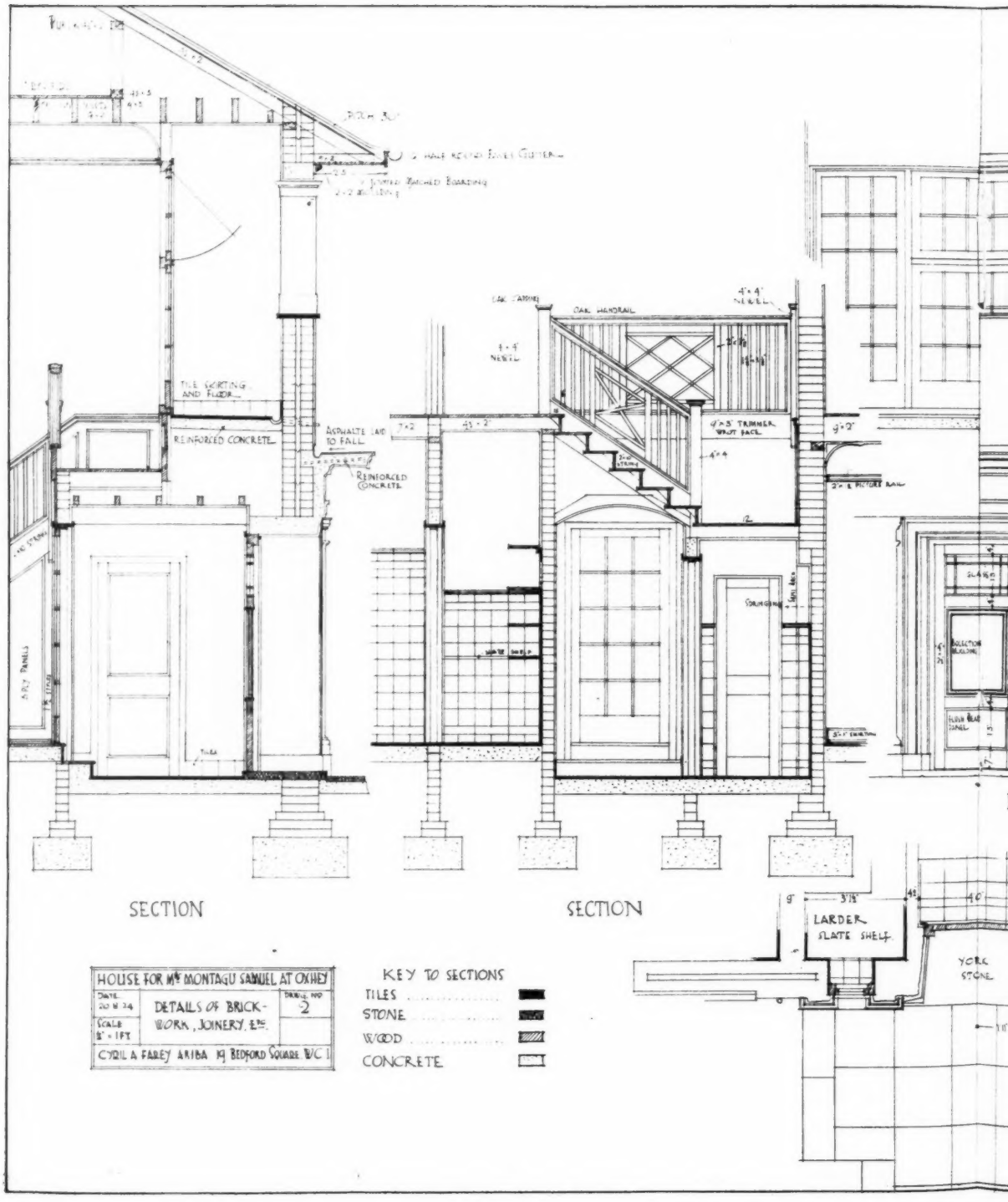


A PROPOSED HOUSE AT OXHEY CYRIL A. FAREY, A.R.I.B.A. ARCHITECT

(*See also pages* 191, 194, and 195.)

Architects' Working Drawings. 93

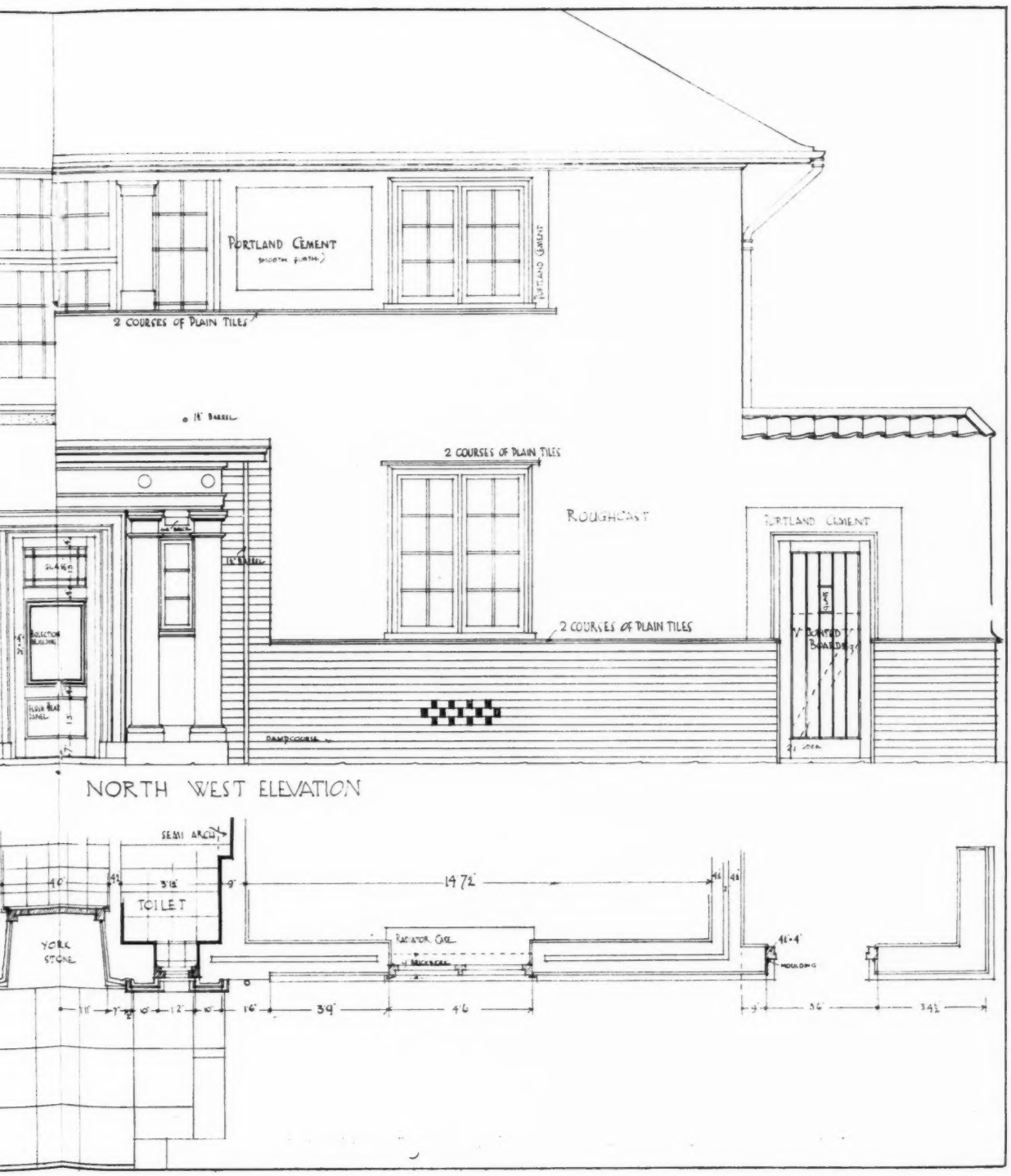
Cyril A. Farey, A.R.



A perspective view and plans of this house wi

s. 93.—A Proposed House at Oxhey

rey, A.R.I.B.A., Architect



of this house will be found on pages 191 and 193.

Little Things that Matter—44

Roofs and Roof Trusses

By WILLIAM HARVEY

THE discomfort of a leaky roof is not a matter of recent discovery. Nearly three thousand years ago King Solomon wrote a proverb about its effects, which he, or his official scribe, considered worthy of repetition. It figures more than once in dispraise of a contentious woman. Under ideal conditions buildings might be made strong and sound enough to meet all emergencies, but actually, considerations of cost intervene between intention and execution, and roofs in modern England are often built so that they can withstand normal conditions, but are liable to fail under stress of exceptional weather just when their protection is most needed. The failure may take place either in the roof covering or the roof support. Sometimes the whole roof collapses under the weight of snow followed by the pressure of a gale; more often the damage is partial and confined to the displacement of some part of the roof's surface.

Lifting and stripping are frequent causes of leakage in tiled and slated roofs, particularly those which oversail the top of the gable and expose an edge to the force of the storm. No tile or slate of ordinary dimensions is heavy enough to lie still by virtue of its own weight when a strong current of air has access to its underside, and a severe gale is capable of turning over a 15 in. tile and smashing it to pieces if once it can penetrate below its edge. The time-honoured custom of bedding and pointing the tiles in mortar at the verge makes a finish that is just strong enough to endure moderate weather conditions and fail under a severe test. In the ordinary course a tiler does not take the trouble to bed his tiles at the verge carefully enough to make them adhere to the tile undercloak and to the brickwork of the wall top, and the inevitable slight sagging of battens and rafters opens the joints. With the use of a rich Portland cement mortar and proper precautions as to damping the surfaces during construction, there is nowadays no reason why the tile verge should not set hard and form part of the gable wall. Where it is desired that this should be the case it must be so specified, for the result will not be obtained by laying the tiles on their battens in the first place, and then pointing the joints in the usual superficial way. (See Figs. 1 and 2.)

Manufacturers sometimes provide special-made half tiles for use at verges, or failing these, the tiler cuts down ordinary full-sized tiles for the purpose. Tiles of greater width than normal would be preferable as they would possess more weight and stability at a vulnerable part of the roof. With the lighter makes of thin tiling now procurable it would be possible to design verge tiles with a thickened edge that would improve both the appearance and the weather-resisting properties of the roof.

Many modern tile makers endeavour, and rightly, to provide a building unit that will hang in position without requiring either nailing or pegging, and attention to this matter of providing extra weight where it is required would mean all the difference between success and failure. A visit to the Etruscan room at the British Museum would show to what lengths the ancients carried the combination of common-sense and artistry in the design and manufacture of special verge tiles for the pediments or gable ends of their buildings. The tradition would be well worth investigation on the grounds of practical efficiency apart from all question of antiquarian interest. (See Fig. 3.)

The hipped roof provided with a heavy half-round capping to the hip is possibly less liable to stripping, for the tiles lie somewhat in the lee of the windward hip. Such roofs, however, often leak beside a hip standing at right angles to the direction of the wind. The hip obstructs the flow of water as it drives horizontally along the roof, and causes an accumulation capable of penetrating any weak place in the tiling.

Where slates are used as roof covering, nailing or pegging is unavoidable, though nails or pegs are themselves perishable things and diminish the strength of the battens or boarding into which they are driven. Examination of large, old slates removed from some roof that has failed to keep out the water will show that enlargement of the holes or breakage of the slate around them has nearly always been a contributory cause of the failure. A hole spiked with the slater's axe in the ordinary way drives a cone-shaped fragment out of the slate, which leaves only a knife edge of material to bear upon the nail or peg.

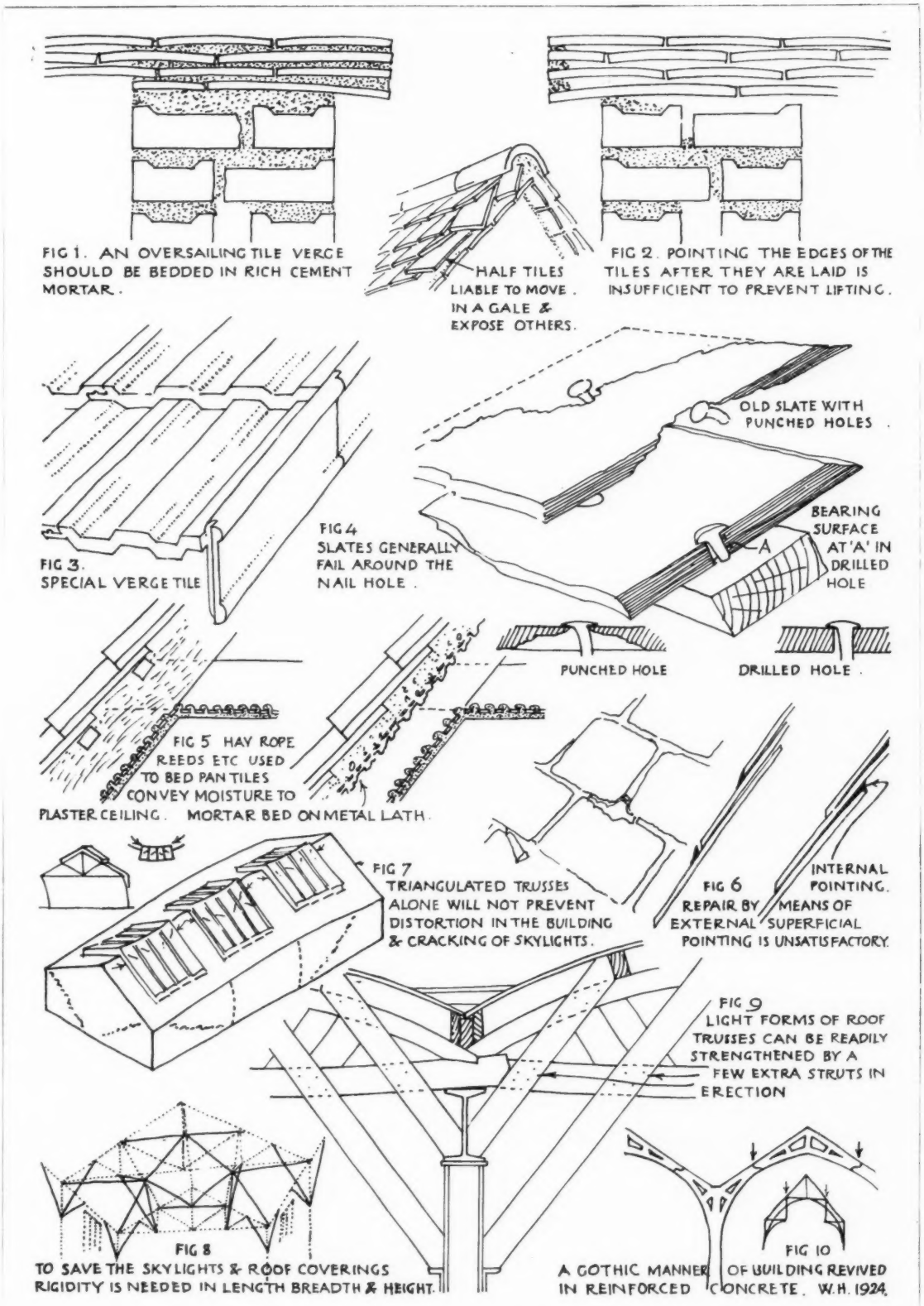
Thick or heavy slates on a steep roof put a certain amount of strain upon their fastenings, but it is now possible to have the holes bored by an electric drill, which leaves a fair bearing area of slate, and does not damage the surrounding particles. It cannot be known just how many years this trifling alteration will add to the endurance of the roof covering, but it is obviously likely to have a very marked influence both upon strength and efficiency, since some substance is presented for the nail head to grip when the slate is subjected to lifting or movement by the wind. (See Fig. 4.)

Driving rain and snow almost invariably succeed in penetrating through a roof covering of tiles or slates for the reason that a violent wind is capable of forcing the flakes of snow or drops of water up and over the hanging ends at the same time that it tends to lift and rattle the butts of the slates or tiles. Underlinings of roofing felt, of hay, or reeds are used in an attempt to absorb any slight leakage arising from this cause and to preserve warmth within the building. In old roofs, where hay has been introduced for the purpose, the absorption is sometimes so active as to gather moisture through the joints and transfer it to the interior of the building by capillary attraction. Where the rafters are lathed and plastered on their undersides the ceiling is kept continually damp, and falls away periodically after having passed through a longer or shorter stage of crumbling and disintegration. Where old-time effects in pan or Roman tiles are desired the southern European practice of bedding them solidly in cement might be adopted in the first instance. Wire mesh or expanded metal would be used as a foundation, and the hay or reeds excluded. (See Fig. 5.)

Tiled or slated roofs are frequently repaired by the application of superficial pointing to the joints or cracks on the outside of the roof. The cement, putty, or patent-mending composition holds for awhile, but is eventually thrown out by slight movements in the structure, such as expansion and contraction under extremes of temperature or vibration in a gale. With the efficient adhesive compounds now obtainable it would be possible to putty or cement the joints in a tiled or slated roof either during construction or from within the loft before ceilings were plastered. Pointing inserted in this way would be very much more difficult to dislodge and would stand a very much greater chance of adhering to the surfaces of the adjoining tiles, and so uniting them.

If cost has to be kept down it would be possible to point at least the eaves courses that will become inaccessible after the ceilings are in, and leave the rest of the roof to be treated from the inside of the loft as and when it requires it. (See Fig. 6.)

A really impervious outer covering would do away with the need for felt underlinings except for the purpose of



LITTLE THINGS THAT MATTER: DIAGRAMS. DRAWN BY WILLIAM HARVEY.

insulation against heat and cold, which is, no doubt, the purpose for which they are designed.

Flat roofs suffer from the danger of leakage during violent storms, not because rain is liable to be blown into their seams or cracks, but because water may accumulate to a sufficient depth to overflow into them or provide a source from which capillary attraction will conduct moisture into the interior of the building. Structural movements caused by the subsidence of walls or the deflection of beams have a more damaging effect upon the water-resisting quality of a flat roof than upon one that has a steep pitch. Lead, zinc, and copper are all liable to wrinkle slightly and to hold water in pools in the lower parts of the roof. Asphalt and granolithic cement surfaces absolutely require a stable backing, and even in modern work with a solid concrete base trouble is not always avoided. Deflection and cracking along the lines of the supporting girders are still common evils that must be guarded against by the use of suitable mesh reinforcement and of concrete of high quality and uniform consistency.

The practice of backing up a good flat roof of reinforced concrete with a filling of cheap coke breeze begrudgingly gauged with cement is a frequent cause of failure in a flat roof. Gases in the breeze expand the upper layer of concrete, and either free it from the more solid material on which it has been deposited or force it to split in all directions, besides tearing apart the upper covering of asphalt or slabs. Damage to the roof covering by causes connected with the structure of the building is not confined to the use of coke breeze.

Light roof trusses which alter in shape under their load, or which tremble when subjected to wind pressure or the vibration of machinery, will occasion a great deal of discomfort and danger.

Owners of extensive buildings with large skylights in their roof slopes sometimes spend far more in glass repairs and in making good valuable apparatus damaged by rainwater than would have paid for adequate roofs and glazing in the beginning. There is perhaps no sphere of construction where scientific analysis and calculation has proceeded farther than in the design of light and inexpensive forms of roof truss, but here science, made easy by the slide-rule and by drawing-board methods of design, far outdistances poor commonsense. The truss is triangulated in a vertical plane, and is thinned down in proportion as the triangulation gives it strength, but in the majority of cases the purlins are not triangulated, nor are the rafters and boarding, with the result that the truss is free to alter its shape laterally, and promptly does so, taking an **S** curve on plan, and deflecting freely in height despite its triangulation once it has escaped out of the vertical. The deflection is augmented at the centres of the bays between truss and truss by the droop of the purlins, and the glass in the skylights actually receives compressive stress, and is shattered by successive gripping and impact as the bars vibrate on their sagging and non-rigid support (see Fig. 7).

Superior forms of putty, heavier and more expensive sheets of glass are simply thrown away in an attempt to provide a sound rain-excluding covering. Under these conditions thick sheets of glass fracture as certainly as thin ones, and the remedy is to make the structure rigid by systematic triangulation, so that the glass is never allowed to receive structural stresses or impact (see Fig. 8). Special putty or a patent glazing system would then have a reasonable chance of success. Ready-made roof trusses built to standard designs may be purchased as complete structural units, and they are often highly satisfactory; they are not, however, capable of making up deficiencies such as have been described in the design and arrangement of adjoining parts of the building. Their strength may be enormously increased by the introduction of additional stays during erection. The feet of a light truss are often deficient in stiffness, and may be strengthened by a bracket reaching some distance down the vertical support, and out along the tie-beam. It is seldom that headroom is needed so close to the support as to make this impracticable (see Fig. 9).

Triangulation by means of struts under purlins and of wind-braces beneath the roof surfaces was practised in Gothic times before ever it was realized that triangulation was a principle of structural mechanics. It is science run mad to bestow ingenuity exclusively on the truss as seen in elevation on the cross-section of the building, and then forget all about the need of structural continuity when seen in long section.

The reason why modern builders seem to think that triangulation begins and ends with the roof truss is not far to seek. All the up-to-date handbooks on construction give many examples of truss designs in elevation, without plans or cross-sections to remind their readers that a building has three dimensions, and may require rigid connection from end to end and top to bottom as well as from side to side.

All young students of architecture who are also students of construction carefully draw roof trusses on the cross-sections of their first designs for bungalows and villa residences, and only discover, with horror, at a later date, that the usual small house is built without roof trusses, but has purlins propped up from the ceiling joists, partitions, gables, chimneys, or any other convenient support.

This exploitation of the rule of thumb carries terrors to the scientific mind in that it is well nigh impossible to calculate the stresses or to find the page in the text-book where any example of such calculation is given. Actually it is sound sense to make use of all necessary constructional members on the principle that a direct primary support like a wall, pier, post, or prop is not only cheaper, but better than an indirect secondary support like a truss, which is only needed where a clear space has to be bridged, and where arches and beams are for any reason unsuited to the position and purpose. Money saved by the elimination of roof trusses can be well spent in thickening the partitions and thus increasing their heat and sound resistance as well as their strength, or in deepening the ceiling joists and avoiding cracks in the ceiling consequent upon their deflection.

A little light reinforcement in the walls at eaves level and across the house in the thickness of the partitions will do much more for a dwelling-house than elaborately-framed trusses in its roof. The reinforcement benefits the part while it unites the whole, whereas the truss only carries certain weights over a certain span.

The importance of a solid connection between roof truss and wall is exemplified in the concrete roof supports of the palaces of engineering and industry at Wembley, where the "truss" grows out of the support as a large cantilever bracket of arched form. These experiments in the design of suitable shapes for the development of the useful properties of reinforced concrete are important, not only in regard to the possible direction of the progress of architectural design in the near future, but as exceptional instances of buildings being considered, in section at all events, as single entities from foundation to apex. The perching of a small central truss in these buildings at Wembley upon the free ends of a pair of cantilever brackets is a modern version of the Gothic hammer-beam roof. The possession of structural strength in tension and compression is shared by reinforced concrete and English oak, and from one point of view similar structural design is permissible (see Fig. 10). The great value of homogeneity that may be given to a reinforced concrete structure is ignored, however, in applying this material to Gothic and ribby designs. The finest models are likely to be found among those domed Byzantine buildings of continuous shell type in which reinforcement and strongly adhesive cements were used in conjunction. In these buildings the roof truss disappears, or, rather, appears throughout, for all material forming the walls and piers is posed in relation to the roof, and the building, in length, breadth, and height, becomes in effect a single roof-bearing frame.

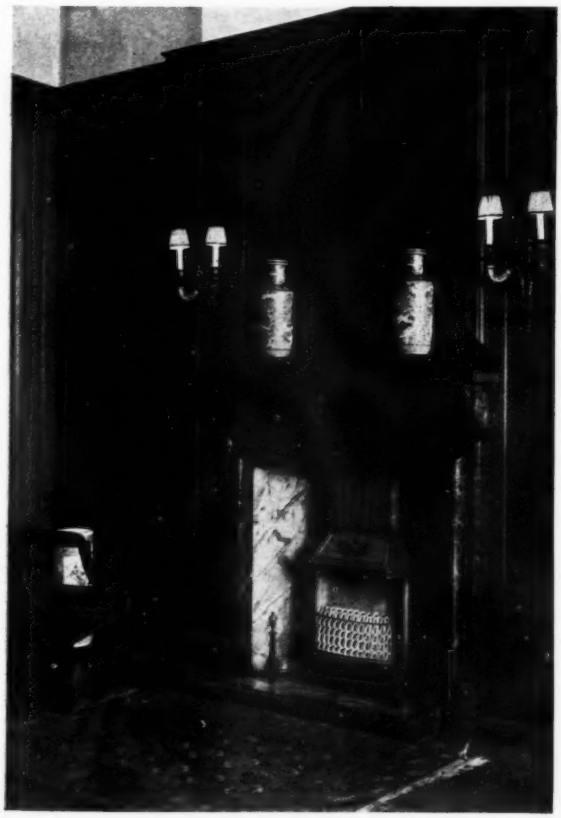
New Gas Showrooms in the City

F. CORNELIUS WHEELER, Architect

THE new showrooms for Messrs. John Wright & Co., at 21 Queen Victoria Street, London, have been designed primarily to enable gas grates to be shown amid favourable surroundings and under practical conditions. The spacious ground-floor area forms a reception-room. It is panelled well up the walls with rich Austrian oak, and the decoration throughout is in the style of the William and Mary period. In this room a small number—some half-dozen only—of the firm's latest gas-grates are shown in settings appropriate to themselves and to the style of the apartment. Mantels, back-panels, and hearths, worked with exquisite taste in handsome marbles from the Pyrenees, show how the modern gas-grate may be used to lend adornment to even so sumptuous and refined a scheme of interior decoration, with its magnificent cornice (an exact reproduction of the famous Grinling Gibbons cornice in Hampton Court Palace).

The lower floor, which is reached by descending the handsome oak staircase, is used for the display of gas-heated hot-water supply for domestic purposes, gas-steam radiators, gas-cookers, and a variety of additional types of their gas-grates.

Apropos of the new showrooms described above it may be noted that it has long been an article of faith with the company that the future of gas-stove progress—particularly as regards gas-grates—lies in a large measure with the architectural profession. Regularly, during many years past, they have directed special efforts towards interesting architects in the gas-grate in its bearing both upon economical heating and upon room ventilation. Their view has been—and continued experience only strengthens it—that eventually architects generally will come to specify gas-grates for new houses with the design and erection of which they are occupied. Only a very few years ago this prospect seemed still a far distant one; but to-day many architects up and down the country consistently advocate and specify gas-grates. In order that the general adoption of this practice among the profession may be hastened, the firm consider that one important method is to show gas-grates under practical conditions and amid favourable surroundings, and this consideration, as stated above, was prominent among others in their minds when laying out their premises.



ONE OF THE FIREPLACES.

A visit to these showrooms brings home to one the striking change that the past few years have witnessed in the position of the gas-grate, in its appeal alike to the æsthetic sense and the practical mind of the housewife.

The open fire has, of course, a peculiar appeal of its own, and for numbers of people will never lose its charm. Through its use, however, pictures, decorations, and curtains are quickly ruined; books become covered with a layer of grit and soot; the home-beautiful is not so very beautiful after the fire has been lighted for a few hours. The blazing fire of coals looks very cheerful in the pictures on the covers of magazines, and gives the right "atmosphere" to the Christmas stories which appear inside: in both picture and story the sooty particles and the ashes are not so manifest as in the actual room.

Nothing can exceed the comfort of the apartment warmed by a good gas-fire. All the grateful colour and warmth of the open-fire are here, without its attendant evils.

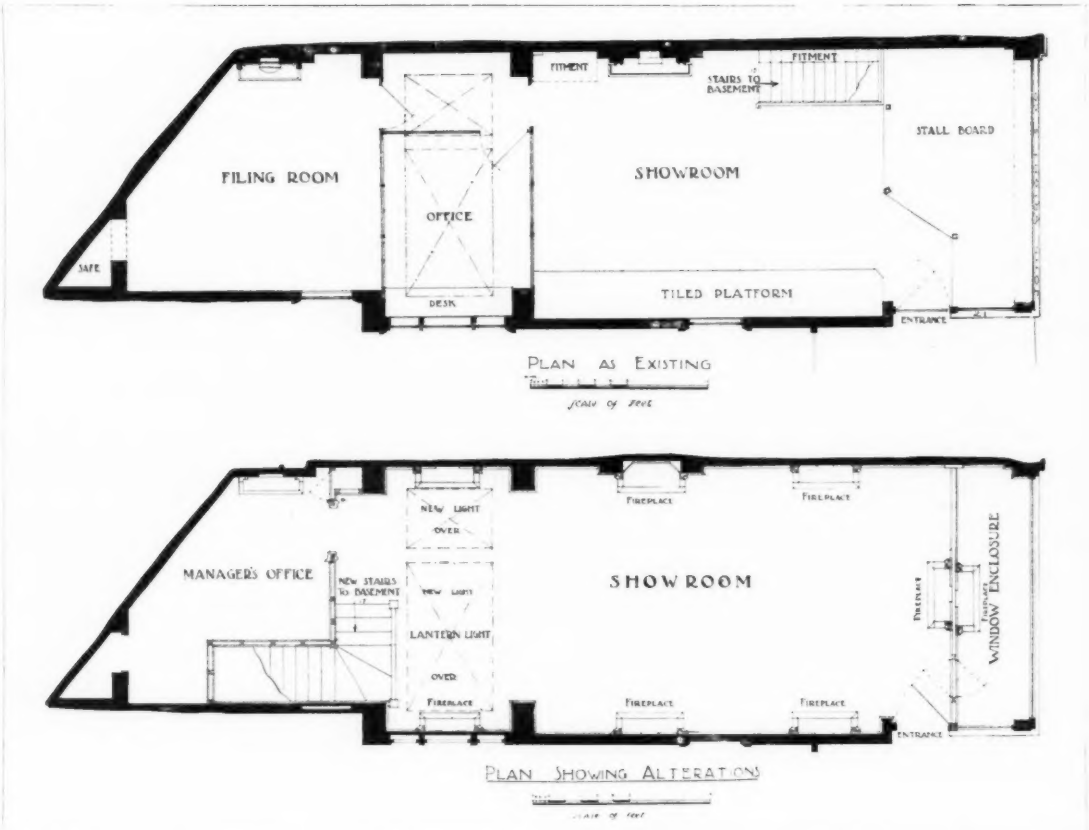
The gas-fire of the early days was a remarkably unsightly thing, and one had to have very weak principles or a woeful lack of taste before one could make up one's mind to buy. And the shop window made it no easier. For these gas-fires of hideous design were exhibited among zinc baths, wash-hand basins, S pipes, and pink tilings, and other abracadabra dear to the plumber's heart. All this is now changed, as these well-appointed showrooms abundantly prove.

On the practical side the great efforts directed towards achieving radiant and hygienic efficiency, which had occupied the laboratories of the radiation firms for many years, have been completely successful. An outstanding problem successfully solved was to ensure adequate ventilation when a gas-fire was in use. The outcome of the work was the production of the "Injector-Ventilator" fires which have stimulated enormously the use of gas for domestic heating. Briefly, these new gas-grates have two openings under the canopy leading to the flue. The lower, or "Injector," opening carries away the entire combustion products, and the upper, or "Ventilating," opening carries away a large volume of air drawn from the room. The ascending current through the lower outlet promotes the ventilating function in the outlet above; the result is that while pure radiant heat is distributed throughout the room, the air of the room is changed a sufficient number of times to ensure an agreeable and healthy atmosphere being maintained.

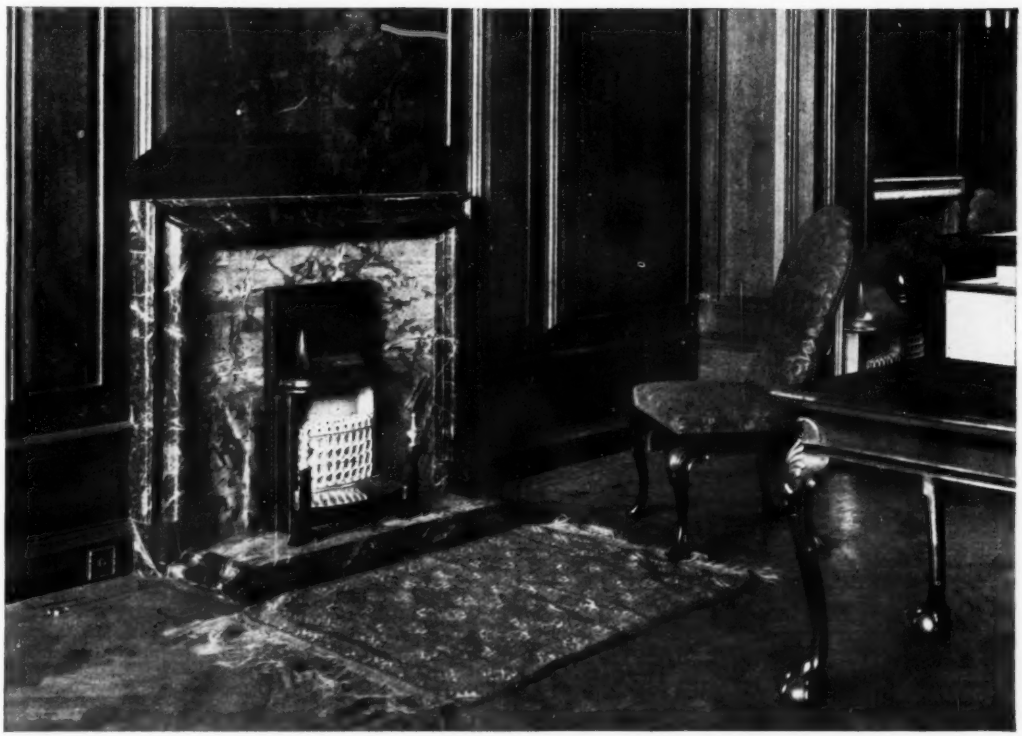
There is something unique about the premises. It is not a shop; it is not a showroom; it is as different as possible from either. It is a place pervaded with an atmosphere of quiet dignity and the decorative tone is good—restful and charming to the artistic eye, and at the same time convincing to the practical mind. It initiates a new idea in the adaptation of such premises to the fostering of the public education in the virtues of gas and gas-consuming apparatus.

It is safe to predict that no visitor, whether a member of the architectural profession or a private householder, will leave the premises without being convinced of the great future before these modern gas-grates.

THE GROUND-FLOOR RECEPTION ROOM.



THE NEW SHOWROOMS OF MESSRS. JOHN WRIGHT AND CO., LTD., QUEEN VICTORIA STREET, LONDON.
F. CORNELIUS WHEELER, ARCHITECT.



THE NEW SHOWROOMS OF MESSRS. JOHN WRIGHT AND CO., LTD., QUEEN VICTORIA STREET, LONDON.
F. CORNELIUS WHEELER, ARCHITECT

Contemporary Art

The Old Cambians.

The Old Cambians' Art Club provides a new and refreshing show at its fifth exhibition at the Passmore-Edwards South London Art Gallery, Peckham Road, S.E. Its *raison d'être* is explained in "The Preface Illustrated," a combination of magazine and catalogue of considerable charm apparently edited by A. R. Laird, himself. He shows "A Village Scene in Sweden," and "Old Time Transport," two original drawings conceived in a decorative way that possesses considerable charm. The same artist has also an original woodcut of a very simplified character which, like those by Percy Smith of "The Child Angel," show some amount of misunderstanding of the medium. No such fault can be found in those by John F. Greenwood, who is rapidly becoming one of the most prolific and significant of print-makers, or of "The Gazelle," by Frank C. Medworth, a very tender print. The former artist has three architectural etchings, of "Ypres Tower, Rye," "Starbottom," and "Hawkwick," and Sydney Lee a characteristic one of "Houses at Neuchâtel." Percy Smith shows in his three etchings that he has progressed out of recognition since he made "The Child Angel" and the two examples of his "Wuthering Heights" series are altogether admirable. W. P. Robins shows three, and Frank C. Medworth the same number, as also two nice drawings made at King's Lynn.

Good drawings of buildings are shown by James H. Milner, E. Mawdsley, and W. K. R. Chapman, but among the drawings one stands out astonishingly, the "Russian Rural Court," by Arthur King. A strange, haunting, realistic representation, the like of which is rarely seen. M. H. Strickland has an architectural subject at Dartford, and H. J. Stammers one at Bruges, which have qualities, and Randolph Schwabe exhibits one of his masterly outlines.

There are some sixty oil-paintings, which are not, on the whole, so good as the works in the other sections, but there are exceptions, and one is Herbert Whydale's "Romanies"; others are the good colour-work of "Ma Femme" and "Vue en Provence," of H. Weaver Hawkins; as decorative work Medworth's "Christ and the Money Changers" and "Répétition du Drame" are excellent, and so is Schwabe's "Mrs. Smith."

From all these names it will be seen how many of the younger stalwarts of the day have sufficient hold on South London to become "Old Cambians." I have not been able to mention nearly all who are quite well known at the Academy and other central shows. The whole idea is admirable, and I have no doubt that with such men and women as these there will always be a high percentage of really fine work to carry what is inevitably less distinguished of the less known or younger artists.

There is another rule, however, where names are of smaller account and the works the thing: the crafts. W. B. Dalton and Carlo Norway are known, and their delightful pottery figures are shown in cases here; there are numbers of nice pots of good shape and colour; good glaze and lustre; bottles, vases, jugs, and bowls, and there is an excellent decorative lion statuette in bronze by Allan G. Wyon called "The Challenge." There are cases of jewellery, illuminating and leather work, and there is a side-show of posters. Altogether a most encouraging and delightful exhibition, and one of important achievement and even greater promise.

"NEXT TRAIN PASSES."
FROM A WOOD ENGRAVING BY MARTIN F. HEINLIN.
(From the Old Cambians' Art Club Exhibition.)

The publication of the "Barbizon House Record for 1924" recalls two of the most significant picture shows of the year: the Brangwyn and the Daumier. It is satisfactory to learn that the sixty works of the former sold have been distributed very widely over the world, and in almost all cases have been purchased by collectors and galleries new to the artist's work. His "Venetian Wedding" forms the frontispiece to this issue of the "Record," and there are two other Venice scenes among the half-dozen illustrated, as well as the superb colour-piece called "Wine." Next, as far as numbers are concerned, is Sir D. Y. Cameron with four Scottish subjects. A charming quay scene is by Bertram Nicholls, and there is a Corot and a Cazin, all of which contain buildings. Two wonderful figure-subjects by J. S. Sargent, two by Daumier, and a tender oil-painting of a girl by Whistler go to make the "Record" a valuable possession for any art-lover. There are forty illustrations in all, with useful notes on each artist: the edition is limited to 500 copies, and is sold at a guinea at Barbizon House, 8 Henrietta Street, Cavendish Square, London, W.1.

KINETON PARKES.

"SOMEWHERE IN SOUTH LONDON." FROM A WOODCUT BY A R. LAIRD.

(From the Old Cambians' Art Club Exhibition.)

Exhibition of the Birmingham Art Circle and Easel Club

In the fifty-fifth exhibition of The Birmingham Art Circle and Easel Club at The Royal Birmingham Society of Artists' Galleries, New Street, there are a number of works—mostly portraits—which stand out from the mass. Not the least excellent of them are by James Swan, F.R.I.B.A., and Ernest Bewlay, two well-known Birmingham architects. Mr. Swan exhibits a water-colour of an "Old House, Dinan," and Mr. Bewlay has a number of bright water-colours, which are fresh and cleanly rendered. There are some fine portraits—quite a number by Merrett Hodges, whose "Yeomen of the Guard" is bold and forceful, yet carefully done. It could be used with splendid effect in a spacious architectural setting. The same artist's "Sunday, 1924," is perhaps a better picture, in which a "modern" feeling has been quietly infused. Mr. Hodges's portraits are always well done, but his love of lighting effects seems to distract him from the more vital expression of personal character. "Portrait of a Girl," by W. E. Wigley, is very fine, and "Reverie," by W. J. Wainwright, R.W.S., is an excellent sepia portrait of an old man, in which the deep background has a considerable dramatic value. The standard of the landscapes varies considerably. To be candid, there are a few which are hardly up to concert pitch, but, on the other hand, there are a number which possess outstanding merit. "Upper Slaughter," by Sidney Currie, has caught the elusive atmosphere of English summer landscape: the "solemn stillness," the dry clarity of the foliage—and these typical qualities are very finely expressed. In "Evening in the Black Country," Butler Bayliss has painted a scene of reeking pit-banks, with two ghostly figures, which is, alas, too true. Yet it is one of those pieces of ugliness which an artist can redeem. A portrait, "A Penny for Your Thoughts," by Miss Una Munns, a new member, is one of the best exhibits, and "Bridge over the Seine," by Cyril Lewisham, another new member, also ranks high. In concluding this review, I must remember the splendid bookbinding by Frank F. Garrett, in green, blue, and brown morocco, and vellum; and the beautiful jewellery by Annie Steel, in silver with crystal amethysts, tourmaline beads, moonstone, onyx, and agate. It is a delight to write of a craft which uses materials with such poetical names.

EDGAR LUCAS.

Correspondence

St. Paul's Cathedral

To the Editor of THE ARCHITECTS' JOURNAL.

SIR,—In connection with the recent celebration of the bi-centenary of Sir Christopher Wren, the R.I.B.A. published a book on Wren and his work (including St. Paul's Cathedral), written by contributors each intimately acquainted with the aspect with which he dealt.

As the profits of the sale are devoted to the St. Paul's Preservation Fund, possibly many people might consider that a pleasant way to help the fund would be to obtain this attractive and well-illustrated record, of which the title is "Sir Christopher Wren Memorial Volume: 1723–1923." The sale of only one thousand copies of the five guineas edition would enable the R.I.B.A. to hand over a sum of 2,000 guineas, to be acknowledged in "The Times" list in the name of each purchaser as a subscriber of two guineas.

The price is £5 5s., and orders, enclosing remittance, should be sent to the librarian, R.I.B.A., 9 Conduit Street, London, W.1.

J. ALFRED GOTCH, president of the R.I.B.A.

Vagaries of Town Planning

To the Editor of THE ARCHITECTS' JOURNAL.

SIR,—I am grateful to Mr. W. Harding Thompson for his letter in your issue of the 14th calling attention to my articles on the above subject, but I put it to him that his method is not a fair one. That it is unfair to me is of no consequence, but it is unfair to the ideas I put forward and to the subject, and that is a very different matter. My feeling is that no one is entitled to cheapen another man's work, discountenance his enthusiasm, and discredit his arguments unless he is able to offer something better; has convictions of his own and affirms them; analyses his opponent's reasoning and meets it. Mr. Thompson does not appear to hold this view, for he cheapens, discountenances, and discredits without attempting to justify himself, although I am willing to believe he is unconscious that he has given me cause to grumble.

Town planning is an important subject, and if we are to learn our mistakes before they are embodied in actual cities (instead of afterwards) it can only be by observing, by thinking, by feeling, and by exchange of ideas. I wrote the articles because I believed what I had to say ought to be said, and because I did not know—although many of my friends supported my views—who would say it if I did not. When I touched on the same ideas in an article on a wider subject a year ago, they were seized upon and applauded in a representative American journal; and I observe that the Germans, with whom the science of town planning has been long established, reacted years ago against those principles advocated by our experts which I hold up as demonstrably wrong principles. In my articles I took trouble to define my ground; to reduce my ideas to concrete terms, instead of making use of facile abstractions (as Mr. Thompson is now unwilling to do); to support my points with analogies and illustrations, and to keep close to my argument. My meaning is clear; there is no question as to what I said or did not say; yet Mr. Thompson does not face a single issue raised by me, and implies a tenor for my remarks which is foreign to them. If Mr. Thompson disagrees with me I would ask him to say in what respects and why, and by doing so throw light on aspects of the subject which I am convinced are deserving of close examination. So far he has merely completed a gesture of yawning and stretching himself and tossing my articles into the waste-paper basket.

H. B. CRESWELL.

Lincoln's Inn.

London's Need of New Bridges

A Deputation to the L.C.C.

A MEMORANDUM on Thames bridges, prepared by a joint committee of the R.I.B.A., the London Society, the Town Planning Institute, and the Architecture Club was submitted to the Special Committee on Thames Bridges of the London County Council last week. The memorandum was supported by a deputation consisting of: Sir Banister F. Fletcher, F.R.I.B.A., Mr. L. H. Bucknell, A.R.I.B.A. (representing the R.I.B.A.); The Earl of Crawford and Balcarres, K.T., Mr. D. Barclay Niven, F.R.I.B.A., Sir William Davison, M.P. (representing the London Society); Mr. W. R. Davidge, F.R.I.B.A., Mr. W. Rees Jeffreys, Professor S. D. Adshead, F.R.I.B.A. (representing the Town Planning Institute); and Mr. E. Vincent Harris, F.R.I.B.A., and Mr. Ewart G. Culpin (representing the Architecture Club).

The memorandum, which consisted of three statements by the R.I.B.A., the Town Planning Institute, and the London Society respectively was as follows. The Architecture Club did not submit a statement :—

The Royal Institute of British Architects.

As it must be taken for granted that the problem of Thames bridges with which the London County Council is faced cannot be separated from that of traffic congestion in London generally, it is essential that the two should be considered in conjunction and that every possible measure should be taken to accelerate the investigations on which a comprehensive scheme can be based.

It is assumed that the existing condition of Waterloo Bridge has raised the problem of the cross-river traffic between Blackfriars and Vauxhall Bridges in its present acute form. The Royal Institute therefore propose to confine their recommendations in the main to this part of the river only. The problem appears to fall under three heads : Waterloo Bridge itself, the stretch of river between Waterloo and Blackfriars Bridges, and that between Waterloo and Vauxhall Bridges.

Waterloo Bridge.—As regards Waterloo Bridge itself, the possibility of underpinning having been referred to the Institution of Civil Engineers, the Royal Institute, while believing that it will be found possible to preserve a structure of such outstanding artistic merit, desire to express their confidence in the judgment of the Institution of Civil Engineers. Whether the eventual decision be to retain the present bridge, to widen it or to reconstruct it, the conflict between its traffic and that along the Strand is typical of the main difficulty underlying the problem of Thames bridges as a whole, namely, the impinging of the cross-river routes on the great volume of traffic running parallel to the north bank of the Thames. It would be most desirable if in this case a north and south route could be devised at another level from that of the Strand.

Waterloo Bridge to Blackfriars Bridge.—The existing inadequate provision for north and south traffic, and the great inconvenience at present experienced during the "rush hours" by workers in the City of London who reside south of the Thames, point to the need for a new bridge at a point near the Temple Station. The construction of a double-decked bridge at this point is therefore suggested, together with a tram subway from the Embankment under the eastern arm of Aldwych, utilizing that in Kingsway and continuing northward under Southampton Row. This subway, it is suggested, might pass under Euston Road and the Metropolitan Railway and emerge in Seymour Street. In this way the Camden Town tramway system may be linked up directly with that of South London by a line crossing the lower deck of the suggested bridge near the Temple Station to the Surrey side and emerging into a road leading to a point in front of the Old Vic theatre. Should the Institution of Civil Engineers report in favour of underpinning Waterloo Bridge, and the London County Council decide in favour of that step, it might be found possible to deal with the traffic in this area without widening the latter bridge at all. It could be used for northward traffic only, and the Temple Bridge for southward traffic, and thus a complete circuit would be formed on a line via the Old Vic—Waterloo Road—Waterloo Bridge—Aldwych and southwards over the bridge at the Temple to the Old Vic again.

Waterloo Bridge to Vauxhall Bridge.—Without venturing to advocate any one of the many schemes which have been suggested for a new bridge at Charing Cross, the Royal Institute reiterate their conviction that there is a need for a road bridge at this point. A detailed study of the approaches to such a bridge, both on the north and south sides of the river, is of the utmost importance, and on no account must the traffic which it carries be allowed to debouch upon the Embankment or the Strand. It must be carried either above or below these thoroughfares in order to avoid adding to the present congestion at Charing Cross.

With regard to Lambeth Bridge, it appears essential that the main approach from the west must be south of Victoria Station.

St. Paul's Bridge.—The attitude adopted in February, 1924, by the R.I.B.A., the Town Planning Institute, the London Society, and the Architecture Club with regard to the proposal to build a bridge at a point opposite St. Paul's is unchanged. The reasons for their opposition to this project were widely published at the time. It is not desired to reiterate on this occasion the many objections to it; but the four societies concerned oppose, and will continue to oppose, the execution of such a scheme.

Finally, it is desired to urge the great importance in any bridge scheme of expert architectural treatment in regard to the design of the bridge itself, and of expert planning in regard to its approaches. The traffic which a bridge will attract, the methods to be employed for its disposal, and its effect upon the development of surrounding areas are problems which the skill of the town planner has set itself to solve. Nor, in regard to the design of the bridge itself, is it enough for the engineer and the architect to work in watertight compartments, the former concerned only with questions of construction and safety, the latter with those of superficial decoration and too often called upon merely to "ornament" a structural design already complete. A bridge is beautiful only if its artistic form is a true expression of its construction; and it is therefore essential, if London's bridges of the future are to be worthy of her great river, that æsthetic considerations in their design should be taken into account at the very beginning, and should mature, *pari passu*, with the structural.

The Town Planning Institute.

The Town Planning Institute have given careful consideration to the question of London traffic and Thames bridges, and are of opinion that the provision of new bridges cannot be properly considered apart from the general question of London development, and they desire respectfully to emphasize the necessity for the preparation of a comprehensive plan, on which the systematic improvement of London can proceed. Such a plan should deal with both town planning and zoning. They would emphasize that the principles to be adopted should be (*a*) to avoid unnecessary traffic that at present arises through lack of zoning; (*b*) to relieve the existing congested centres and thoroughfares of all except necessary traffic originating or terminating in the immediate locality.

They therefore suggest :—

That all through traffic should be as far as possible provided with a by-pass or alternative route.

That as the greater part of the existing congestion is due to blocks caused by cross traffic, all important crossing places should either provide (*a*) for circular regulation of traffic; or (*b*) where possible the two streams of traffic should cross at different levels.

Confining their recommendations, however, at this stage, to the question of Thames bridges, they would point out that from the Tower Bridge to Kingston Bridge, both inclusive, a distance of twenty-one miles, there are only sixteen road bridges, and that owing to the loss of Lambeth Bridge, there are exactly the same number of road bridges across the Thames as existed fifty years ago, when the population was considerably less than half its present size. The provision of additional road bridges across the Thames is therefore an essential part of a development plan for London.

The new bridges proposed on the Chertsey Road will provide additional bridges at Chiswick and Richmond, but although this will provide a valuable outlet in a south-western direction, it will not appreciably affect the congestion in central London.

The Town Planning Institute therefore favour the construction of such further new roads, embankments, and bridges as will enable through traffic to proceed to its destination either in the centre or beyond London with the least possible hindrance.

The Town Planning Institute support the following:—The completion and linking up of the north and south circular roads. The extension of Chelsea Embankment to Putney Bridge. The construction of a by-pass south of King Street, Hammersmith, to connect the new Chertsey Road with Fulham Palace Road. The construction of a new road over the District Railway in continuation of the above, and connecting with the west end of Cromwell Road. The construction of a new road over the West London extension railway from the new Western Avenue at Shepherd's Bush to Battersea and connecting via Clapham Common with the South Circular Road, involving a double-deck bridge over the river at Lots Road. A new road from the eastern end of the Great West Road at Chiswick High Road to Barnes Railway Station, with a new bridge about one-sixth mile north-east of Barnes Railway Bridge. A new bridge over the river from West Hill, Wandsworth, to Hurlingham connecting with the new embankment on the north side. A new road from Wandsworth Bridge to Trinity Road, Wandsworth. The rebuilding of Lambeth Bridge, and a new road south of Victoria Station via Page Street, Vincent Square, and Warwick Street. A new high level bridge at Woolwich (in preference to a road tunnel) passing over the river and Albert Docks and connecting Woolwich Common with the new Barking by-pass at Becton, reaching ground level at the northern outfall sewer. A new bridge across the Lea at Canning Town and new approaches to the docks as recommended by the Ministry of Transport. A new road tunnel between Purfleet and Dartford as recommended by the Ministry of Transport.

It will be seen that the above proposals, in addition to the two new bridges and road tunnel already proposed by the Ministry of Transport, will eventually involve the construction of additional embankments and four additional road bridges, as follows: A double rail and road bridge at Lots Road. A new road bridge at Barnes. A new road bridge at Hurlingham. A high-level bridge at Woolwich. The rebuilding of Lambeth Bridge and new approaches on west side. A new road connecting Wandsworth Bridge and Trinity Road. They also support a new bridge at Charing Cross and a new bridge at the eastern end of Aldwych.

The London Society.

The London Society consider that there are two separate problems for which solutions must be found:—

1. The long-distance traffic between the counties lying north and south of the Thames.

2. Cross-river communication for local purposes between North and South London.

With regard to 1, the Society are of opinion that this traffic should be diverted from the London area by the improvement of arterial roads, and the provision of new bridges and tunnels, outside this area. This is an additional and conclusive reason against the project of a bridge at St. Paul's.

With regard to 2, the Society believe that the development of the south side of the Thames (so well commenced by the example of the London County Council) can never be realized until additional and improved communications across the river are provided by the erection of a traffic bridge at Charing Cross in place of the existing railway bridge, and of the new bridge at Lambeth.

The Society are also of opinion that, if possible, Waterloo Bridge should not be altered from its present form, although it may be necessary to have further increased bridge accommodation for the south of London.

We look forward to the complete abolition of railway bridges in the central area and the substitution of electrified under-river communication for railway traffic; further, for the provision on road bridges of moving platforms for foot passengers, as these are now within the realm of practical engineering.

In our opinion, discussion concerning these Central London bridges cannot serve any useful purpose unless a plan for the development of London south of the Thames (including proposals for the future of the railways) is considered at the same time. If this is not done, any piecemeal dealing with the problem will only be a palliative for the present situation, without regard to "London of the future."

The Earl of Crawford and Balcarres introduced the deputation, and the speaker was Mr. W. R. Davidge.

Mr. R. C. Norman, the chairman of the Special Committee, said that he and his colleagues were greatly interested in the proposals and grateful for the assistance proffered. They were anxious to get an indication from the deputation as to which of the works suggested should be given precedence.

The deputation replied that the bridges which could be constructed with the least difficulty were those outside the county area. Inside the county, the Charing Cross bridge should be the earliest to be considered; then the extension of the Chelsea Embankment and the other bridges connected with it.

London Bridges *

By H. V. Lanchester, F.R.I.B.A., P-P.T.P.I.

Two positions seem to have been adopted with regard to the problem of relieving the congestion of cross-river traffic in the London area. To some, the remedy appears to be increased accommodation near the most overcrowded bridges; to others, the diversion of this traffic to points east or west of the present congested area. The first course is open to the objection that increased bridge accommodation would be useless apart from a considered revision of the traffic routes north and south of the river, while the second may be criticized on the ground that no proof is available that much of the traffic passing through central London would find roads so far east or west advantageous. Neither solution can be justified without a census of vehicles over all the London bridges of a more informative character than those of the past.

Such a census must give the starting place and destination of the vehicles, and the chief difficulty in securing it is the impracticability of holding up traffic while detailed inquiries are being made. Some simple formula must be employed, taking well-recognized districts north and south of the river, and getting the replies briefly as, say, Islington—Bermondsey, Hampstead—Clapham.

Without such a census it would be impossible to decide

* Extracts from a paper read before The Town Planning Institute.

as to how many vehicles could be diverted to routes outside the central area, but my impression is that the proportion would be comparatively small, and though additional bridges for the outer routes would be valuable, the need for dealing with the traffic of the City and West End will yet remain a paramount one. Such an impression may be correct or not, and it is for this reason that the first step to be taken should be the investigation by a census of the actual character of the traffic.

Even assuming that this shows the possibility of diverting a large proportion of the traffic to outer lines, the steady increase in transit and transport would probably in a few years bring us again face to face with acute congestion, and we must be very optimistic if we imagine that it will be possible to evade very drastic amendments in the present alignments and planning of our main routes. The question of the bridges cannot be regarded separately from such a general scheme as it is indissolubly linked up with that of traffic reorganization on comprehensive lines.

In considering the area between Westminster and the Tower we find that the main factor is the bend in the river which brings the traffic on the northern side into routes near the northern bank. It has been shown that the chord of this arc on the south side affords a shorter route, but this does not serve the needs of the larger proportion of the traffic which connects with intermediate points.

The difficulties occur where the routes across the river intersect those running east and west, and no solution will be permanently effective which does not provide for disentangling these conflicting streams by providing that they shall cross each other at separate levels, as at Holborn Viaduct, or by some other expedient.

On the south side there is a much more ample provision of communications, and the only difficulty here is that, owing to the bend in the river already mentioned, the lines of route coalesce at various points and ultimately a large proportion of the traffic is led to the "Elephant and Castle." The remedies needed on this side would, however, be much more easily effected than those on the north by reason of the fact that property is lower in value and the planning of a few short by-passes and the organization of one or more gyratory rings would be feasible.

On the north side a number of possible schemes suggest themselves, but before these could be definitely advocated, a very careful investigation, both from the economic point of view and from that of their influence on the general organization, would have to be undertaken. Nevertheless, it may be worth while to note down a few as illustrating the type of solution that is likely to be found appropriate.

To take the bridges seriatim from east to west. No material alteration appears practicable at London Bridge.

A subway running north from Southwark Bridge, linking it with Redcross Street, Golden Lane, and Central Street, would be of great value, but the cost would be heavy. The District Railway line would have to be lowered several feet.

An overhead by-pass from St. Paul's to St. Clement Danes, south of Ludgate Hill and Fleet Street, would greatly relieve these streets, and also free Bridge Street from the cross traffic.

The opportunity of the reconstruction of Waterloo Bridge should be taken advantage of to link up the northern and southern tramway systems by means of a double-decked bridge either on the site of the present bridge, which might be re-erected opposite the Law Courts, or by a new bridge at the latter point, whichever proved to be the more economical. This would relieve the heavy tram traffic on Westminster and Blackfriars bridges.

The proposed bridge at Charing Cross might also be double-decked, providing for an electrified suburban railway. The roadway debouching into the Strand should only take the traffic for that locality, that to the West End might be carried by a branch dipping under the Strand to run along the north side of Trafalgar Square as a sunk forecourt to the National Gallery and reaching the surface at Pall Mall East. This is practicable, and need be in no way destructive to the amenities, while it is essential if the proposed bridge is to avoid increasing the already serious traffic difficulties at Charing Cross.

The proposed reconstruction of Lambeth Bridge would relieve Westminster Bridge, but the main line of approach westward must be schemed to pass south of Victoria Station, otherwise the present traffic congestion at this centre will be intensified rather than diminished.

Specific schemes such as the above, and a number of others that could be added, ought only to be accepted subject to their conforming to a general programme of reorganization, and it is this general programme that is the urgent need at the present time. We have in the past spent large sums on "improvements" that are now found to increase rather than diminish our traffic difficulties, particularly where additional lines of route have been brought into ganglia such as the Bank, Charing Cross, and Piccadilly Circus.

Waterloo Bridge

At the last meeting of the London County Council the Special Committee on Thames Bridges submitted a report containing the reply of the Institution of Civil Engineers to a question with regard to the possibility of underpinning Waterloo Bridge.

The Council in December last decided to seek the assistance of the Council of the Institution of Civil Engineers in the determination of the question whether it was possible to maintain the existing structure of Waterloo Bridge by means of underpinning, as had been suggested by the Society for the Protection of Ancient Buildings. The committee now reported the receipt of the following letter from Mr. H. H. Jeffcott, secretary to the institution :—

"In reply to your letter of December 10, 1924, I have been directed to say that the Council of the Institution of Civil Engineers much appreciate being asked by the London County Council to express 'their views on the question whether, having regard to the present condition of Waterloo Bridge, it would be practicable and reasonable to underpin all or some of the piers of the bridge so as to render the structure permanently safe and to enable it to be restored to its original form.' While it is not within the province of the Institution Council to give a technical opinion on such a question, they desire, having regard to the public importance of this matter, to afford the London County Council such assistance as is within their power. The Institution Council have therefore given their most careful consideration to the subject.

"In the result they are of opinion that the London County Council have followed the best possible course in consulting two engineers of acknowledged eminence in this particular branch of engineering. It is observed that these engineers, after careful examination of all the essential details of the case, have reported unfavourably as to underpinning. It is the view of the Institution Council that the London County Council would be well advised to act on the considered individual opinion of these consultants."

The report added that the committee felt that the Council was greatly indebted to the Council of the Institution for the assistance which they had given so readily in this important and difficult matter and for the promptness with which that assistance had been rendered. They had caused a letter to be sent to the Council of the Institution expressing the County Council's high appreciation of the public spirit which had induced them to give an opinion on the matter.

The report was received without discussion.

The First Chair of Architecture in New Zealand

Mr. Cyril R. Knight, B.Arch., A.R.I.B.A., who graduated at the Liverpool University School of Architecture with first class honours in 1923, has been appointed to the first Chair of Architecture in New Zealand, that at the University College, Auckland. The salary attached to the chair starts at £900. Mr. Knight was chosen from a very large number of candidates from all parts of the Empire. Since leaving Liverpool in July, 1923, he has been at work in New York, and before he left Liverpool he was in the final round of the Rome Scholarship.

Enquiries Answered

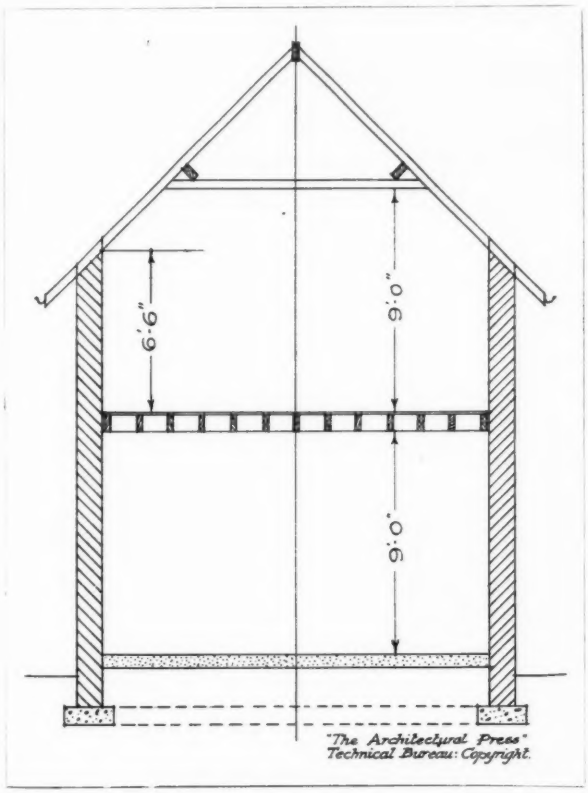
Enquiries from readers on points of architectural, constructional, and legal interest, etc., are cordially invited. They will be dealt with by a staff of experts, whose services are specially retained for this purpose. If desired, answers will be sent direct through the post. In no case is any charge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

HEIGHT OF ROOMS.

"W. M." writes: "We submitted plans for a cottage (a section of which is reproduced herewith) to a local authority, who declined to pass them unless we make the height of the upper rooms not less than 9 ft. in any part. The by-laws in force in respect to the height of rooms intended to be used for human habitation are as follows: 'Every person who shall erect a new building, and shall construct any room therein so that it may be used for human habitation, shall comply with the following requirements: If such a room is not intended to be used as a sleeping room, he shall construct such room so that it shall be not less in any part thereof than 9 ft. in height. If such room is intended to be used as a sleeping room, and is not an attic or a room in the roof of such building, he shall construct such room so that it shall be not less in any part than 9 ft. in height. If such room is intended to be used as a sleeping room, and is an attic or room in the roof of such building, he shall construct such room so that it shall be not less in any part than 5 ft. in height, and so that it shall to the extent of two-thirds of the superficial area of the floor be of a height of not less than 9 ft.' We maintain that in this case bedrooms are rooms in the roof, but the surveyor to the local authority does not agree."

—I am of opinion that the surveyor to the local authority is evidently in the wrong, and unreasonable to boot. The section submitted shows the height from floor to ceiling of the bedroom to be 6 ft. 6 in. at its lowest point (close to the walls), and 9 ft. for the greater part of the floor area—approximately one quarter of the area being less than 9 ft. in height. Unless there is some other reason for refusing to pass the plans the local authority can be compelled to approve them.

F. S. I.



HEIGHT OF ROOMS.
(See answer to "W. M.")

PAYMENT FOR ERECTION OF BUNGALOW.

"Anxious" writes: "Last July I began the erection of a bungalow. Plans, etc., were supplied, but no signed and sealed agreement was made with my client. After the foundations were in and the building was 3 ft. in height I desired some money, but my client, it appears, had very little, so I arranged him a mortgage of £300 (the contract being only £300), and received £30 on account. When the building was roofed, the building society valuers, with whom I arranged the mortage, gave a certificate for £275. Of this sum I received only £125, and £25, making a total of £180, my client stating that only £100 had come through from the building society to the solicitor. After a few weeks' wait I had the building plastered, and asked for more money as it was valued at £275 before being plastered, etc. My client refused, so I said I should do no more work until I received more money. The work stopped, therefore, until a few weeks ago, when my client used the material I had there, and ordered and installed the firegrates I had selected and had the bill sent to me. He is now living in the bungalow, and has received £75 subsidy. I have asked for payment, but he says he will pay nothing. Which is the best way to proceed to obtain the £130 due to me? My client may make a counter claim for damages under breach of contract if this is possible."

—In answering the query which you lay before us we assume that the facts are as you state, and that you have not committed any breach of your engagements towards the owner. Your proper course is to instruct a solicitor to issue a writ against the owner for recovery of the sum due to you for work done upon the instructions given to you.

S. J. S.

FACTORY ACT QUESTIONS.

"Hygiene" writes: "On several occasions I have been anxious to find out in what proportion w.c.s must be provided to the number of workpeople employed in a factory or workshop, or in an office or warehouse. I find in the Factory Act that 'suitable and sufficient accommodation must be provided,' and that the Secretary of State shall by special order determine what is suitable and sufficient accommodation. (*a*) Can you inform me whether such a special order exists in the form of a printed pamphlet, or give me the information I require? (*b*) Please also give me your opinion on section 3, para. 1, of the Factory Act, where it is stated that 'the number of cubic feet of space in any room to the number of persons employed at one time shall not be less proportion than 250.' Is there any limit of height in calculating this proportion? It is obvious, of course, that with an open roof a much larger cubic space of air is provided, but much of it might be valueless for the purpose of the Act. I am acquainted with a case where a room designed for one purpose, and, as a consequence, of extraordinary height, has been used for the accommodation of a number of workpeople. The cubic content will be satisfactory so far as the figures are concerned, but practically it is not. What would the law say on the matter? Does the law place any limit on the height which may be employed for the purpose of calculation under this section of the Act?"

—Both these points are very difficult of solution, and for that reason I believe the law has been left in a hazy state; a hard and fast rule might work hardship. (*a*) I believe no such order has ever been made; the question to be answered in each individual instance is: "What is reasonable?" (*b*) Under the old Factory Acts there was no limit to height, but a new set of regulations is being preferred at the present moment, fixing a limit of height—if passed, all air space above the limit of height (yet to be fixed) will not count in calculating cubic air space. After all it is common sense if carried out in a common-sense (and not a hide-bound official) way. Our by-laws are all wrong, in that they reckon air space (though it may be all dead space), whereas they should provide for air inlets and air outlets, and so give live air to living persons.

F. S. I.

Concrete for House Building

"Broadly speaking, the various forms of concrete construction offer a very effective supplement to the normal methods of building. Not only is the house built in concrete satisfactory, but it utilizes labour and material in plentiful supply." This is the considered opinion of the committee appointed by Mr. Wheatley, the late Minister of Health, in its second interim report on "new materials or methods of construction which are or may be available for the building of houses for the working classes." The committee, therefore, recommend that local authorities should, wherever necessary, include in their housing programmes houses built of one of the various forms of concrete construction, and by so doing not only meet the demand for houses, but also absorb labour that is largely unemployed.

The committee state that the use of concrete for the construction of dwellings in the form of pre-cast blocks is not a new or untried method. Since the war large numbers of satisfactory concrete dwellings have been erected in which several methods of construction have been employed. Most of these schemes, however, rely to a lesser or greater degree upon the employment of those expert trades in the building industry which are most scarce and which are essential to the requirements of the present building programme in materials of construction other than concrete. There is a sufficient body of experience to show that comfortable, dry, and healthy dwellings, satisfactory in appearance, can be constructed of concrete. Suitable aggregates, representing five-sixths or more of the ingredients required, are to be found in most districts. They require no skilled labour to prepare, and the quantity available is generally plentiful. The getting, crushing, screening, and preparation of the materials would afford occupation suitable for men now unemployed.

One of the best methods, in the committee's opinion, which would substantially supplement the output of houses, is the use of concrete placed or poured *in situ* between wooden or steel shutters. Poured concrete of a special character in which the proportion of cement to suitable aggregate is reduced to 1 in 9 is incorporated in housing schemes in Holland. Effective buildings have been constructed by this method up to three stories in height with walls only about 8 in. thick, in which there is a high percentage of voids, and consequent lightness of structure. In these houses the walls are finished externally by cement rendering or roughcast, and inside by ordinary commercial plaster. These plastered surfaces, together with poured concrete, form the outer wall, and no air space is required. In Holland, where plasterers are available in sufficient quantity to keep pace with the other employees engaged on the houses, this form of structure is possible. In Great Britain, however, the plasterer is one of the most scarce kind of employee.

In order to minimize plastering as far as possible, in many cases a fair finish can be produced by carefully stopping all holes, rubbing down, and applying a cement wash with a brush, and so preparing a surface sufficiently well to take paper or distemper. Concrete floors, partitions, and roofs have been satisfactorily constructed in some of the existing housing schemes in this country, and linoleum or cork carpet on concrete floors has been in use with hard wear for upwards of twenty years in office blocks. Such floors may be more expensive than wooden ones, but they do not necessitate carpentry work, and the use of steel shuttering would probably avoid the use of plaster work.

The question of an efficient system of easily moved shuttering is one of the greatest importance in connection with poured *in situ* concrete houses. The committee have several such systems before them, but submit that the last word in this connection has not been said. They suggest that the offer of some substantial premium for the best and most economical system of shuttering capable of being erected, though not necessarily constructed, by unskilled labour should be made.

The committee's conclusions are as follows :—

1. That houses built of poured *in situ* concrete are satisfactory habitations.

2. That this method of building which economizes in bricklaying and plastering enables a building to be completed rapidly and almost entirely by other than skilled labour.

3. That various improvements have been introduced in the way of giving a pleasing outside surface and a smooth inside surface to such buildings, with a minimum of labour drawn from the skilled building trades, and that further improvements in these directions should be carefully studied and assisted.

4. That this method of construction promises more houses and more permanent structures than any other alternative to brick construction which it has had before it, and with the least call on the skilled building operatives. The maintenance costs of such houses will compare favourably with those of any houses.

"Reinforced Concrete—Some Points of Importance in Practical Design"

In a lecture before the Building Surveyors' and Inspectors' Association, in the College of Technology, Manchester, Mr. F. E. Drury, M.Sc. (Tech.), M.I.Struct.E., F.I.S.E., lecturer in building construction in the University of Manchester, and head of building department, College of Technology, Manchester, said that the position of the building surveyor in respect to reinforced concrete work was a particularly difficult one, because, owing to the insufficient number of workmen who were able to do the work efficiently, it was not easy to ensure that a reliable structure would be erected. A little knowledge of the principles of design might prove to be a very dangerous thing, and the mathematical formulæ introduced for checking any designs in reinforced concrete might often become a pitfall for men with but a little experience. The speaker's opinion was that the mathematical side of the work was exaggerated, and that a surer knowledge of the materials used was of the utmost importance. He had often been surprised by the great risks taken in the selection of materials for reinforced concrete work, in which the cement had been very carefully chosen to come up to standard, but the choice of aggregate left a great deal to be desired. The aggregates used very often failed to reach a satisfactory standard, and the result was a poor concrete, for it was not possible to get good concrete unless the aggregate was satisfactory. The popular notion that sharp sand was necessary for good work had long been exploded, and the result of many tests carried out at the College of Technology showed that so long as the sand was clean, the sharpness did not matter; what was desirable was that the sand should consist of large grains.

It was realized that too little attention had been paid to the question of waterproofing. Whilst it had been said that it was possible to obtain concrete absolutely waterproof, provided the materials were graded so as to get the maximum density, i.e., reduce the voids to a minimum, the speaker had never yet obtained a waterproof concrete where the thickness had been 1 in. or less, and the water had been applied under pressure. In his opinion nothing leaner than 1 : 2 : 4 concrete would stand water under a 5 ft. head. In addition to the tests mentioned earlier, tests had been, and were being carried out in the College, to ascertain the waterproofing qualities of certain materials, and some interesting results had been obtained by the addition of slate flour to the mix. The slate flour was a perfectly inert filler, and depended for its waterproofing qualities upon its fineness of grinding and its ability to mix with the other materials, and not upon its expansion. It should be noted that materials which were claimed to expand in the mix might be dangerous to use. With the slate flour it was found that if the material was not too wet, and the filler was used in proportions varying from 2 per cent. to 18 per cent., good results were obtained every time.

With regard to the distribution of the steel in reinforced concrete work, he pointed out that it ought to be realized that because reinforced concrete was a compound material formed of two totally different substances, the only satisfactory means of approach to the study of the subject was through mathematics.

French engineers used top steel in reinforced concrete long before it was taken advantage of in England, realizing as they did the tendency of floors to lift where beams were continuous through several bays, and all were not fully loaded at the same time.

Referring to reinforced concrete pillars, he stated that their design under standard regulations seemed to be the point most likely to cause trouble and misconception. The regulations were drawn up to ensure that the design was on the safe side, and this was, of course, as it should be, for all sorts of people, competent and otherwise, dabbled in reinforced concrete design.

Obituary

Mr. C. F. Norman.

We regret to record the death, which occurred last week, at Purley, at the early age of forty-one, of Mr. Charles Frederick Norman, who, with his partner, Mr. A. F. A. Trehearne, designed most of the large buildings in Kingsway.

Born on May 14, 1883, the only son of Charles Norman, of Lee, Kent, Mr. Norman studied at various art schools and went through a course of practical training. He was Galsworthy prizeman and special prizeman of the Surveyors' Institution, qualifying as F.S.I. At the age of eighteen he was articled to Mr. Trehearne, who took him into partnership in 1906.

A great opportunity came to the partners when the new thoroughfare of Kingsway was being filled with buildings, and in the success which they achieved there Mr. Norman had no small share. The taste and skill which he showed were such as to make it clear that by his death English architecture has suffered no ordinary loss, and his work had already marked him out as a man likely to attain the highest distinction in his profession. It is only necessary to compare Kingsway with, for instance, Victoria Street, to realize the advance which has been made. The partners had, it is true, a broader street to consider, but of this they took full advantage, and they designed a series of buildings characterized by seemliness, dignity, and suitability to the purposes for which they were erected. The names of these buildings in chronological order are: West Africa, Central, Imperial, Regent, Windsor, York, Adastral, Alexandra, Victory, and Ingersoll Houses; Shell Corner; and Prince's Crown, Africa, and Connaught Houses. Of these, probably Africa House, with its employment of appropriate sculpture, has been most generally admired.

In addition, the partners designed the London School of Economics, near Aldwych; 3 Sanctuary Buildings, Westminster; 27 Old Bond Street; the Ravensbourne Club at Lee; and many other buildings, including several country houses.

Mr. Norman was a Fellow of the Society of Architects and a member of the Council of the Society. During the war he obtained a commission in the Royal Engineers, and served in Belgium. Personally he was a man of sterling qualities and friendly nature. He married in 1912; his widow survives him, with one son and two daughters.

Mr. Wm. Bakewell.

We regret to record the death at St. Margaret's Bay, Kent, of Major William Bakewell, F.R.I.B.A., at the age of eighty-six. He designed numerous commercial and bank premises in the centre of Leeds, especially about the time of the Boar Lane improvements, when New Station Street was formed. Amongst the public buildings he designed were the Wakefield Hospital, the Leeds Coliseum, the Ilkley Town Hall, the Athenæum Buildings, Leeds, and the City Square improvements. The last building structure in Leeds for which he was responsible was the Pearl Assurance Buildings. He was an officer in the old Leeds Engineer Volunteers, and designed their barracks in Claypit Lane.

Mr. Guetavo Meo.

We regret to record the death of Mr. Guetavo Meo at Downshire Hill, Hampstead. He assisted the late Sir William Richmond in the designing and execution of the mosaics in the dome of St. Paul's Cathedral. He was also responsible for the execution of the mosaics in St. Andrew's Chapel in Westminster Cathedral. In his early days he exhibited at the Royal Academy.

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.
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 March 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.

Competition News

Rugby U.D.C. Housing Scheme.

The following notice has been issued by the R.I.B.A.: "Members and Licentiates of the R.I.B.A. must not take part in the above competition because the conditions are not in accordance with the published regulations of the Royal Institute for architectural competitions."

Law Report

A.R.I.B.A.—Use of Letters

Royal Institute of British Architects v. *Hindle.*

January 20. Chancery Division. Before Mr. Justice Tomlin.

This matter came before the court on a motion by the plaintiffs, the Royal Institute of British Architects, for an interim injunction against Mr. J. W. Hindle, to restrain him from using the description or letters A.R.I.B.A., or from otherwise representing that he was connected with or vouched for by the R.I.B.A. Mr. F. Whinney appeared for the plaintiffs. The defendant did not appear and was not represented.

Mr. Whinney stated that his instructions were that the defendant had been representing that he had passed the examination of Associate of the R.I.B.A., and he had accordingly added the letters A.R.I.B.A. after his name. In consequence of this representation he had obtained employment at six guineas a week with Mr. Halstead Best for a certain number of years. Mr. Best believed he was what he represented himself to be, but owing to the manner in which he did his work he came to the conclusion that he could not be a member of the Institute. Upon inquiry he found it to be a fact. Counsel added that it was not the first time that the defendant had attempted to pass himself off as an Associate. Therefore the Institute pressed for the injunction in the terms of the notice of motion.

His lordship granted the injunction as asked for.

Jubilee of the Royal Sanitary Institute

The Jubilee of the Royal Sanitary Institute falls in 1926, and it has been decided to celebrate this occasion by holding a congress in London as the centre most appropriate for representing its widespread work. It is hoped to make it an opportunity for gathering together those engaged in public health work from all parts of the Empire.

The Week's News

The Roof of Wakefield Cathedral.

Sir Charles Nicholson has discovered serious defects in the roof of Wakefield Cathedral. Repairs will cost about £10,000.

Proposed New Church for Dulwich.

It is proposed to build a new Roman Catholic church in Dulwich on a site in the neighbourhood of Lordship Lane.

Proposed Housing Scheme for Hendon.

The Hendon Rural District Council are seeking power to acquire land compulsorily for housing.

Yarmouth Electricity Extensions.

The Great Yarmouth Corporation propose to spend £194,000 on electricity works.

More Houses for Crompton.

The Crompton Urban District Council have decided to build fifty additional houses.

Irthlingborough Market Cross.

Irthlingborough market cross, built in 1280, is to be restored by Northampton County Council.

Northamptonshire Road Improvements.

The Northamptonshire County Council are considering a £250,000 arterial road improvement scheme.

New Drainage Scheme for Berkshire.

At Binfield (Berks.) a drainage scheme is to be carried out at a cost of £15,275.

Glamorgan Road Schemes.

The Glamorgan County Council are embarking on a £400,000 road scheme.

A New Church for Sudbury.

The Wembley Urban District Council have passed plans for a new Church of St. Andrew at Sudbury.

A New School for Brockley.

In Spurles Road, Brockley, an additional L.C.C. elementary central school is to be built.

East Ham Refuse Destructor Extensions.

The Ministry of Health have been asked to sanction the borrowing of £10,000 for alterations and additions to East Ham's refuse destructor.

Worthing Electricity Extension Scheme.

The Worthing Town Council have decided to apply to the Electricity Commissioners for sanction to extend their electricity supply at a cost of £77,000.

More Carlisle Housing Schemes.

The City Council have received the sanction of the Ministry of Health to the borrowing of £122,546 for the erection of houses at Blackhall.

Ipswich Infirmary Heating Scheme.

The Ipswich Guardians have adopted a scheme of central heating and hot water supply installation at Heathfields, involving an expenditure of approximately £10,000.

Taunton Housing.

The Taunton Town Council have decided to submit to the Ministry of Health a scheme for the building, within two years, of 200 houses under the 1924 Act.

Proposed New School for Guiseley.

A proposal to erect a new elementary school at Guiseley at an estimated cost of £15,000 is being considered by the West Riding County Education Committee.

Housing at Armthorpe.

The Industrial Housing Association propose to erect 245 houses at Armthorpe for the employees at the New Markham Main Colliery.

Somerset Flood Damage Scheme.

The Somersetshire Drainage Commissioners are considering a scheme of flood relief in the Lower Brue district. The estimated cost is £100,000.

Housing by Private Enterprise at Warsop.

The Warsop Urban District Council have decided to ask the Ministry of Health to give provisional approval to the erection of seventy additional houses to rank for subsidy.

Proposed Boulevard on the Irwell.

A boulevard bridging the Irwell, and thus linking Salford to Manchester by artificial means, is a suggestion at present being considered by the authorities.

The Condition of the Dome of Santa Sophia.

A committee of Turkish engineers has reported that there are cracks in the dome of the Mosque of Santa Sophia at Constantinople, and the Angora Government has hurriedly provided money for repairs.

Church Building and Repairs.

At the last meeting of the Incorporated Church Building Society, held in Westminster, grants were made towards the building of new churches; rebuilding, enlarging, reseating, and repairing of others in various parts of the country. During the past year nearly £9,000 was granted for work of this nature.

Fifteenth-Century Derbyshire Church in Danger.

The roof of All Saints' Parish Church, Bakewell, Derbyshire, which dates back to the fifteenth century, is in danger of collapse, and is to be replaced at a cost of £2,000. Buried in the church are Dorothy Vernon, the heroine of the Haddon Hall romance, and her husband, Sir John Manners.

The Piccadilly "Skeleton."

Terms have been arranged by which the site in Piccadilly facing the Green Park, and occupied by the steel skeleton of a large building, will be covered by the erection and completion of the hotel, which was begun many years ago but abandoned in consequence of the war.

Architectural Partnership.

Mr. Frederick W. Skipper, of 55 London Street, Norwich, architect, has taken his son, Mr. Eric H. Skipper, A.R.I.B.A., into partnership. Mr. Eric Skipper was educated at the Norwich Grammar School and University College, London, and has had considerable experience in London and the North of England. The style of the firm will be Messrs. Fredk. W. Skipper and Son, and the practice will continue to be carried on at the above address.

A New Port for South Portugal.

His Majesty's Acting Consul at Lisbon (Mr. C. Broughton) has forwarded to the Department of Overseas Trade information regarding the construction of the commercial port of Vila Real de Santo Antonio (Southern Portugal). Tenders for this work are to be submitted before March 21. United Kingdom firms in a position to supply British materials can obtain further particulars regarding this call for tenders on application to the department, 35 Old Queen Street, London, S.W.1, quoting reference A.X.1630.

Professional Practice.

Mr. Ernest Bower, M.S.A., architect, has commenced practice at Jovil, Linthwaite, Huddersfield, at which address he will be glad to receive trade catalogues.

Mr. Chas. E. Compton, M.S.A., of 35 Commercial Street, Newport, Mon., architect, has recently completed the reconstruction of two large Baptist churches, one at Duckpool Road, Newport, Mon., and the other the Tirzah Baptist Church, Cwm, in the Monmouthshire Valleys, and a church at Catsash, near Newport, for the Free Church Movement.

The Leipzig Underground Fair Hall.

The Leipzig Underground Fair Building, to be used in connection with the Leipzig Spring Fair from March 1–7, is claimed to be the first of its type. It is 89 m. long, 40 m. wide, and stands 5 m. high, and contains 200 exhibition stands. The excavation and construction of the underground building has taken about six months, and about 18,000 cub.m. of earth have been excavated from the market place and carried away. The building is of reinforced concrete, and has absorbed 4,800 tons of gravel, 120 tons of iron, and 590 tons of cement, while 3,400 sq.m. of the market place has been built into underground rooms. The building is provided with modern lighting, heating, and ventilation, and many ingenious precautionary measures are taken against fire. The market place has also been improved and renovated.