

THE ARCHITECTS' JOURNAL



standard contents

every issue does not necessarily contain
all these contents, but they are
the regular features which
continually recur.

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★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their full address and telephone numbers. The glossary is published in two parts—A to Ie one week, Ie to Z the next. In all cases where the town is not mentioned the work LONDON is implicit in the address.

| | | |
|-----------|--|--------------------------|
| AA | Architectural Association, 34/6, Bedford Square, W.C.1. | Museum 0974 |
| AAI | Association of Art Institutions. Secy.: W. Marlborough Whitehead, "Dyneley," Castle Hill Avenue, Berkhamstead, Herts. | |
| ABS | Architects' Benevolent Society. 66, Portland Place, W.1. | Langham 5721 |
| ABT | Association of Building Technicians. 5, Ashley Place, S.W.1. | Victoria 0447-8 |
| ACGB | Arts Council of Great Britain. 4, St. James' Square, S.W.1. | Whitehall 9737 |
| ADA | Aluminium Development Association. 33, Grosvenor Street, W.1. | Mayfair 7501/8 |
| APRR | Association for Planning and Regional Reconstruction. 34, Gordon Square, W.C.1. | Euston 2158-9 |
| ArchSA | Architectural Students' Association. 34/36, Bedford Square, W.C.1. | |
| ARCUK | Architects' Registration Council. 68, Portland Place, W.1. | Welbeck 9738 |
| ASB | Architectural Science Board of the Royal Institute of British Architects. 66, Portland Place, W.1. | Langham 5721 |
| AScW | Association of Scientific Workers. 15, Half Moon Street, Piccadilly, W.1. | Grosvenor 4761 |
| BAE | Board of Architectural Education. 66, Portland Place, W.1. | Langham 5721 |
| BATC | Building Apprenticeship and Training Council. Lambeth Bridge House, S.E.1. | Reliance 7611, Ext. 1706 |
| BC | Building Centre. 9, Conduit Street, W.1. | Mayfair 8641/6 |
| BCC | British Colour Council. 13, Portman Square, W.1. | Welbeck 4185 |
| BCCF | British Cast Concrete Federation. 17, Amherst Road, Ealing, W.13. | Perivale 6869 |
| BCIRA | British Cast Iron Research Association. Alvechurch, Birmingham. | Redditch 716 |
| BDA | British Door Association. 10, The Boltons, S.W.10. | Flaxman 7766 |
| BEDA | British Electrical Development Association. 2, Savoy Hill, W.C.2. | Temple Bar 9434 |
| BIA | British Ironfounders' Association. 145, Vincent Street, Glasgow, C.2. | Glasgow Central 2891 |
| BIAE | British Institute of Adult Education. 29, Tavistock Square, W.C.1. | Euston 5385 |
| BID | Building Industries Distributors. 52, High Holborn, W.C.1. | Chancery 7772 |
| BINC | Building Industries National Council. 11, Weymouth Street, W.1. | Langham 2785 |
| BOT | Board of Trade. Millbank, S.W.1. | Whitehall 5140 |
| BRB | Building Research Station. Bucknalls Lane, Watford. | Garston 2246 |
| BSA | Building Societies Association. 14, Park Street, W.1. | Mayfair 0515 |
| BSI | British Standards Institution. 28, Victoria Street, S.W.1. | Abbey 3333 |
| BTE | Building Trades Exhibition. 4, Vernon Place, W.C.1. | Holborn 8146/7 |
| CABAS | City and Borough Architects Society. C/o Johnson Blackett, F.R.I.B.A., Borough Architect, Town Hall, Newport, Mon. | Newport 3111 |
| CAS | County Architects Society. C/o F. R. Steele, F.R.I.B.A., County Hall, Chichester. | Chichester 3001 |
| CCA | Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1. | Sloane 5255 |
| CCP | Council for Codes of Practice. Lambeth Bridge House, S.E.1. | Reliance 7611 |
| CDA | Copper Development Association. Kendals Hall, Radlett, Herts. | Radlett 5616 |
| CIAM | Congrès Internationaux d'Architecture Moderne. Dolderal, 7, Zurich, Switzerland. | |
| COID | Council of Industrial Design. Tilbury House, Petty France, S.W.1. | Whitehall 6322 |
| CPRE | Council for the Preservation of Rural England. 4, Hobart Place, S.W. | Sloane 4280 |
| CUJC | Coal Utilization Joint Council. 3, Upper Belgrave Street, London, S.W.1. | Sloane 9116 |
| CVE | Council for Visual Education. 13, Suffolk Street, Haymarket, S.W.1. | Reading 72255 |
| DGW | Directorate General of Works, Ministry of Works, Lambeth Bridge House, S.E.1. | Reliance 7611 |
| DIA | Design and Industries Association. 13, Suffolk Street, S.W.1. | Whitehall 0540 |
| DOT | Department of Overseas Trade. 35, Old Queen Street, S.W.1. | Victoria 9040 |
| EJMA | English Joinery Manufacturers' Association (Incorporated). Sackville House, 40, Piccadilly, W.1. | Regent 4448 |
| EPNS | English Place-Name Society. 7, Selwyn Gardens, Cambridge. | |
| FAS | Faculty of Architects and Surveyors. 8, Buckingham Palace Gdns., S.W.1. | Sloane 2837 |
| FASSC | Federation of Association of Specialists and Sub-Contractors, 5, Arundel Street, Strand. | Temple Bar 6633 |
| FBI | Federation of British Industries. 21, Tothill Street, S.W.1. | Whitehall 6711 |
| FC | Forestry Commission. 25, Savile Row, W.1. | |
| FCMI | Federation of Coated Macadam Industries. 37, Chester Square, S.W.1. | Sloane 1002 |
| FDMA | The Flush Door Manufacturers Association Ltd. Trowell, Nottingham. | Ilkeston 623 |
| FLD | Friends of the Lake District. Pennington House, nr. Ulverston, Lancs. | Ulverston 201 |
| FMB | Federation of Master Builders. 26, Great Ormond Street, Holborn, W.C.1. | Chancery 7583 |
| FOB 1951 | Festival of Britain 1951. 2, Savoy Court, Strand, W.C.2. | Waterloo 1951 |
| FPC | The Federation of Painting Contractors, St. Stephen's House, S.W.1. | Whitehall 3902 |
| FRHB | Federation of Registered House Builders. 82, New Cavendish Street, W.1. | Langham 4041 |
| FS (Eng.) | Faculty of Surveyors of England. Buckingham Palace Gdns., S.W.1. | Sloane 2837 |
| GC | Gas Council. 1, Grosvenor Place, S.W.1. | Sloane 4554 |
| GG | Georgian Group. 27, Grosvenor Place, S.W.1. | Sloane 2844 |
| HC | Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1. | Whitehall 2881 |
| IAAS | Incorporated Association of Architects and Surveyors. 75, Eaton Place, S.W.1. | Sloane 5615 |
| ICA | Institute of Contemporary Arts. 17-18 Dover Street, Piccadilly, W.1. | Grosvenor 6186 |
| ICE | Institution of Civil Engineers. Great George Street, S.W.1. | Whitehall 4577 |
| IEE | Institution of Electrical Engineers. Savoy Place, W.C.2. | Temple Bar 7676 |
| IES | Illuminating Engineering Society. 32, Victoria Street, S.W.1. | Abbey 5215 |



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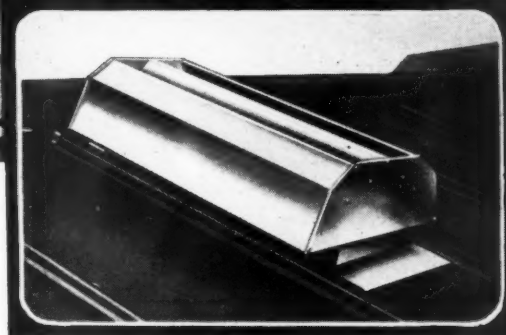
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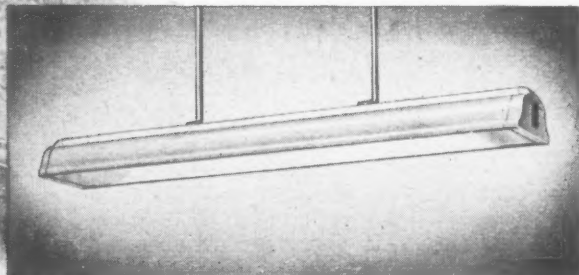


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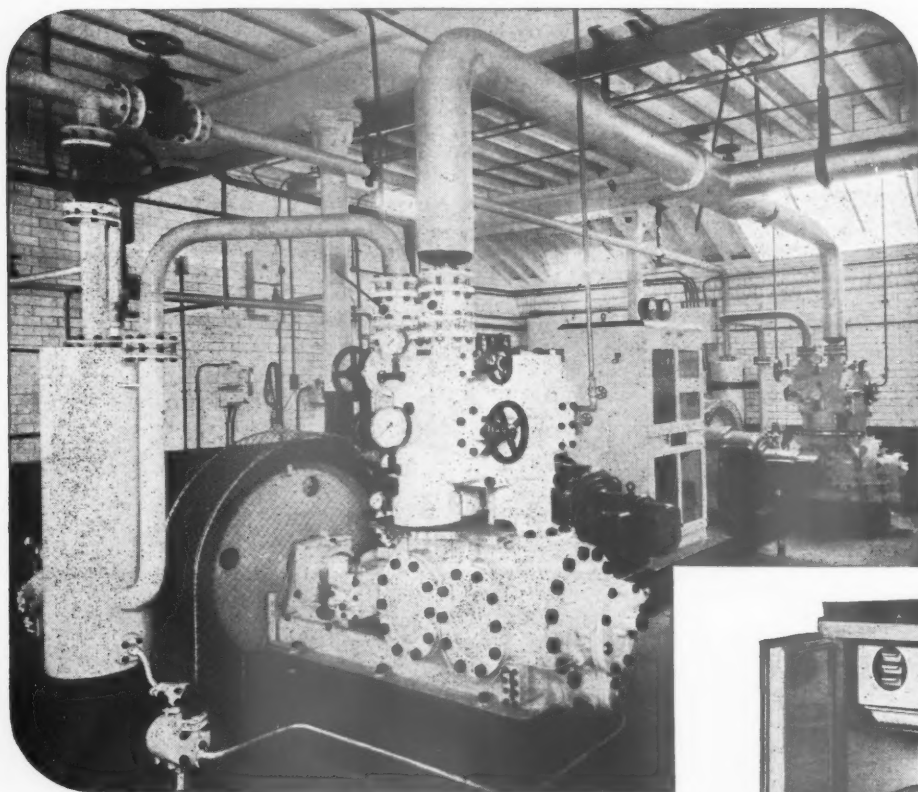
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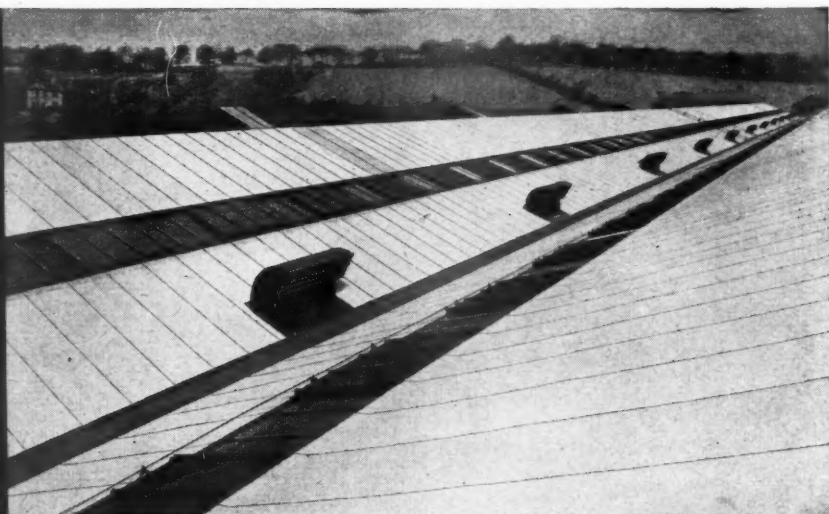
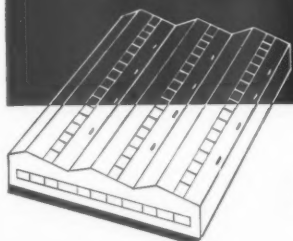
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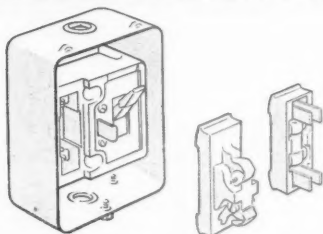
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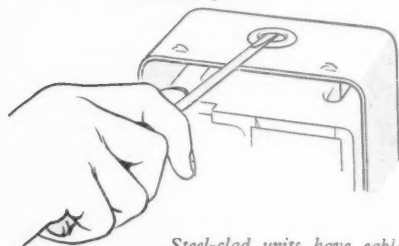
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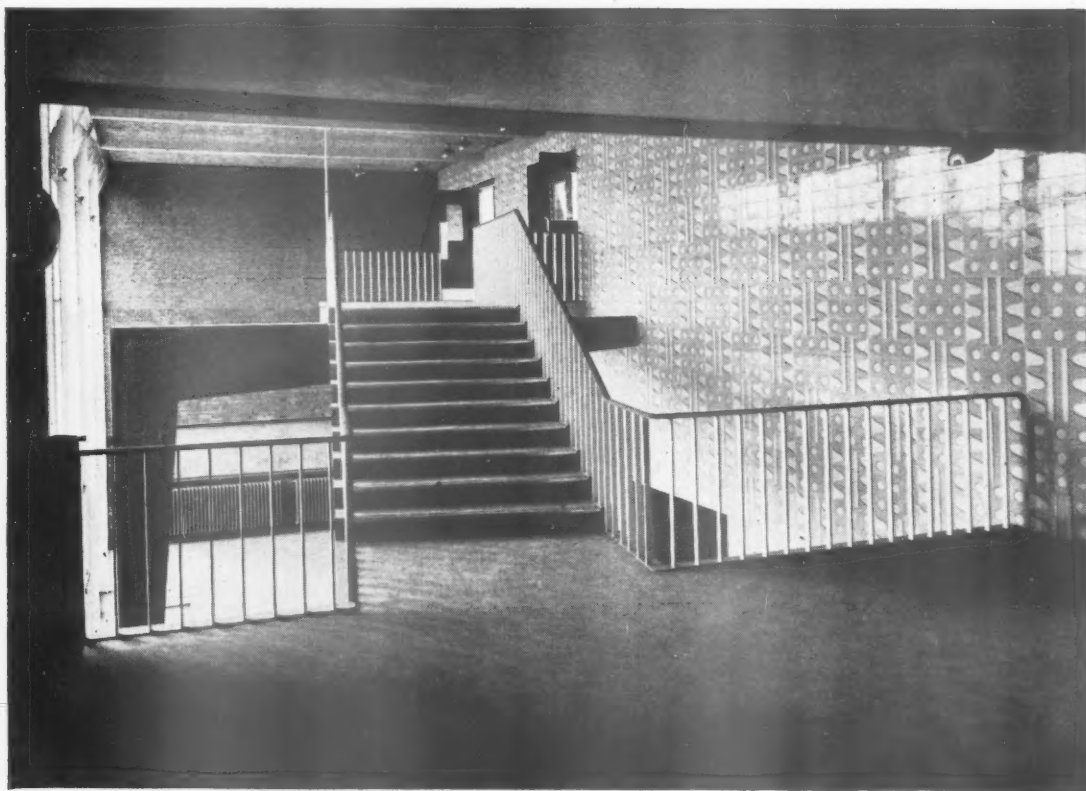
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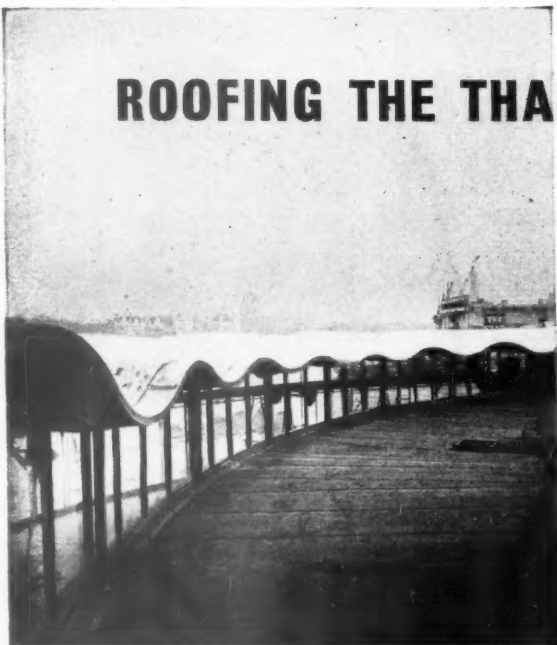
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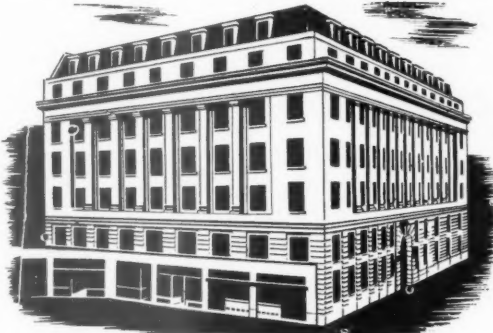
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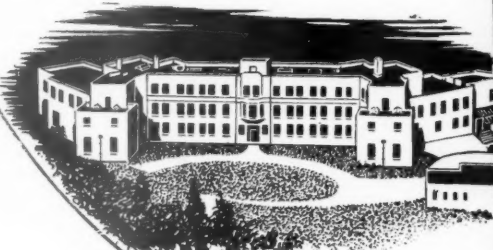
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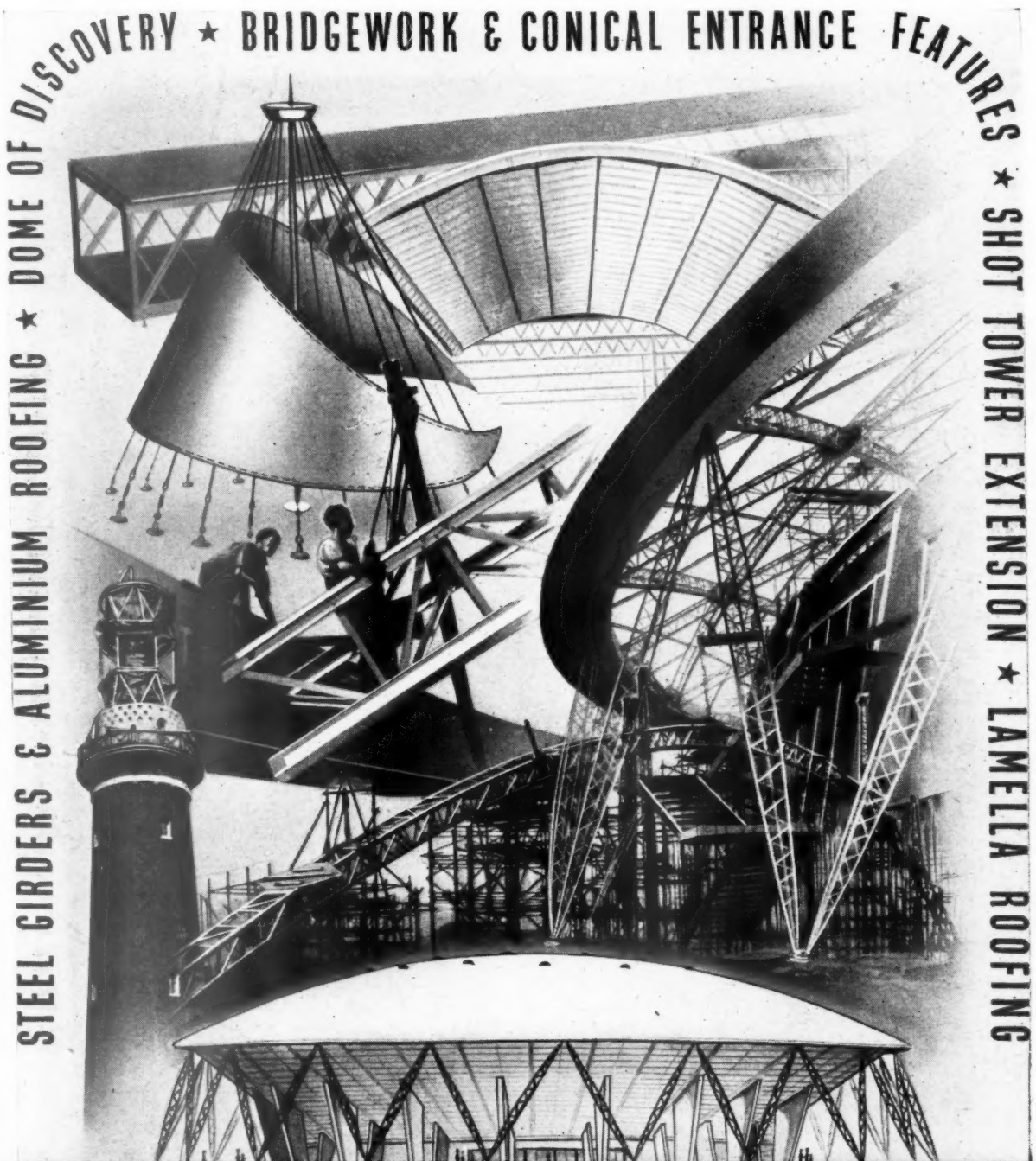
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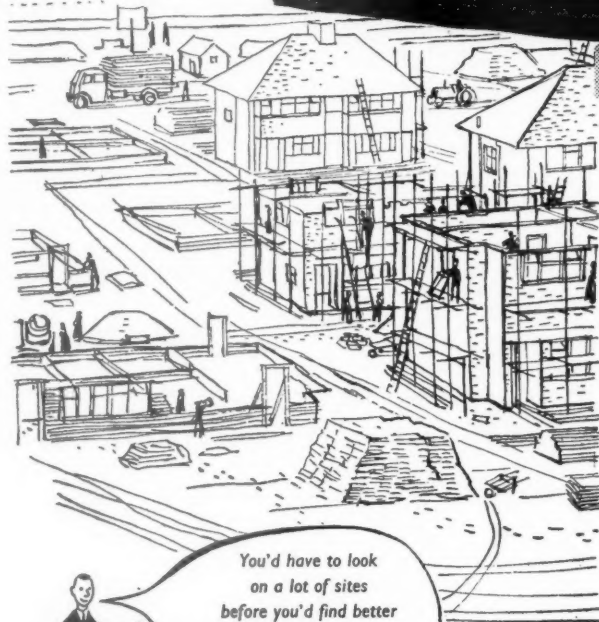
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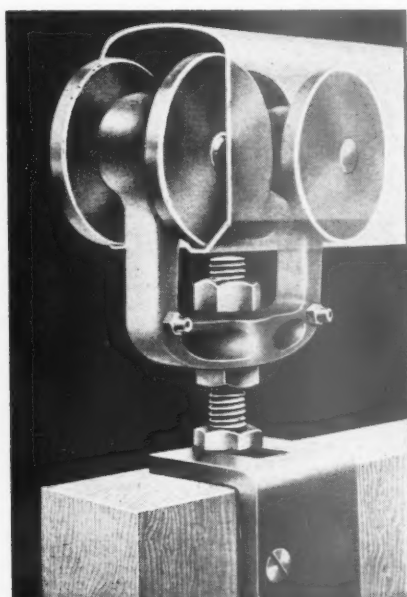
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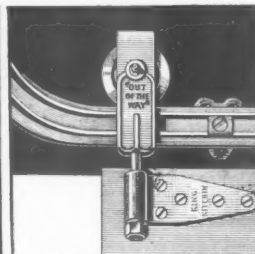
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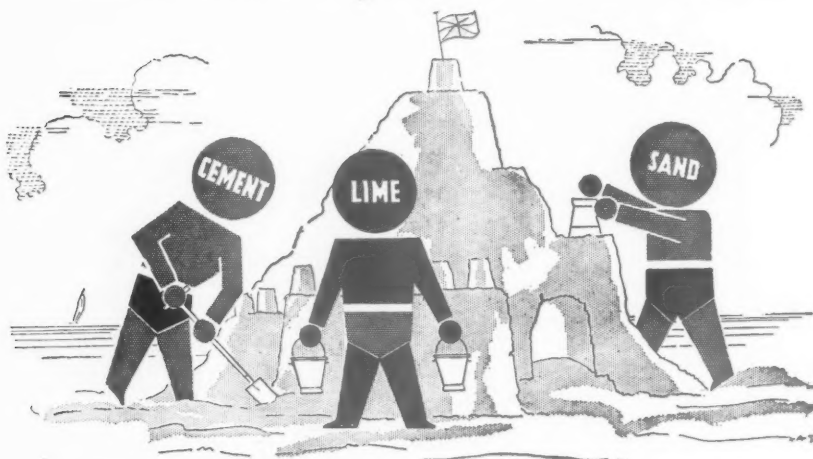
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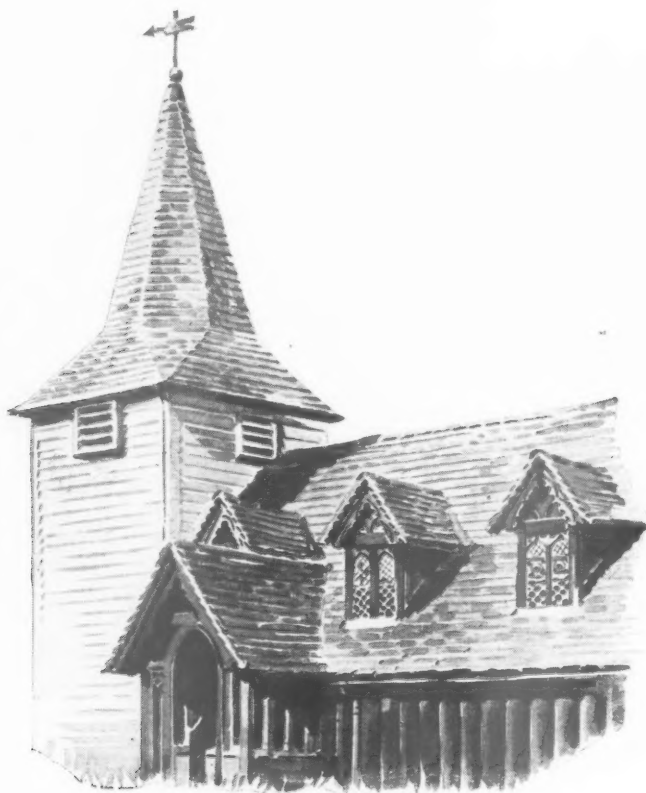
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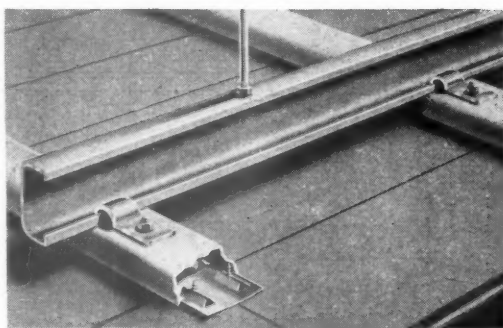
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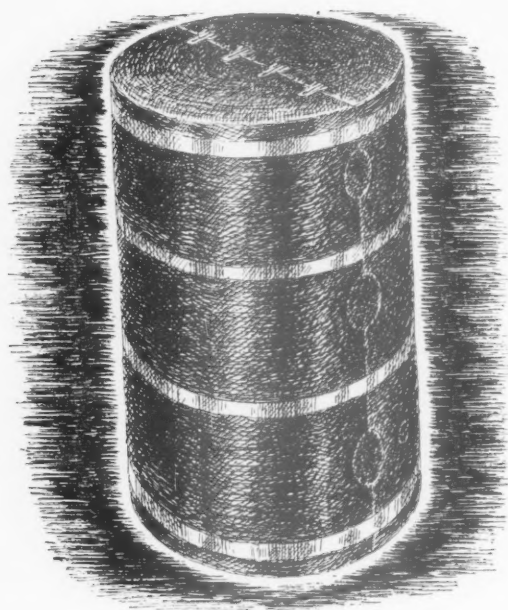
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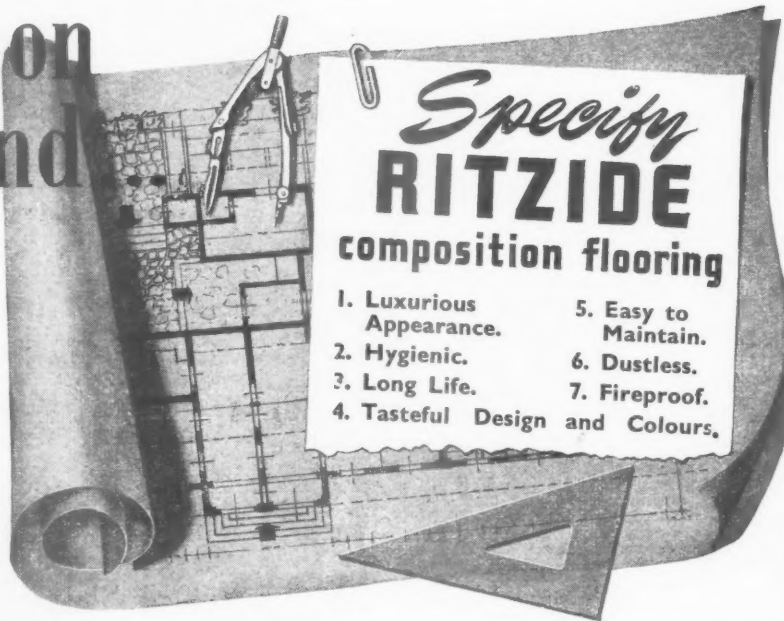
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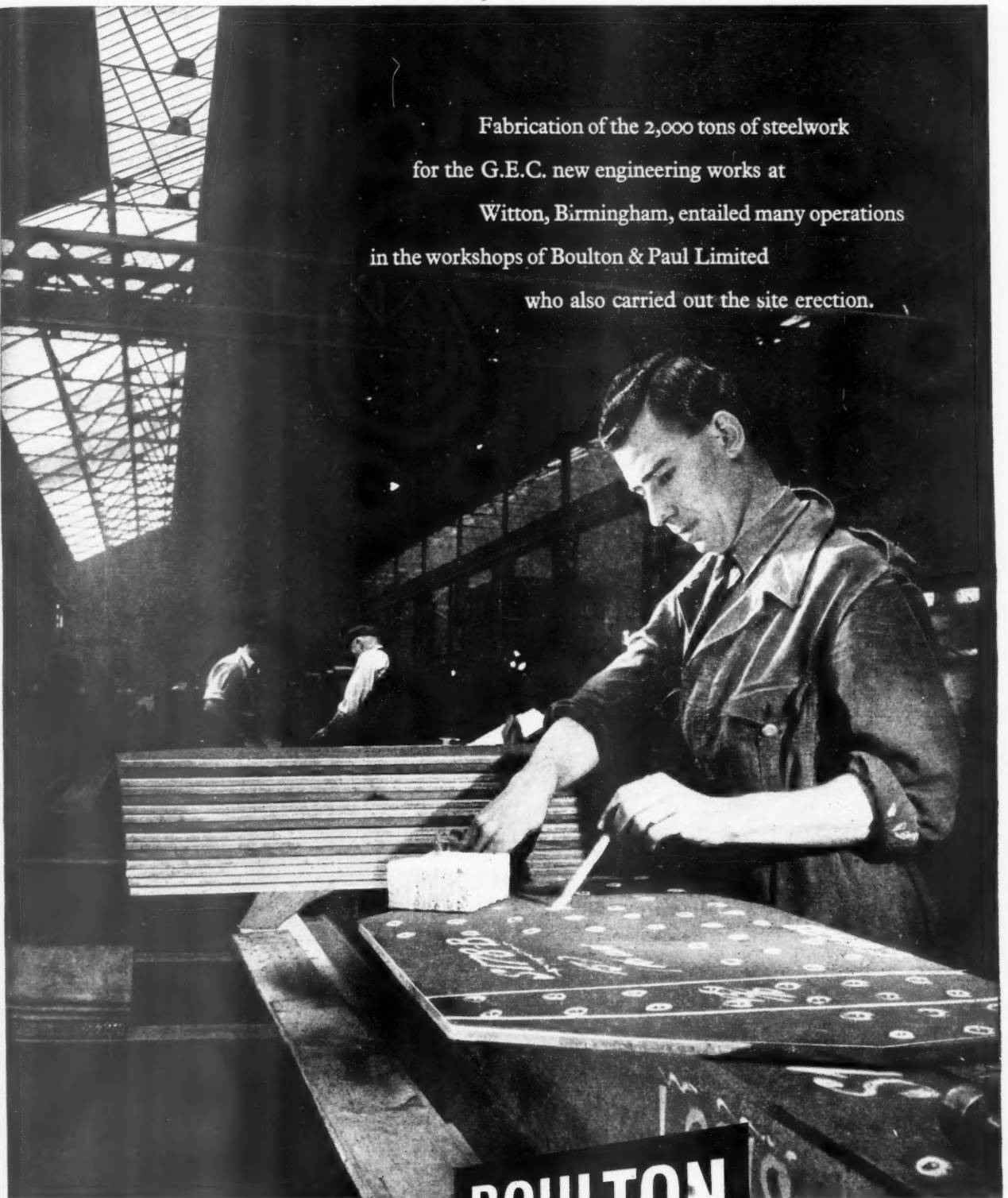
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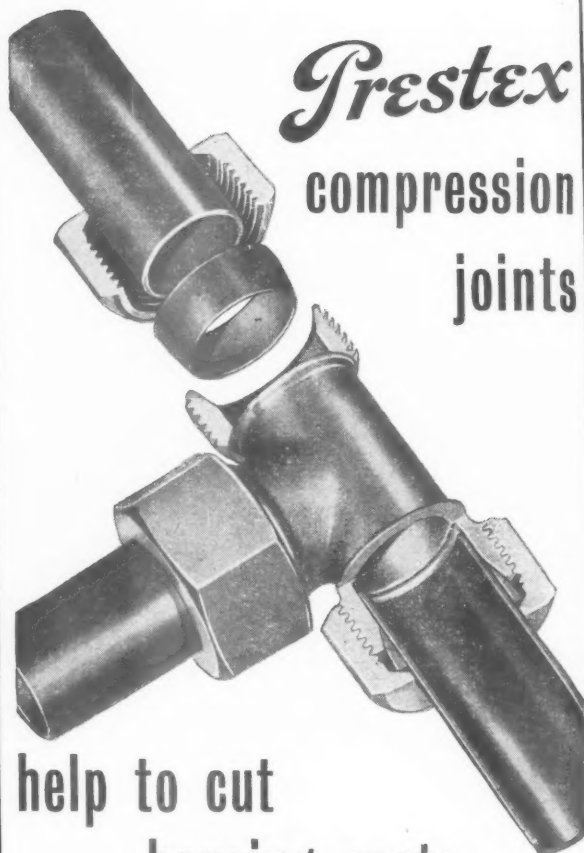
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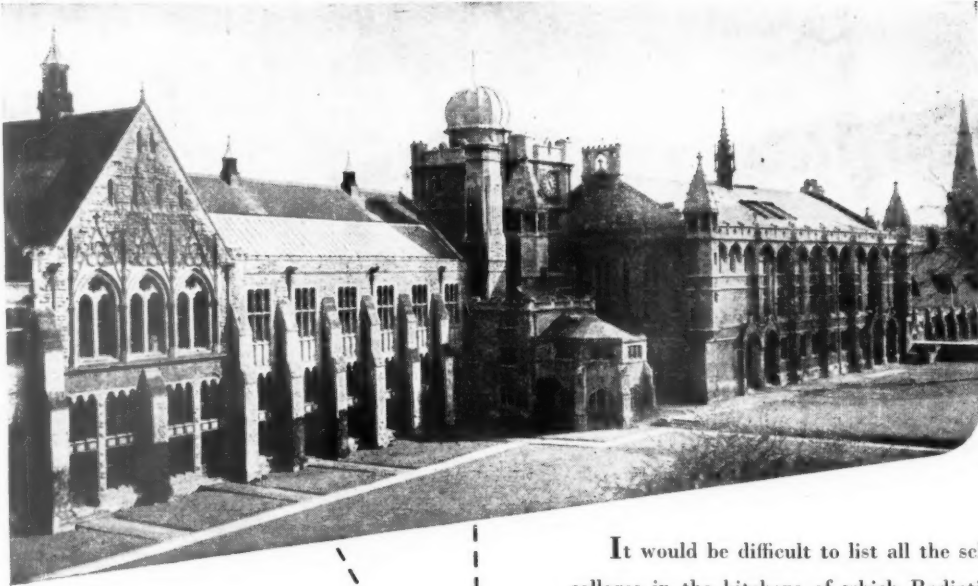
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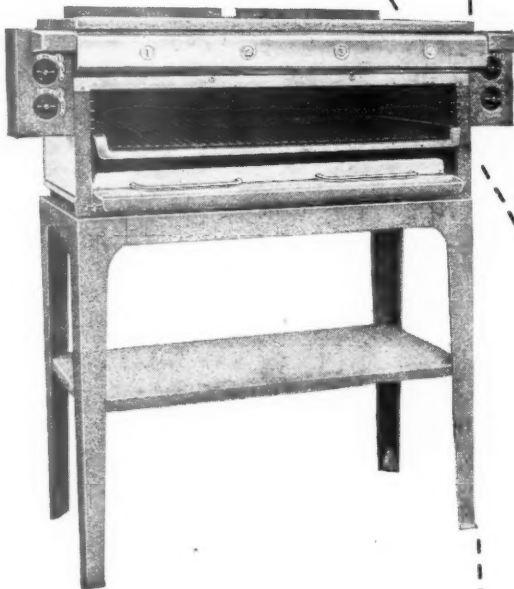
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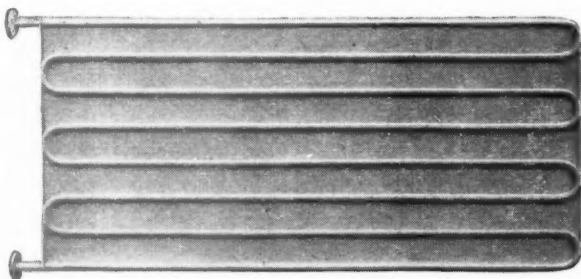


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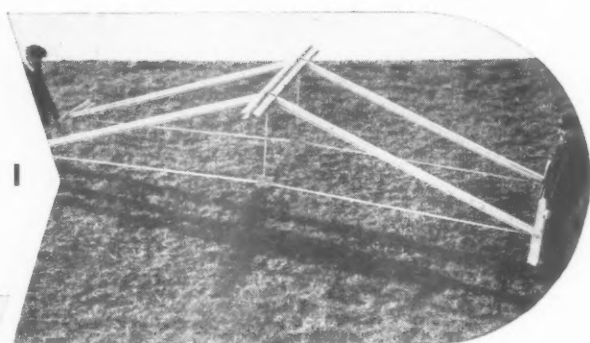
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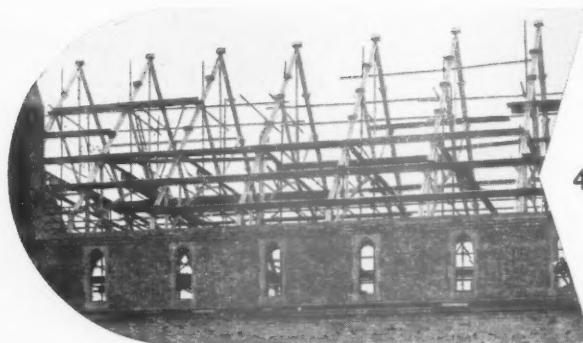
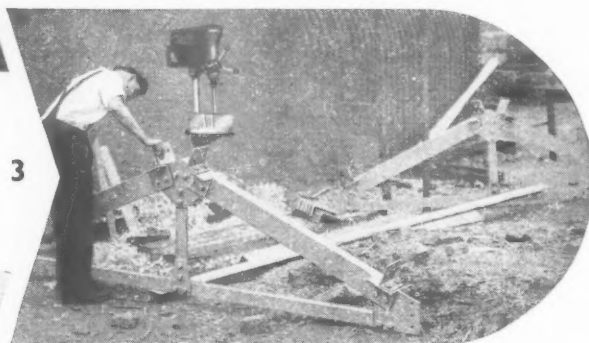
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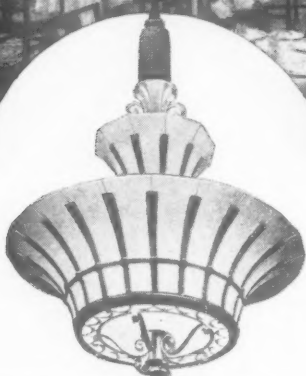
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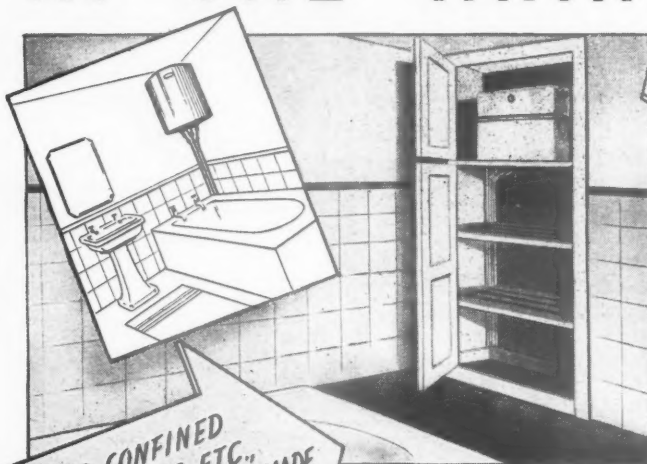
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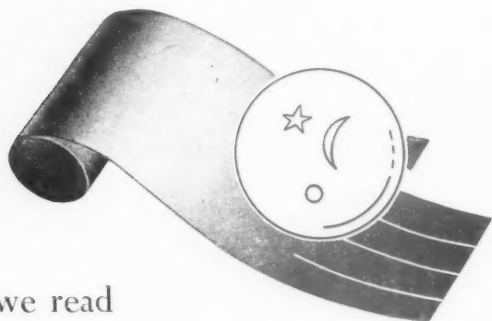
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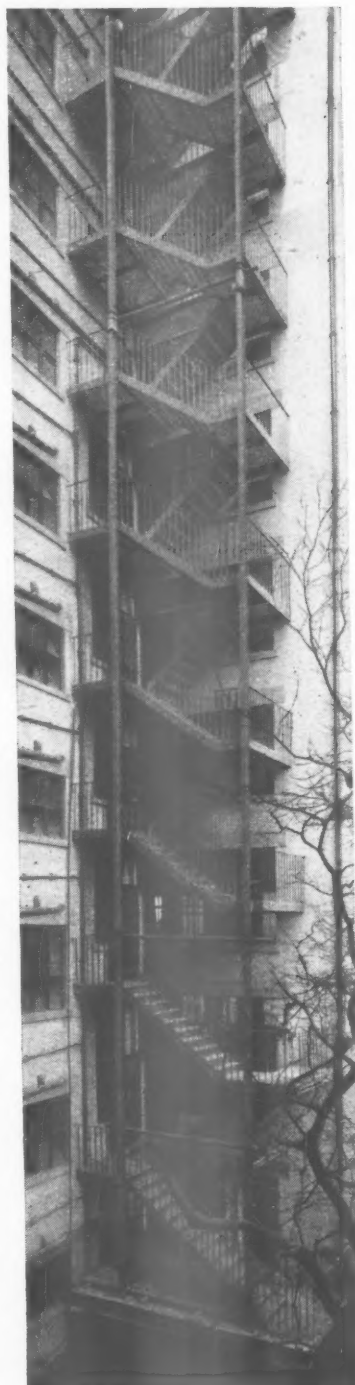
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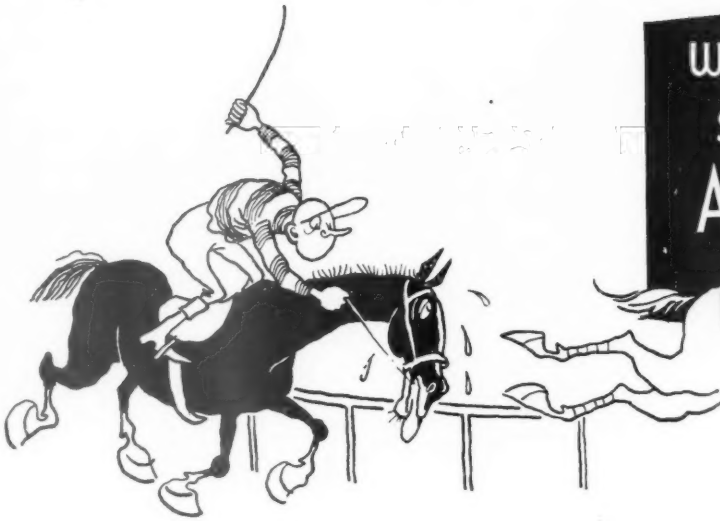
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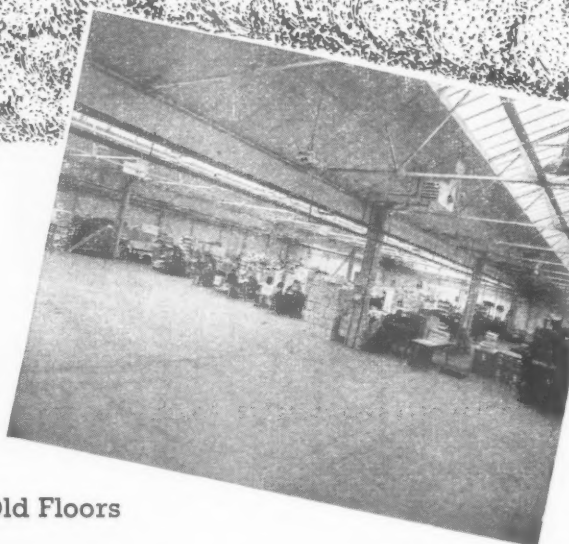
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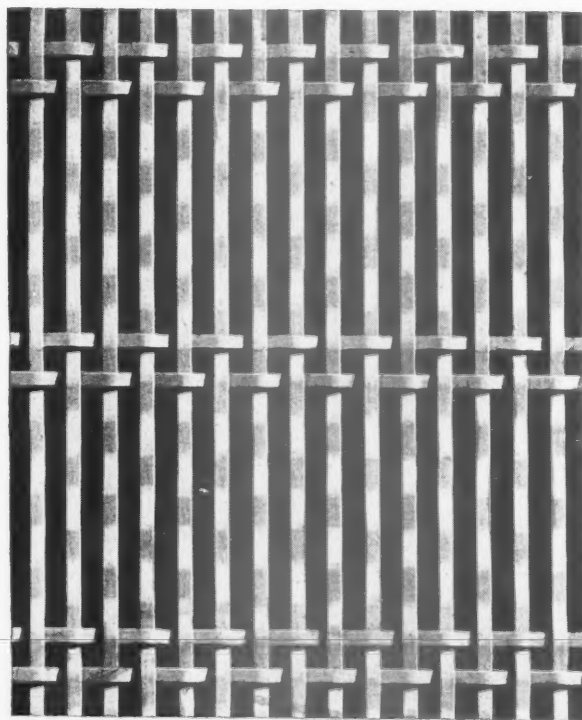
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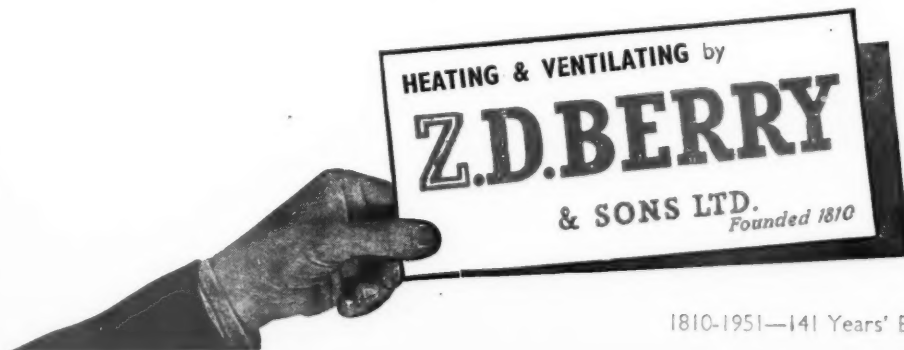
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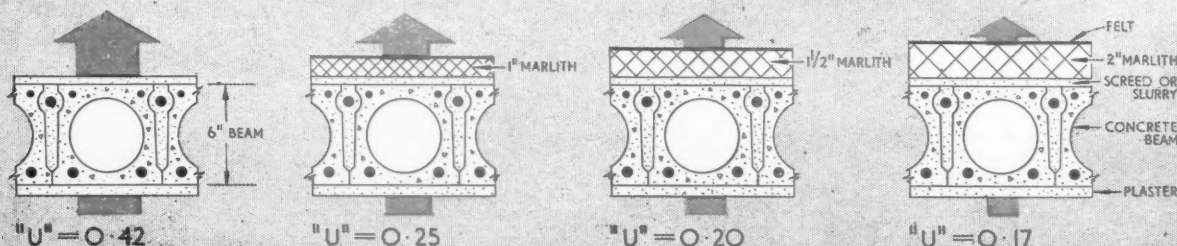
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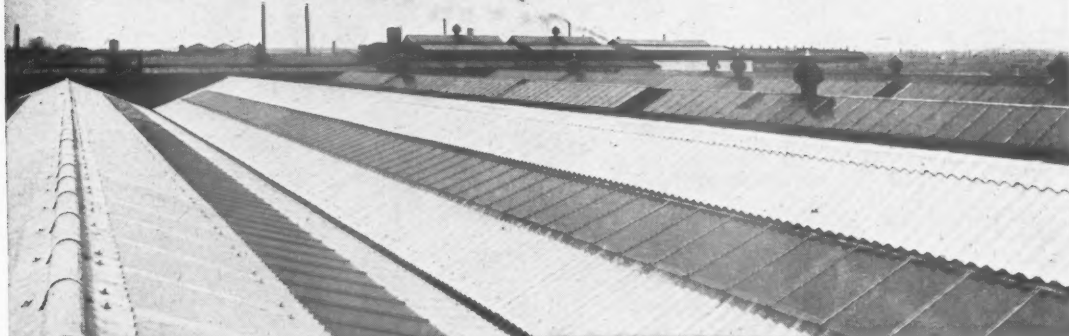
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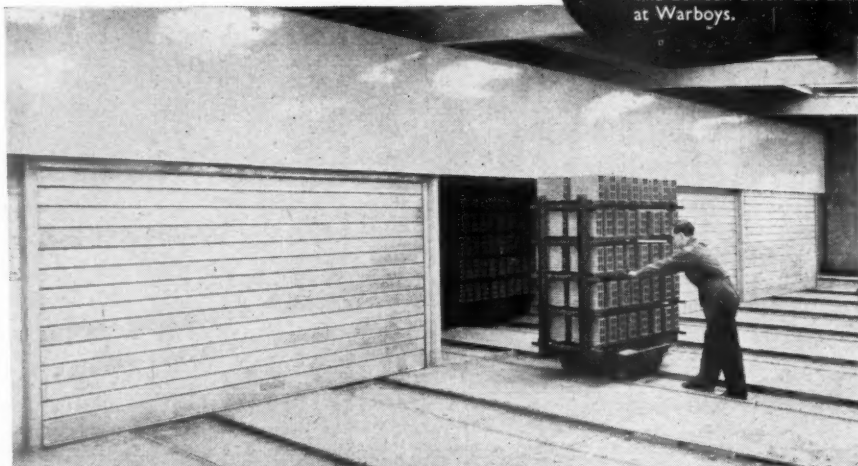
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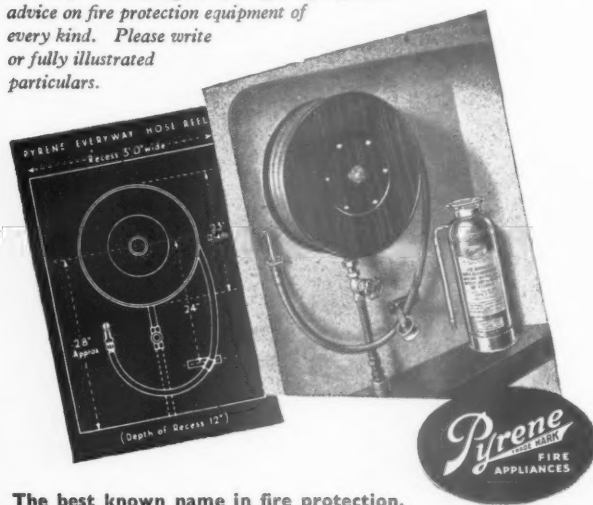
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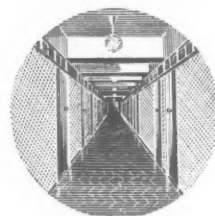
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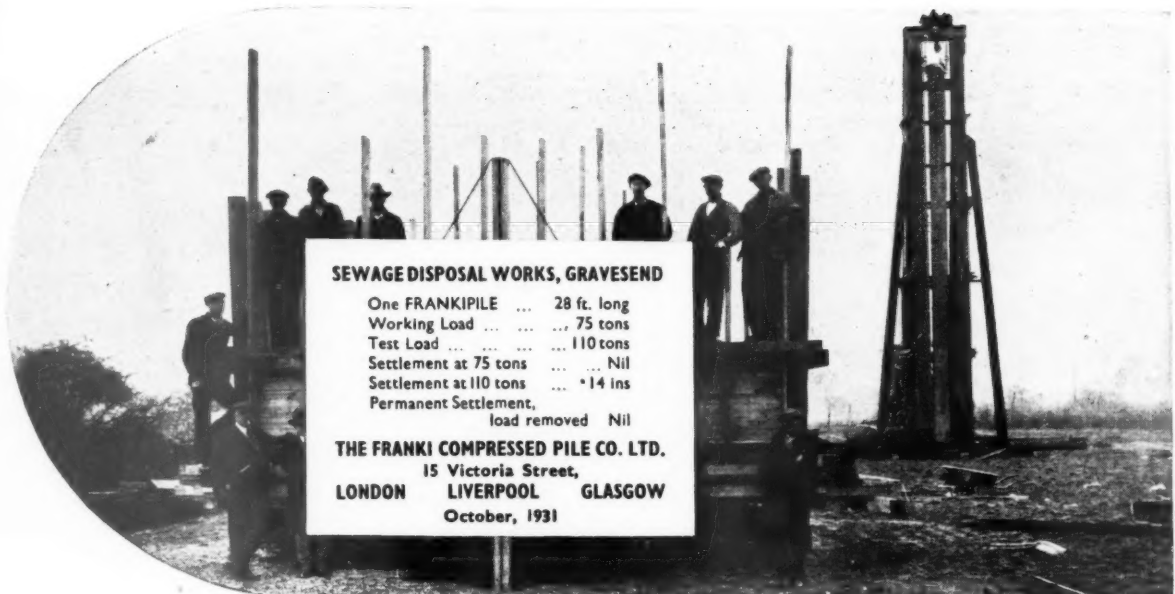
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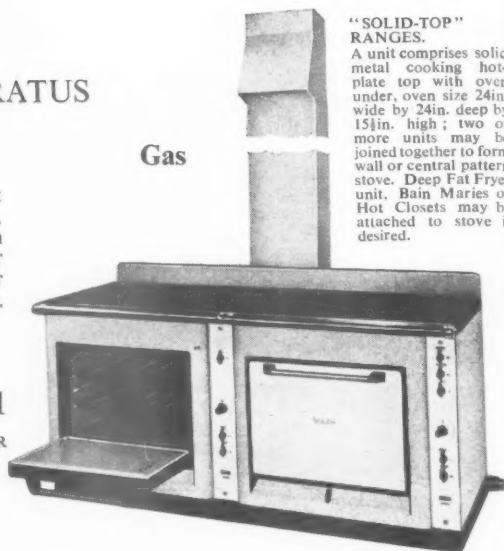
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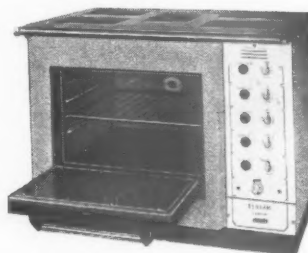
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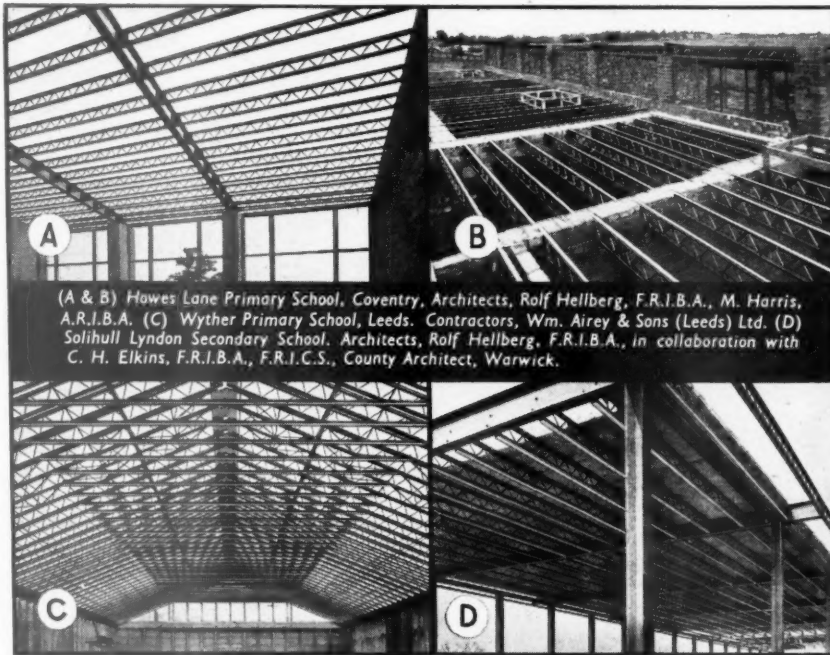
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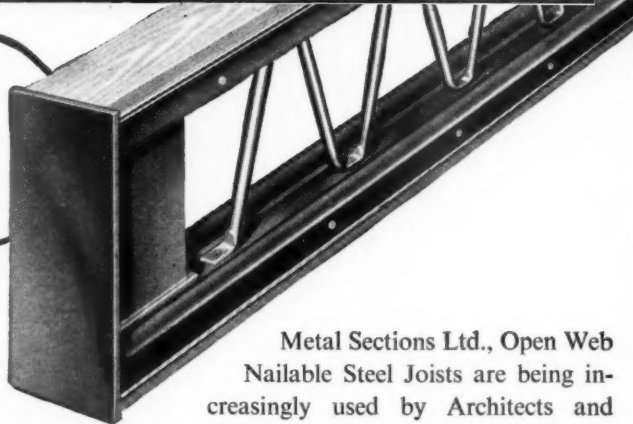
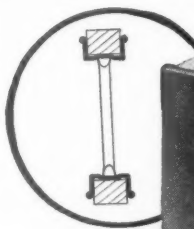
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THE ARCHITECTS' JOURNAL

No. 2950 13 SEPTEMBER 1951 VOL 114



INTERNATIONAL RESEARCH COLLABORATION

The second meeting of the Building Research Organising Committee, to which I referred a few weeks ago, took place last week at Maidenhead. The final session of these hard-working delegates was held on Sunday morning, so it is encouraging to learn that considerable progress was made. Three subjects were chosen on which it was felt that international collaboration on research could begin on a pilot scale, and the existing arrangements for international collaboration were carefully examined in order to discover exactly how much of the field of building research was *not* covered by them. As you might imagine, the field is a large one. By far the greater part of building research, in fact, is not covered by any really effective system of international collaboration at all.

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* To preserve freedom of criticism these editors, as leaders in their respective fields, remain anonymous

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The committee consisted of over twenty members, representing seven countries and seven non-governmental international organizations. There were several well-known architects present: including Marcel Lods, representing the International Union of Architects, M. Bodianski, the secretary of CIAM, Lucien de Vestel, from Belgium, Mr. Lindquist, from Sweden, and Phillip Arctander, of Denmark, who has been loaned by the Danish Building Research Organization to the United Nations Secretariat at Geneva. Alas, no British architects, you will note. Can it be that architects abroad are better fitted for contributing towards building research and this kind of research organization? An indication of the answer to this may, perhaps, be found by studying the list of speakers at the Building Research Congress, 1951.

ONIONS AND CREAM

I hear that the exterior of Brighton Pavilion is to be painted "Regency

cream," onion domes and all. And I must say I am dismayed.

*

If you visited Brighton earlier in the year, you may have noticed that one of the walls of the Pavilion was striped in a number of different colours. This was an experiment conducted by Director Clifford Musgrave with a view to discovering the best combination for the necessary repainting. Mr. Musgrave's committee, however, weren't having any, and, getting outside advice to the effect that the original colouring was Bath stone throughout, they plumped for that as the "correct" and therefore safe choice.

*

I don't know what swung them round to "Regency cream," which is presumably so called because in Regency times—as my historical experts assure me—it was *never* used on the outside of buildings. Nor do I know whether they stopped to consider the fact that quite a bit of the building—"balustrades, minarets, pinnacles, chimneys,

Delegates of the Building Research Organising Committee being introduced by Mr. Fitzmaurice, the chairman, to Mr. G. Trapani, the proprietor of the Skindles Hotel, Maidenhead, where the meeting was held.



C R E A T I O N W I T H C R A F T S M A N S H I P



Entrance to Coal Section at Exhibition of Industrial Power,

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columns and the facing of the ground floor drawing-rooms," according to Mr. Musgrave in his new book—is real Bath stone. But I do know that if the Pavilion authorities had been determined to show that they were altogether without feeling for the special qualities of the building in their charge they could not have found a surer way of doing so than by thus laying on it the dead hand of municipal "good taste."

In any case, *pace* Mr. Musgrave, was there so very much wrong with the old colour scheme, which dated from the previous painting of 1935? The green domes—how many people thought they were copper?—always seemed to me quite lovely.

WREST PARK

I can recommend the gardens of Wrest Park, now opened to the public by MOW, as a very good tanner's worth. They were laid out in the French manner early in the eighteenth century for the Duke of Kent and "improved and corrected" by Capability Brown in the early 1760s. They contain some notable embellishments in the shape of both buildings and sculpture.

The finest of the buildings is Thomas Archer's domed pavilion, which MOW has just finished restoring, at the end of the long water. This has been illustrated in many books, but few of those who are familiar with it in photographs can actually have set eyes upon it. The interior is painted in *trompe l'oeil* by a certain Haudroy, who also worked for the "magnificent" Duke of Chandos at Cannons Park.

The present house at Wrest, which is occupied by the National Institute of Agricultural Engineering and not open to the public, is one of the earliest examples of the French Rococo Revival. It was designed by the Earl de Grey who was the first president of the RIBA and so deserves a respectful—though not necessarily admiring—glance. What does deserve rather more than a glance, while you are in the district, is the de Grey burial chapel attached to the church at Flitton. This is a highly atmospheric affair, cruciform in plan, which holds one of the finest displays of monu-

The restored gardens of Wrest Park, Silsoe, Bedfordshire, are open to the public from 2 p.m. until dusk on Saturdays and Sundays until mid-October. Admission charge: 6d. The melancholy view of Leda, above, shows the state of the park in 1949. Right, the house.

mental sculpture, from the sixteenth to the nineteenth centuries, outside Westminster Abbey.

MORE ABOUT LITTER BINS

On a recent visit to the South Bank (I had not been there for quite a while) I was struck by an immense improvement in the litter situation. Even at the end of a reasonably fine day the place was not unbearably messy.

What is the improvement due to? Partly, I hope, to more conscience

about litter on the part of the public—the Festival authorities do their share in educating the public by reading it a little sermon on the subject every so often over the loud speaker system. But chiefly the improvement is due to a better organization for collecting litter and to the provision of a lot more litter-bins.

Jack Howe's charming grey and yellow litter-bin has been supplemented by a number of dustbins, as I mentioned a few weeks ago, but I fear I





Architecture for Acoustics

"The most important of Bristol's durable contributions to the Festival," writes Lance Wright in his survey of events in the West of England, printed on pages 312-318 of this week's JOURNAL, "is undoubtedly the reconstruction of the Colston Hall." Above is a view of the new interior, designed by Nelson Meredith, the city architect, within the old "Bristol Byzantine" external shell built, in 1867, by those scholarly advocates of this style, the architects Foster and Wood. It shows how markedly the details of concert hall design today are guided by the newly discovered science of acoustics. The dominating acoustic canopy overhead, the large areas of flat wood

panelling to provide resonance, the smaller areas of paneling in convex curves to diffuse sound, areas of pierced, soft and irregular surfaces to absorb sound, these, provided almost at the dictates of the scientists of building research, are the elements which go towards the creation of a contemporary design. There is thus in acoustic design the modern equivalent, in fact, of at anyrate *one* of the classical orders of architecture to discipline buildings of this nature. It will be interesting to see, as the acoustic research becomes more precise, whether the scientist will discover another, entirely different acoustic "order" for the architect to handle or merely refine the existing one.

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may have done Mr. Howe an injustice when I suggested that the dustbins were more effective because people more readily put their litter into something they were used to putting litter into. His specially designed bins, I am now told, were full up from the beginning. The trouble was that there weren't enough of them.

Incidentally the number of problems he had to overcome in designing what might seem a very simple object was remarkable; fixed positions could not be agreed in advance so the bins had to be transportable, which meant adjustable screw feet to rectify unevenness in the ground. The litter must not come in contact with the outer container and the bin had to be emptied in windy weather without the litter blowing about (Howe's solution was a removable inner container of strong paper). Finally the litter itself had to be invisible—the usual large-mesh wire litter basket is almost as unsightly as litter lying about on the roadway.

These are typical of the sort of problems a good designer takes in his stride but of which the public is often quite unaware.

IDEA: GOOD. PRESENTATION:

TERRIBLE.

Northampton architects have felt inspired, this being Festival year, to inform the public of that well-heeled town and its purlieus of the nature of the architectural profession, its training and responsibilities. The idea is admirable, but the execution is miserable. A collection of building components with copies of various documents relating to building contracts and professional training is, perhaps, all the raw material required to interest the public in the essential nature of the architectural beast and the services it can render. They must, however, be arranged at least in such a manner that the visitor is impressed by the quality, clarity and taste with which the story is presented. The Northampton exhibition has none of these things. The exhibition is overcrowded, the items are badly arranged, the lettering is slapdash and crude, and it would be kinder to say nothing about some of the work shown by local architects as an example of the achievements of the profession.

ASTRAGAL

The Editors

BUILDING RESEARCH CONGRESS, 1951

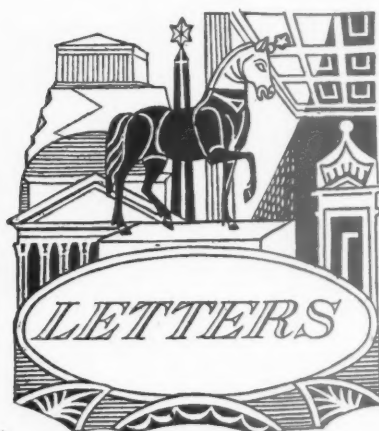
ONE of the most striking things about Building Research is its diversity. During the war, several thousand research workers could be found at one depot, all working on one subject—radio. But at the Building Research Station at Watford—a far smaller establishment—the number of subjects being investigated simultaneously runs into dozens.

It is no wonder, therefore, that at the Building Research Congress, now taking place in London, nearly 100 papers are being presented on subjects ranging from the "Influence of Prefabrication on Drawing Office Procedure" to the "Behaviour of Structures Beyond the Elastic Range" and from the "Quality Control of Concrete" to "Hospital Planning in the USA." On pages 325 to 333 we publish summaries of papers already presented to the Congress, and in our next two issues further summaries of the papers of most direct architectural interest will appear. In the issue of September 27 we will also be publishing a number of the discussions following the papers, for these are, to a large extent, the most important part of such a congress.

In spite of the excellent work being done by British research teams, particularly in the fields of heating, lighting and sound insulation, there has been for some time a certain feeling of uneasiness—a feeling that perhaps, because of the enormous range of subjects under investigation, we are unable to see the wood for the trees. Research workers in other countries complain of similar difficulties and it is hoped that the discussions of the eminent architects, engineers, scientists and contractors at this Congress will provide, quite apart from the invaluable exchange of information, a basis for co-ordinating the diverse activities of building research workers and a means whereby the limited resources which governments make available for research can best be canalised into the channels most likely to result in better, more efficient and cheaper building.

SUPPLY AND DEMAND

The report of the Building Apprenticeship and Training Council to the MOW on the shortage by 20 per cent. of enough properly trained apprentices to maintain the existing labour force is reviewed by Frank Russon, our Guest Editor, on page 312. The building crafts, with their capacity for satisfying man's innate creative sense, will always have a greater appeal to the manually skilled than the relatively unskilled distributive trades and factory work. But this quality, with increasing competition for the highly trained, will not ensure an adequate labour force. This is obtained by high wages, good working conditions and good chances for promotion. In the long run, the nation gets the quality of building for which it is prepared to pay. Before the war a building operatives wages were amongst the highest. Now they are about thirteenth. The laws of economics alone will solve the problem.



Stanley W. Milburn, F.R.I.B.A.

Christopher Knight, A.R.I.B.A.

A Competitor

Ill Equipped to Comment

SIR,—I am writing to protest against ASTRAGAL's sweeping comment in your issue of August 23, upon the designs submitted after what he states to have been a brief study. I would suggest that if he felt ill-equipped to comment on the winning design his remarks, in my opinion, indicate that he is more ill-equipped to comment in general upon the designs submitted.

No brief study could possibly do justice to many brilliant solutions which have been thought out over a period of nine months, and I think I need only refer to three or four apart from the premiated and commended designs, to illustrate my point. I wonder if ASTRAGAL examined design No. 204 submitted by Richard D. C. Scott, this is a most delightful solution to the problem, the plan being based upon a Greek cross. It is unfortunately not very well hung and is rather difficult to find. Another design which I think is worthy of note by R. D. Martin, No. 133, is in some ways a very brilliant solution and places the new Cathedral entirely below ground. The problem of leaving the existing ruins dominating the site has in this case been solved in a Napoleonic manner and is well worthy of comment. Another design which I consider worthy of very special mention is No. 119 by Alison and Peter Smithson, it is a brilliant contemporary piece of work maintaining the light and graceful tradition of the Gothic designers. Lastly, I would draw attention to design No. 85 submitted by L. G. Thomson. This is a very fine scheme worked out upon modern Gothic lines.

I could refer to many more brilliant schemes, but I think I have said sufficient to indicate that ASTRAGAL's sweeping condemnation of the Exhibition is totally unjustified and would never have been written if he had been able to devote more than a brief study to the architectural designs submitted.

Sunderland

STANLEY W. MILBURN

"Dogmatic and Sly"

SIR,—It is not often that you criticize buildings or designs, so that when criticism does appear one does not want to oppose it. But I feel that someone should make plain to you the impression your editorial

and ASTRAGAL's remarks on the Coventry competition have probably made on many people who will not write to you because they are personally involved as competitors, successful or unsuccessful. This reason applies to myself but I am prepared to be accused of prejudice, though I hope to show that I am only prejudiced against unfair criticism. I would say here that I do not support the winning, or any of the other designs, but it is not my object in writing to you to criticize the designs. I only want to criticize you.

There is about the tone of all the comments in the AJ for August 23 something both dogmatic and sly; there pervades it all an insinuation that the subject is hardly worth discussing for the reason suggested by your headline. But, because of the public interest in the competition and its very clear demonstration of the "modern" architect's greatest difficulty, you obviously felt bound to give it considerable space. Yet your generosity with space is entirely negated by your manner; there is very little reasoned criticism, but many dogmatic statements, many words with imprecise or ambiguous associations, many insinuations stand out from the general mass of the articles, through which runs an undercurrent of mingled boredom, dislike, and subtle denigration.

You imply that the winning scheme is dull, unadventurous, a nullity, because it makes no contribution to the development of modern architecture, which to you is synonymous with the exploitation of a new conception of space relationships and symbolism. You further describe these relationships as "intricate," but no reason is given why they should be intricate rather than, simply, subtle.

Certainly the winning scheme is not intricate; nor is it to my mind simple and direct, though obviously intended to be so. But you seem to accuse the architect of attempting a simple design with a strong one-directional emphasis, which you condemn, again by implication as out of date. Yet I can see no reason why one space conception, a simple one, is invalidated when more complicated or subtle ones become possible. You further imply adverse criticism when you analyse the design as a Gothic conception to which modern structural possibilities have been adjusted, and you suggest that modern structures produce "modern forms" which should have been used instead. But what forms? There is a variety of possibilities which express quite different conceptions of structure and space; some resemble the effect of Gothic, others resemble the great centralized space under a dome, "the still centre of the turning world."

The only alternative to the Gothic and Renaissance conceptions is the sort of combination of both with additional interpenetration of inside and outside spaces, which modern structures make possible, and which you consider essential.

But it is surely permissible to think otherwise, and it is surely possible for you to give reasoned and straightforward arguments to support your view? And if you are faced with a design based on a conception with which you disagree, either you must ask whether the conception is right (a question worth asking when the architect is presumed to have been previously what you consider a "modern" architect) or you should admit your inability to criticize fairly because you are biased. Otherwise you can only ask, critically, whether the architect has achieved his aims.

Instead you merely make two dogmatic statements, one that we cannot now be monumental, (surely a *debatable* point) and the other, (astounding!) that we cannot now express emotion in architecture without *tending* to be either derivative, vulgar, or banal. See ASTRAGAL's description of all the "modern" designs save

one (which he might have named) as "insipid, vulgar, or banal." To say that, is to say, for example, that the Swiss Pavilion either expresses no emotion about modern life or else that it tends to be derivative, vulgar, or banal, both statements being patently absurd.

You further throw doubts on the popular demand for a new cathedral (more correctly the rebuilding of the old one) and imply that without it the merit of the building and the sincerity of the architect are affected. This seems to me irrelevant, and untrue, because it is well known that a large public does want the cathedral rebuilt, and one is justified in suspecting that of those who don't, many would not use it anyway.

Your argument would condemn most or all modern architecture, which its most ardent supporter would not deny has more enemies than friends amongst the public.

London

CHRISTOPHER KNIGHT

Pulling Punches

SIR,—In connection with the Coventry Cathedral Competition, the writer of your leading article in the JOURNAL of August 23 thinks the standard reached by the competitors is most disappointing. Personally, I think it is disgraceful, in fact it is unbelievable. I thought that the conditions were extremely well written and gave a very good lead, but hardly anybody took the lead, least of all the premiated designers!

What the competition called for was new thought on the planning of churches and there can be no doubt whatsoever that the one thing which is not wanted these days (and I speak from experience in all types of parishes), is a long narrow building. All the clergy nowadays want more of the auditory type of plan introduced by Wren; in fact a large space in which the congregation can worship close together and have the parson, if not in their midst, at least as close as possible to them. Yet you will notice that nine designs out of ten had naves as long and narrow as the naves of mediæval basilicas.

Secondly, I thought an over-riding requirement was that the new Cathedral should be subordinate to the old. The old spire, itself, dictates this, and yet you will notice that nine out of ten of the designs, including the winner's, are so overpowering that the poor old Cathedral looks lost beside them.

However, there cannot be any doubt that of the traditional schemes, Basil Spence's was far away the best and was most beautifully worked out. My only surprise is that it is hailed as Modern Architecture!

The Leader in that issue of the JOURNAL was, I thought, very good indeed and hit the nail well and truly on the head even if the punch, so to speak, was slightly pulled.

A COMPETITOR

To follow this correspondence we are reprinting from the The New Statesman and Nation of September 8, part of the review by John Summerson, the distinguished critic and historian of architecture, of the designs for Coventry Cathedral.

Of the five designs recently exhibited at the Building Centre in London, only that by the winner, Mr. Basil Spence, inspired real confidence. Generally, the competition confirms the view that, to younger architects, the designing of cathedrals has quite lost its glamour. Traditionally the greatest of opportunities, it is precisely the one for which their present outlook unfits them. The trouble is obvious. Beyond a certain point, a cathedral "programme" is incapable of analysis. It is really no good supposing that the "poetry" of Le Corbusier can have the slightest relevance to a place of orthodox worship, however "liberal" the orthodoxy, or that an Anglican cathedral in the style of the Royal Festival Hall (optimistically

adopted by at least two Coventry entrants) can be anything but, at best, a slightly blasphemous satire. A sense of grappling with material and economic factors, factors capable of analysis, is the life-blood of the modern school of architecture. Suspend this conflict and the architect wilts with embarrassment. There is then only one thing he can design—an Exhibition Building, a Pavilion of Religious Art.

Mr. Spence's Coventry design has a good deal of the exhibition about it. The plan, with its zig-zag outer shell, is the kind of fascinating novelty which one looks for, and finds, at South Bank (not least in Mr. Spence's own Sea and Ships pavilion). Yet something has saved Mr. Spence. Partly, it is his own well-developed decorative sense and rich invention; and partly a real feeling for symbolism. Judging by his report, he has used symbolism as the sanction and check which the intuitive designer needs, and normally looks for in the dictates of function and a modular code. Incredibly, he was the only architect among the short-listed five who saw that a Chapel of Unity must, at almost any cost, be a central-space affair. His contention that the exterior of this Chapel is in the shape of a crusader's tent and is therefore appropriate to the crusading function of the modern church means, I suspect, more to him than it does to me, but the important thing is that it has meant something to him, just as the descending bays of his nave have symbolized, for him, the phases of human life. In other words, Mr. Spence believes in his own design—a pre-requisite of success not, I think, possessed by many of the authors of designs submitted in this competition. In an age when the designing of churches has reached a point of extreme deflation, Coventry has been marvellously fortunate.



HONG KONG

New Faculty of Architecture

The University of Hongkong have raised the status of the Department of Architecture to that of a Faculty. This becomes operative from September 1 of this year. Last year, the school at Hongkong University started with just under fifty students and it is already clear that there will be more applicants for entry in the coming year than the University can accept.

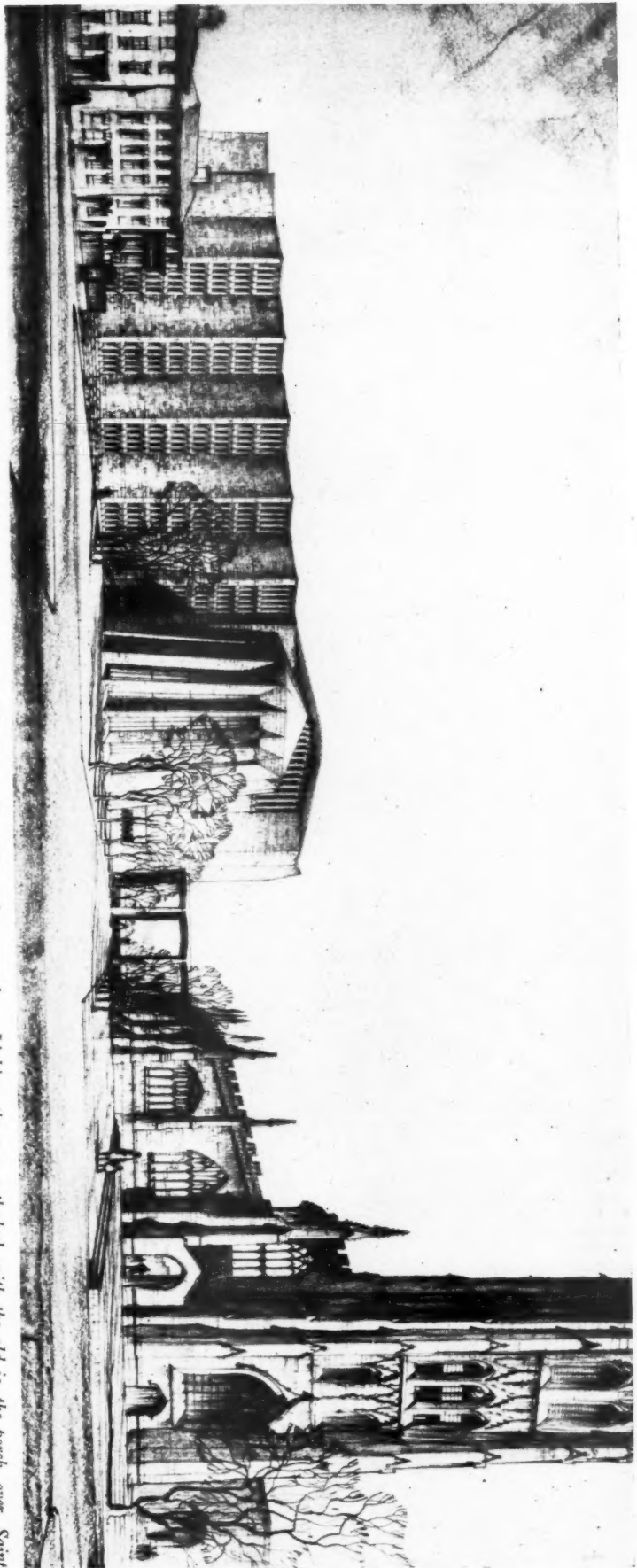
COMPETITION

Dunoon Pavilion

The design by Ninian Johnson, of Glasgow, for a new pavilion and concert hall at Dunoon was selected by the assessor, A.

Above is a perspective sketch by Lawrence Wright of Basil Spence's design for the new Coventry Cathedral. It has been drawn from a point near the east-end of Holy Trinity Church. In the centre of the sketch is the Chapel of Unity, designed in the shape of a crusaders tent to symbo-

lize this modern crusade. Linking the new cathedral with the old is the porch over Saint Michael's Avenue, the traditional right of way. On the extreme left are some of the houses in Priory Row which, under the conditions of the competition, are to be retained.



Graham Henderson, President, R.I.B.A., as the best of the six designs submitted in this limited competition. No second or third prize was awarded. The six architects selected to submit designs each received one hundred guineas. The fees for the erection of the building constitute the winner's award. All the designs submitted are on view at the Scottish Building Centre, Sauchiehall Street, until Saturday. The winning design will be illustrated in next week's issue.

The building industry is short of apprentices. Below, Frank Russon, the Birmingham building contractor and the JOURNAL's Guest Editor, comments on the recent report to the MOW on the subject by the Building Apprenticeship and Training Council.

FRANK RUSSON

Building Trade Apprenticeship

For the first time since hostilities ceased the Building Apprenticeship and Training Council has been in a position to review apprenticeship training throughout the whole of the country. The Council considers that its present targets are still a sound guide for the industry, and in an endeavour to meet the obvious shortages of apprentices it issues three main recommendations:—Firstly, that the industry in the worst-affected areas should immediately and strenuously stimulate recruitment into undermanned crafts, especially bricklaying, plastering and masonry. Close co-operation is advocated with educational authorities in the provision of facilities for vocational and technical training. The need is stressed of advising parents of special opportunities in certain crafts. Secondly, that employers should give fuller support to the Industry's National Apprenticeship Scheme, as it appears that in many areas boys cannot find satisfactory apprenticeships. Thirdly, that every apprentice should be properly indentured and registered with the Council as receiving approved training.

APPRENTICESHIP FIGURES

The review of the apprenticeship census is made possible by the information supplied by the firms in the thirteen main trades which comprise the industry. Apprenticeship strength, as at May, 1950, is 88,000 compared with 83,000 in August, 1949, and whilst these figures show an improvement, they are still 22,000 per annum below the Council's target of 110,000. It will be noted from the

figures given in the table below that there would appear to be a surplus of boys entering the trades of carpenter and plumber, whilst every other trade is well below the target set by the Building Apprenticeship and Training Council.

There is a great shortage of bricklayers, plasterers and masons throughout the country, and this particularly applies to large industrial cities where builders are in constant competition with other industries that can offer higher wages, no loss of time for inclement weather, improved canteen and welfare facilities and other incentives seldom found on building contracts.

The wages of the apprentice today are very different from those prior to the war, for a boy of fifteen can start in the industry at a rate equivalent to 25 per cent. of the craftsman's rate, rising to 87½ per cent. at the age of 20. Although these wage rates are exceedingly high in comparison with pre-war level, the commencing wages offered in factories are often in excess of these rates. It would seem, therefore, that what really matters to the boys, and also their parents, is the bigger wage packet, and not the accomplishment of becoming a craftsman, which can in turn lead to an executive position depending upon the ability of the individual.

It is also apparent that boys leaving technical colleges express, in the majority, a preference to become surveyors or carpenters. But it should be noted that, in addition to carpentry, other skilled craftsmen are urgently needed in the trades of bricklaying and masonry and, of course, all these trades are stepping-stones to the higher position of general foreman.

THE BUILDER'S RESPONSIBILITY

Another factor of importance is that few building firms have taken up their quota of apprentices because of the apparent uncertainty of the future, or because there is not the quantity of first-class buildings of all types being erected in the country today. In fairness to the contractor and to the apprentice, a boy cannot be trained in any trade on the erection of houses and flats alone; he must have some part of his training on this type of work, but he should also be afforded an opportunity of serving part of his apprenticeship on better-class building. It is only too apparent that an apprentice completing the whole of his training on housing is not viewed with great favour by the architect and clerk of works for work on civic buildings and the like.

The shortage of masons is most serious throughout the country. Boys are not attracted to this trade because of the uncertainty of the future, for in most towns there has been in the past a surplus of masonry work at some time, whilst there has been insufficient to provide full employment at other times. There may be one satisfactory solution to this problem and the difficulty may be overcome by a selected number of boys being apprenticed to dual trades, such as bricklaying and masonry, serving part of their time with each.

The NFBTE is well aware of the serious position of apprentices, and is actually considering what can be done to improve the matter, for if the target of 110,000 is not reached, the problem will become a most serious one for the whole country. Sugges-

tions put forward to improve the number of apprentices at work in the building industry are:—(a) That it should be a contractual obligation; alternatively (b), that it should be part of the working rule enforceable under the Fair Wages Clause, for all builders to take the necessary number of apprentices.

It must be stated that there is no definite quota of apprentices to craftsmen at the present moment. It was expected that all builders would take as many apprentices as they could reasonably handle. Many builders have done so, but the majority have few, if any, apprentices, due to the uncertainty of the trade or because they feel that they may not have work for the apprentices in two or three years' time. There is no reason why all builders should not take a reasonable quota, because conditions of apprentices today are such that a builder can appeal to the Regional or Local Joint Apprenticeship Committee if he has no work available, and can ask those committees to place the apprentices with other firms.

A correspondent in Bristol contributes the following survey of recent architectural news from the West of England. We hope to follow this shortly, with reports of a similar nature from other parts of Britain and Ireland.

LANCE WRIGHT

Report from the West of England

The South West—like doubtless the other regions—has been spending its best energies during these last three months on the Festival. The argument about how exactly these energies were to be spent has resembled strikingly the argument which was roused after the first world war on "what to do for a war memorial." There has been the same sharp division between the practical men who have seen it only as an opportunity for doing something which wanted doing anyway and the more ardent types who have seen it as a great occasion which could only be marked by some exhausting gesture devoted to this end alone. Whereas in the war memorial controversy it was a straight fight between cottage hospitals and stone warriors, angels and wreaths, this time it has been a straight fight between bus shelters and the speeding-up of a showy fraction of the civic rebuilding programme on the one hand and the elaborate *ad hoc* exhibition on the other. If we are to judge the matter according to the popular response, those who backed the less imaginative line have been proved to be right. For generally speaking only a fraction of the expected hordes have gone to see the exhibitions.

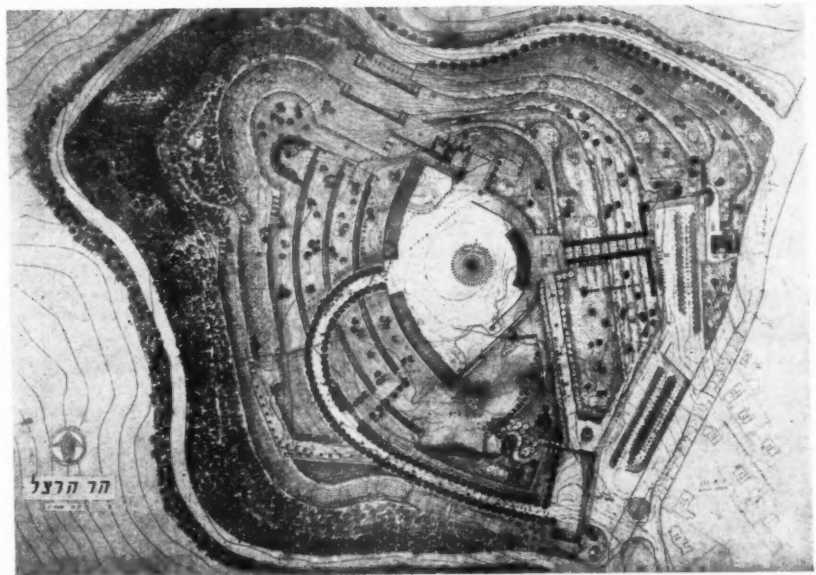
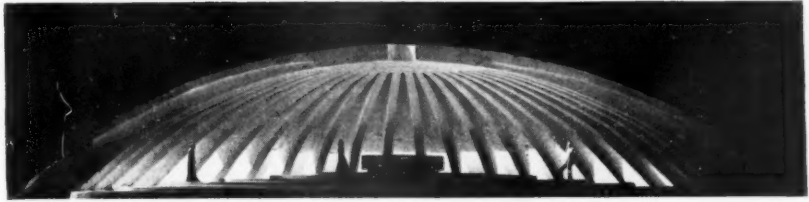
Though tempting, it would be untrue to suggest that those who stayed away did not miss much. But the fact remains that the art of mounting exhibitions is not yet indigenous in these parts. The *Campania*, steaming gingerly round this difficult coast, with local mayors descending in helicopter on her flight deck, has come a year too early to be an object lesson. Undaunted at the possibility of being thought corny the City of Plymouth re-enacted the Victorian myth of the game of bowls. The City of Bristol, on the other

| | B.A.T.C. Targets as a Percentage of Total. | Actual Percentage of Total Apprentice Force in each Craft. | |
|---------------------------|--|--|------------|
| | | August, 1949. | May, 1950. |
| Carpenters | 26.0 | 33.4 | 32.7 |
| Bricklayers | 21.0 | 16.3 | 16.9 |
| Slaters/Tilers | 2.0 | 1.8 | 1.8 |
| Plasterers | 8.0 | 4.5 | 4.8 |
| Painters | 25.0 | 21.8 | 21.0 |
| Plumbers/Glaziers | 9.5 | 16.8 | 16.5 |
| Masons | 2.5 | 1.7 | 1.6 |
| Other Crafts | 6.0 | 4.4 | 4.7 |

WINNING DESIGN FOR THE HERZL MEMORIAL, JERUSALEM

Last week we published the results of a competition arranged by the Executive of the Zionist Organization, for a memorial to Dr. Theodor Herzl, the founder of the Organization. The memorial is to be erected on Mount Herzl, Jerusalem. On the right is shown a section, a sketch, and a site plan of the design by the winner Joseph Klarwein, of Jerusalem. The jury pointed out that the competition had an unusual theme, with few precedents. The vastness of the Jerusalem landscape presented the competitor with special problems, especially to architects who did not know the locality. The jury commented that the general spirit and shape of the winner's design are excellent. It has dignity and provides a really adequate space for people coming to Herzl's tomb or gathering round it. It gives a sense of enclosure and concentration (enhanced by the skilful use of light falling from above on the tomb itself) and at the same time the connection with the vast landscape is preserved through the many openings between the ribs. The memorial as a whole has the advantage that, when completed, it would give Mount Herzl its final shape. The jury also noted the following points. The traffic scheme is workable, but would need some readjust-

ments. The first approach and the courtyard and buildings at the entrance are excellent; a very suitable area for assembling processions is provided. It is suggested that the general height of the memorial itself (the dome) should be checked as there were some doubts as to its adequate height. However, the height of the entrances between the ribs is convincing. The geometry of the plateau is excessive; a contour more corresponding to the natural shape of the ground seems to be better. The jury recommended that the designer check the form of the terraces and their intersections with the approach to the tomb with a view to re-adapting them to the topography and to the special character of the hill. The chief approach to the memorial is good. The treatment of the family graves and of Wolffsohn's tomb is good, as is the access to them and to the military cemetery.

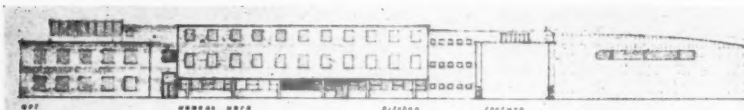


The processional stairs leading down from the memorial to the parking place should be altered or abolished. Their solemnity is in painful contradiction to the view of the buses and cars to which they point. The proposal to cover the dome with climbing plants should be discarded. The question of outer and inner facing of the dome with mosaic was considered. The jury thought that an inner facing might be desirable and feasible, but it expressed doubts as to the desirability and durability of such an outer facing. Finally, the jury report that the plan is accepted as a basis for execution. Minor adjustments in the memorial and major adjustments in the plan (approach, traffic layout and parking spaces, etc.) will be agreed upon between the designer and a special committee to be appointed by the Executive of the Zionist Organization.

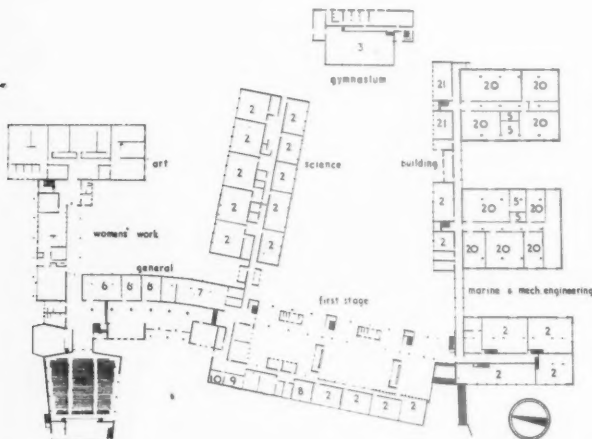
MARINE AND TECHNICAL COLLEGE COMPETITION, SOUTH SHIELDS

2nd PRIZE : C. W. H. WRIGHT

The first prize winning design and full details of the competition were given in the JOURNAL for August 23. The competition assessor was S. W. Milburn.



North elevation



Ground floor plan

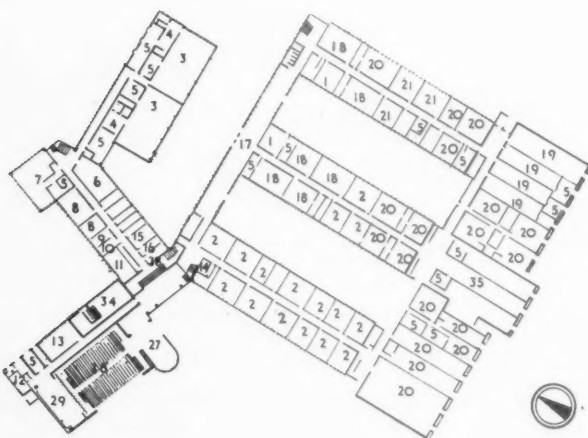


First floor plan

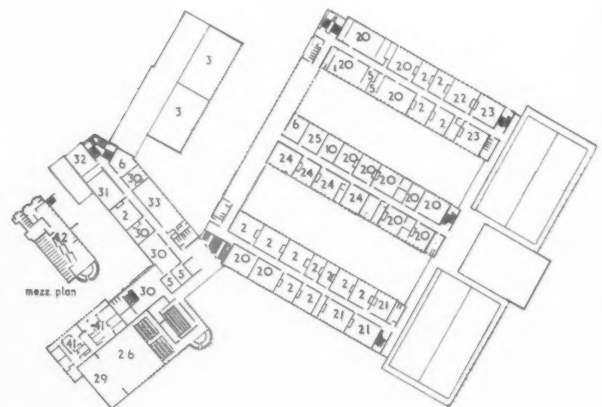
KEY TO BOTH DESIGNS

- | | |
|-------------------------|-------------------|
| 1 Lecture room | 12 Dressing room |
| 2 Classroom | 13 Music room |
| 3 Gymnasium | 14 Porter |
| 4 Changing room | 15 Principal |
| 5 Store | 16 Secretary |
| 6 Students' common room | 17 Locker room |
| 7 Library | 18 Laboratory |
| 8 Staff room | 19 Building dept. |
| 9 Records | 20 Practical room |
| 10 Registrar | 21 Drawing office |
| 11 General office | 22 Geography room |

- | | |
|-------------------------|-----------------------|
| 23 Typewriting room | 33 Housecraft room |
| 24 Art room | 34 Heating chamber |
| 25 Study room | 35 Marine engineering |
| 26 Hall | 36 Shop |
| 27 Foyer | 37 Lecture theatre |
| 28 Projection room | 38 Waiting room |
| 29 Stage | 39 Craft room |
| 30 Cookery room | 40 Refectory |
| 31 Health subjects room | 41 Flats |
| 32 Committee room | 42 Cloaks |



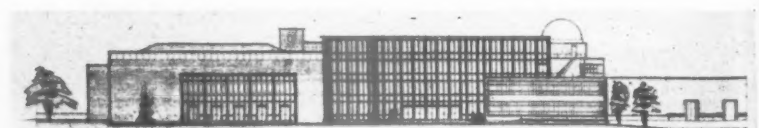
Ground floor plan



First floor plan

3rd PRIZE : HARRIS & GARD

(All four plans have been redrawn to ensure legibility in reproduction).



South-west elevation and main entrance.

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hand managed to steer clear of the merchant venturers and with teeth clenched staged a show entitled "Our Way of Life." If this failed as a spectacle this was partly due to its being sited in a cinder-strewn waste somewhere behind the conveniences on the rugby ground, but chiefly because it was all too candid. Bristol spent, in all, some £40,000 on the Festival—about 2s. per head. But most of this money seems to have been used up getting the moth balls out of bunting acquired for the Coronation of King George VI. That Bristolians, as a whole, are starved for glamour is proved by the immense queues of buses and cars which crawled up to Clifton every night, at 10 p.m., to witness the turning on of the fairy lights on the suspension bridge.

One additional reason why the exhibitions proper failed to attract may have been the resolute way in which architecture pushed her face into the marquees. At short notice, with no funds and in a space ten feet by four the students of the R.W.A. School managed mysteriously to convey their way of life and in the adjoining corporation tent the architect's department was given an undoubted pride of place. Models and perspectives showed the versatility of the department, and the varied tongues in which she speaks, and projects were put forward for the next half-century. What matters is that the City Architect and his men should have been given this opportunity and should have taken it. Bristol sees things, but in Bristol glass, darkly.

EXHIBITING THE COTSWOLDS

The most informed of all the West Country Festival show pieces is surely "The Cotswold Tradition" at Cirencester. Forewarned by clusters of red and white maypoles that something is going on, the visitor enters a forbidding door in Lord Bathurst's park wall and steps immediately into something which might have escaped from the Lion and Unicorn Pavilion. Giant display figures by Russell Gammage drive home the picturesque truth that cloth from the Stroud Valleys is used for papal robes, guards officers' uniforms and billiards tables. Round these are hung, pinned, suspended or encased every telling morsel of Cotswoldiana that could be imagined. The thing is exceedingly well done. Mrs. Airey, the redoubtable hon. secretary, has goaded Oliver Hill (the designer) John Betjeman (who wrote the captions) and a great many others into doing, or giving, their best and between them they have mounted a truly vivid argument for all that they hold dear. Stated in the broadest possible terms this is, of course, the notion of quality—a notion which here has blossomed in a markedly patriarchal frame. It is inevitable that the note should be struck most resonantly in works which belong to the past. But it is also noticeable that whereas the tradition took in its stride the jump between the Mediaeval world and that of the Renaissance, it seems to have hedged so far the jump between the Renaissance world and the Modern. In neither the architecture nor the craft section are there any exhibits to suggest that we are in the throes of change. This is not primarily the fault of the designers of the exhibition, and we may at least be grateful to them that fastidiousness has caused them to reject such half-baked manifestations of the new spirit as are to be found on their territory. The fault lies with history and when you consider the matter it is surely surprising. The Cotswold valleys have a long tradition of industrialism and, on the face of it, it would have been the easiest thing in the world for some new Patriarch to have set up a Taliesin at Northleach or Hawkesbury Upton.

TURNING UP THE PAST

Another Festival contribution which seems to come under the exhibition class, though the substance of it is by no means so eph-

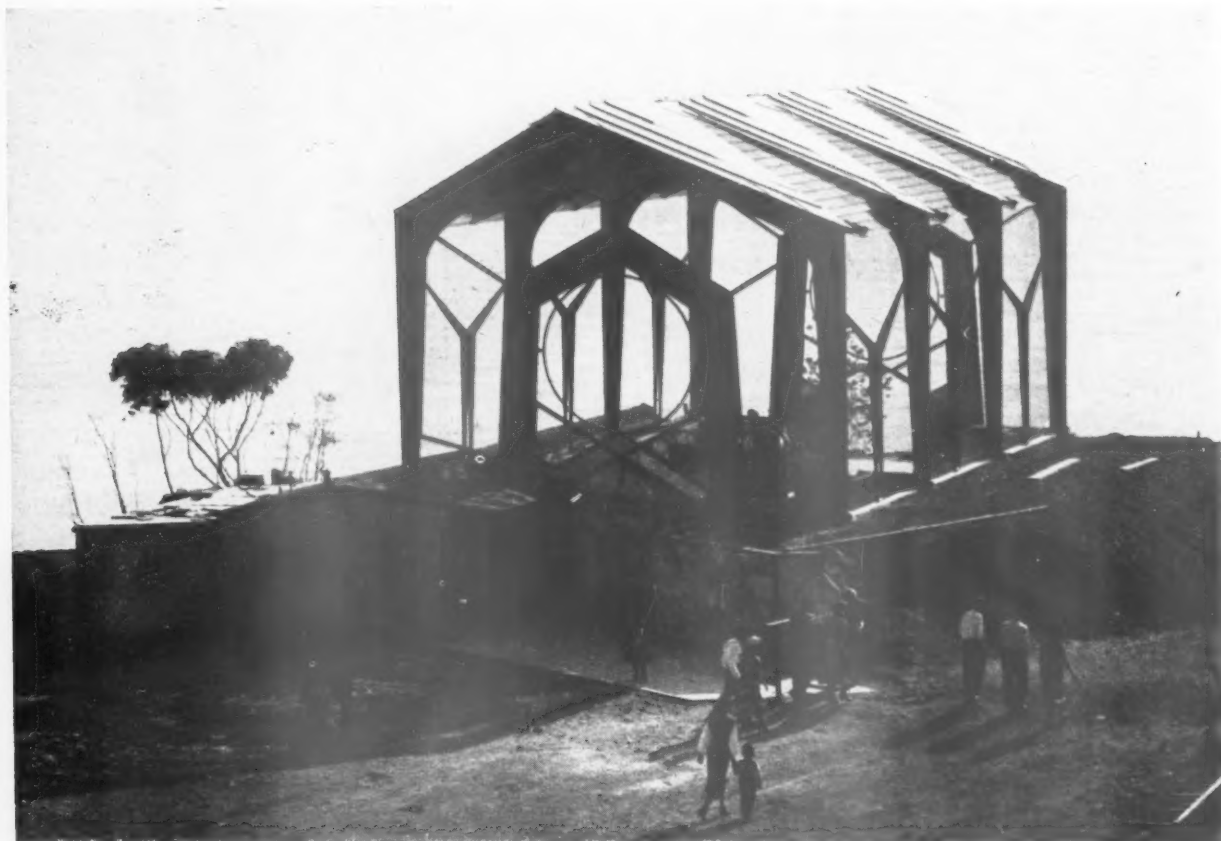
SEASIDE CHAPEL DESIGNED BY LLOYD WRIGHT



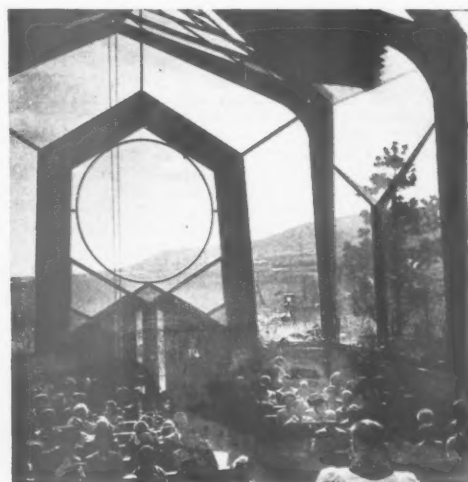
Lloyd Wright has designed a chapel at Portuguese Bend, California, where the Palos Verdes Hills overlook the Pacific Ocean. It was commissioned by the General Convention of the New Jerusalem as a national memorial to Emanuel Swedenborg, an eighteenth-century scientist and theologian, and dedicated in May. Above, the parson preaching against a coastline background. Below, looking out through the main door.



CHAPEL DESIGNED BY LLOYD WRIGHT AT PORTUGUESE



The main construction is of huge redwood beams and native rough-cut stone from Palos Verdes. Several thousand square feet of plate glass are used for the walls, and also for the roof in conjunction with small triangles of flat blue tiles. Worshippers in the chapel are, from shoulder height, surrounded with a sweeping panorama of the Pacific Ocean, the Palos Verdes Hills and the sky. Below are two views of the interior showing the slender, forked wooden roof supports. On the opposite page, below, is a closer view of the doorway which shows the construction in greater detail. We regret that in the report sent to us there was no mention of air-conditioning or ventilation. The photograph on the left suggests that worshippers may find the heat of summer tiring.



BEND, PALOS VERDES, CALIFORNIA



meral as that of the others, is the unearthing of the Woodchester pavement. This great archaeological ritual was last done in 1935; and before that, in 1926, 1890 and 1880. Boy scouts removed the 2½ tons of earth and the foot of sand which shield the pavement against frost and the Woodchester Women's Institute then set to and scrubbed the tesserae.

The pavement is a square of some 30 ft., being, apparently, the floor of the reception room of a vast official dwelling, the work of a second century Lutyens. Excavations—which so far have been carried out in three directions only—have brought to light some 63 other rooms, though the greater part of these can only be described as "the usual offices." Patriots will be gratified to learn that it is probably the finest tesserated pavement in the world—despite the holes deliberately torn in its face by eighteenth-century gravediggers. For the tesserae themselves are unusually small—about half an inch across—which is the mark of exceeding luxury in these things. The reds are cubes of brick and the whites and other colours are cubes of stone from recognizable quarries round about, which suggests that the Cotswold tradition was already *vieux jeu* when the Romans were installed. Designed as a carpet pattern with the entrance ways taken care of on the best Beaux Arts principles, the illusion that you are looking at a textile is all the more vivid from the fact that the elastic Roman cement in which it is laid has sagged here and there over collapsed hypocausts.

It would be pleasant to think that people are coming to be drawn increasingly to works of quality. Though publicity has not been very widespread the interest aroused by this unearthing has been out of all proportion to that of earlier years. When your correspondent was there, there was still a week to run and over 33,000 people had goggled at the pavement and had listened to the patter of the two retired—but apparently inexhaustible—colonels who mount guard over it. It is a pleasing coincidence that one of these is a connection of the late Sir Edwin and bears his name.

THE WATER CLOSET MODULOR

It is more difficult to speak of the Hard Headed Men's contribution's to the Festival because you cannot always distinguish between works which have been hastened to fruition on account of the Festival and those which have been finished simply because they could not, in conscience, be delayed any longer. In the matter of the reconstruction of central areas, Plymouth and Exeter are far ahead of Bristol. This is not difficult for them, for Bristol can hardly be said to have started at all. When we come to investigate we may even doubt whether their lightning get-away has done the other two any good. It is one thing for the planners to clear the ground and quite another for the architects to provide the bricks and mortar of reconstruction. In the struggle which is going on for the interpretation of Plymouth it is already evident that South Devonian barbarism is steadily winning the day. As will be familiar to those who know it, South Devon has long been a stronghold of city engineers, sanitary inspectors and chain stores. Large populations of retired people and exacting drainage contours have, together, produced a climate of opinion in which the sanitary men and their comemoers particularly thrive. Eager youths qualify from the flat dirty areas of Burslem and Stoke-on-Trent and make a splendid leap into this much publicised coast, where conditions are generally as near to Paradise as they can conceive of. Thus, the true modulator of the South Devon landscape is the water closet, and the rule of thumb which it enjoins now carpets whole strips of this attractive, hilly coast. It is a far cry from the fishing villages where Edmund Gosse's father sought for fossils to the glistening red bye-law streets which service this zone of mass retirement. Plymouth has

hitherto been somewhat apart from this. The Kingsbridge peninsula separates it physically from the built-up Dawlish - Paignton sequence, and the fact of its having work to do has saved it from becoming a seaside suburb for all England. The Victorians, in their inimitable fashion, dealt faithfully with Plymouth—if only because high freight charges caused them to prefer the local stone. Under their aegis the close-packed city of the Pilgrim Fathers became the open blue-grey windy place which we know. But the wide-spread bombing has created something of a vacuum, and, as there is no guidance worthy of the name, this can only be filled by Paigntoniana.

Of the commercial palaces which are rising on either side of Abercrombie's Triumphal Way, that which has been styled by Sir John Burnet, Tait and Lorne for the local emporium of Messrs. Dingle (readers will remember Dingle Foot) is the most advanced. It is a rather old-fashioned structure, with powerful set-backs and a rhetorical corner tower.

COLLEGE GREEN AND COLSTON HALL

Bristol sped two projects for the Festival: the levelling and sowing of College Green and the reconstruction of the Colston Hall. The object of the first of these was to give full effect to the intentions of Mr. Vincent Harris, the architect of the crescent-shaped Council House which overlooks the Green. Before the levelling, the Council House had

a somewhat retiring disposition, its lower storey being hidden by the Green. But citizens are now in no doubt which building issues summonses for the rates. Controversy first raged on the wisdom of the levelling, and, when this was decided in the architect's favour, on the wisdom of laying out the paths on a different axis from that of the building. Disconcerting as this is, critics do not care to be too acid about it lest the green fingers of the Parks Department, fresh from a grisly popular triumph on the Tramway Centre, might come and spatter the grass with their beautiful flowerbeds.

But the most important of Bristol's durable contributions to the Festival is undoubtedly the reconstruction of the Colston Hall. Past experience suggests that it may be rash to speak of this work as durable, for the interior of the Hall has already been reconstructed three times since its first building in 1867. The first Colston Hall, by Foster and Wood, was primarily an assembly hall and, despite its Bristol Byzantine exterior (which has survived to this day), it was within modelled on St. George's Hall, Liverpool. This was burnt out in 1898 and the shell was re-filled, two years later, by an architect whose name no one has been able to discover. This second Colston Hall was a concert hall pure and simple and was modelled on the Queen's Hall, London. The coffered barrel vaults were replaced by a flat, coved ceiling and the walls were lined with double-tier horseshoe galleries which raised the total accommodation from 2,500

to the astonishing figure (including standing room) of 5,000. It was this interior which used to receive such honourable mention in books on acoustics. Unfortunately, in course of time, it became evident that Bristolians did not love music enough to be able to support a concert hall which was good for nothing else and in 1935 the Corporation commissioned C. F. W. Denning (the author of "The Eighteenth-Century Architecture of Bristol") to adapt the place to a more general user and to give it a more modish appearance. Acting on these instructions he removed the horseshoe galleries and turned the hall into a superior seaside pavilion.

It was this third hall which was burnt down—apparently by Bristol's old friend, the cigarette—in 1946. Its replacement of 1951 is a concert hall once more, though prudent steps have been taken to ensure that it can serve also for prizefights and for ball-room dancing. On June 5 an audience was invited to hear the hall go through its acoustic paces. Pistol shots ("fired by scientists from the Building Research Station" as the programme said) were instantly absorbed and a performance of The Bristol Concert Orchestra was all too faithfully dealt with. In general, the acoustics are good and the lie of the hall is, perhaps, as good as the standing walls would allow; but to eyes which have been sharpened by the new standard set by the Royal Festival Hall the detailing will seem parsimonious and untalented.



Above is shown a model of the proposed new secondary school at East Kilbride, designed by Basil Spence and Partners.



Professor R. Gordon Brown has been seconded from the University of Hongkong and attached to the Public Works Department of the Hongkong Government for three months in order that he should undertake the work of preparing plans for the redevelopment of the Central Urban Area, including the new Central Reclamation Scheme. The photograph above shows a part of the area included in the new scheme. It is hoped that work will begin shortly after the plans are completed.

DIARY

Recent Welding Developments in USA. A paper to be read by P. T. Houldcroft. (Sponsor, The Institute of Welding.) At the Fyvie Hall of the Polytechnic Institute, Regent Street, W.1. 7.30 p.m. **SEPT. 13**

Exhibition of the West Ham Draft Development Plan. At the Central Library, Water Lane, E.15. Weekdays, 12 noon to 8 p.m. **UNTIL SEPT. 28**

Prestressed Concrete Statically Indeterminate Structures. The subject of a Symposium to be held at ICE, Great George Street, S.W.1. (Sponsor, CCA.) September 24, 10.30 a.m. and 2.30 p.m. September 25, 9.15 a.m. and 2.30 p.m.

London: An Adventure in Town Planning. Exhibition of work by Assist. Professor Smigielski, staff and students of the School of Architecture, Polish University College. At ICA, 17-18 Dover Street, Piccadilly, W.1. Weekdays 10 a.m. to 6 p.m. **UNTIL OCT. 6**

Exhibition of British Popular and Traditional Art. Sub-title: Black Eyes and Lemonade. At the Whitechapel Art Gallery. Daily except Mondays, 11 a.m. to 6 p.m. Sundays, 2 p.m. to 6 p.m. **UNTIL OCT. 6**

The Quantity Surveyor and the Building Contract. A lecture by Arthur J. Willis. (Sponsor, The Institute of Quantity Surveyors.) At the Institute, 98, Gloucester Place, W.1. 6.45 p.m. **OCTOBER 24**

Exhibition of Architecture. Sponsored by the Institute of Registered Architects.

The above exhibition will be on view at the following places:—Mile End Library, Stepney (until Sept. 22); East Finchley Library (Sept. 24-Oct. 6); Thomas Parsons Showrooms, 70, Grosvenor Street, W.1. (Oct. 8-19); Council Office, Surbiton (Oct. 22-27); Building Exhibition, Olympia (Nov. 14-28).

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The Architects' Journal for September 13, 1951 [319

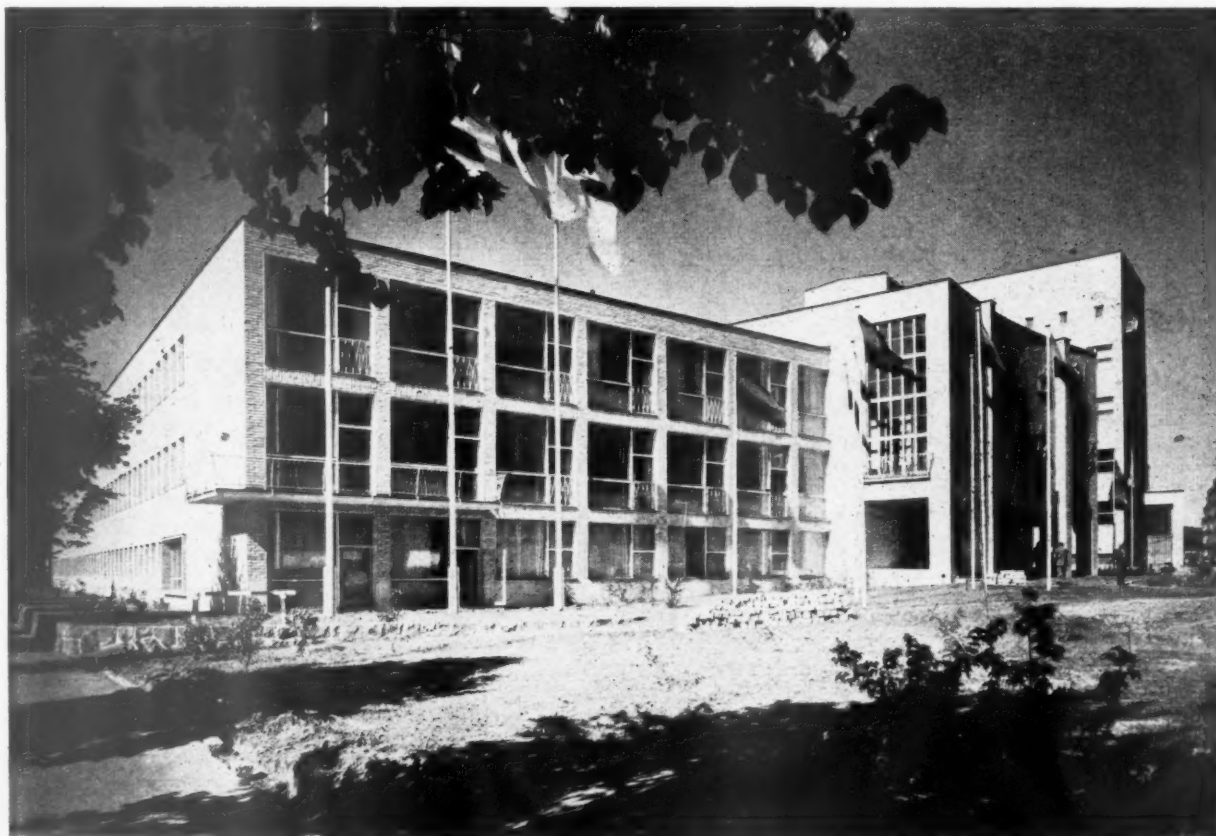
COLLEGE

in HELSINKI, FINLAND

designed by HUGO HARMIA and WOLDEMAR BAECKMAN

The new building for the Helsinki Institute of Economics was completed in 1950. Between the wars, the Finnish State appointed a committee, the purpose of which was to plan a new building for the Institute. The site for the new building was reserved at the crossing of two main streets. A competition was opened in 1941 and the design which is described here won first prize. The building work was started after the recent war, the detailed drawings being completed in 1946.

The main facade and entrance from the south-east.



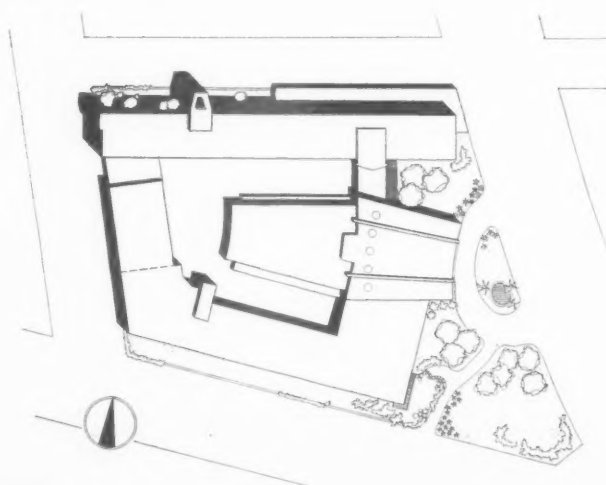
The foyer on the first floor. Doorways on left open on to the balcony seats of the theatre, those on the right to the large lecture hall.

COLLEGE

in HELSINKI, FINLAND

designed by HUGO HARMIA and
WOLDEMAR BAECKMAN

PLAN.—The building is divided into four different parts. The centre part includes large common rooms, such as the entrance hall, the theatre and the large lecture hall. The higher part of the wing facing north contains all rooms serving theoretical instruction, staff rooms and a library. The wing facing south caters for practical instruction. The basement contains a students' restaurant and some flats for the staff. The west wing is a separate part and contains a gymnasium with two dressing rooms and washrooms. The theatre had to be planned to serve several different uses. Besides its main purpose of serving as the Institute's theatre, it is used as a concert hall, a broadcasting studio, a conference room and a ballroom. It has a flat floor



Site plan



The students' canteen on the ground floor.

WORKING DETAIL

FURNITURE AND FITTINGS : 10

SIDEBOARD AND CHINA CABINET: HOMES AND GARDENS PAVILION, SOUTH BANK EXHIBITION

Leslie Matthew, designer.



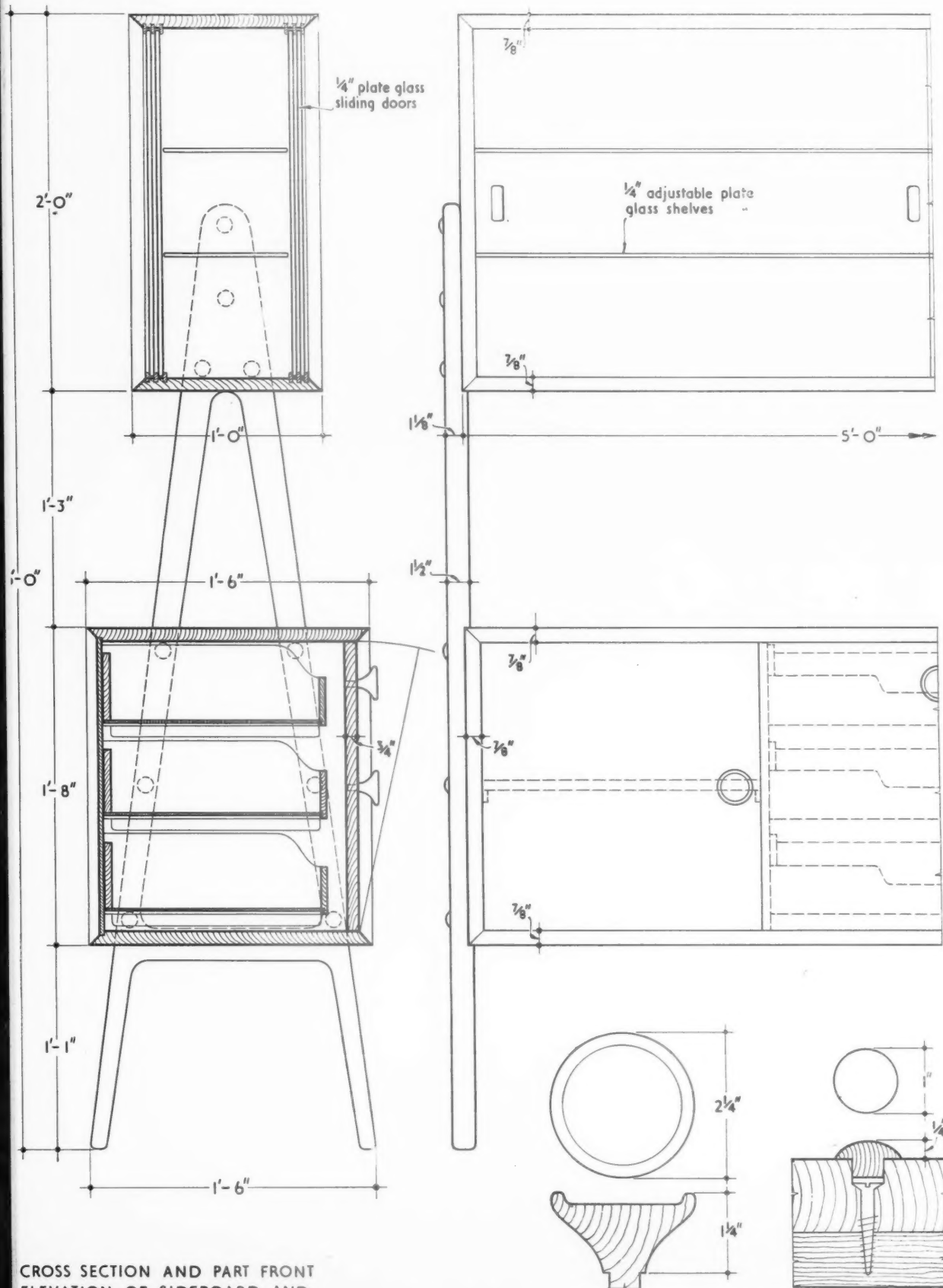
The mahogany sideboard, which is designed as a buffet accessible from both sides, has a two-sided china display cabinet fitted above, with glass shelves and sliding glass doors.

WORKING DETAIL

FURNITURE AND FITTINGS: 10

SIDEBOARD AND CHINA CABINET: HOMES AND GARDENS PAVILION, SOUTH BANK EXHIBITION

Leslie Matthew, designer.



CROSS SECTION AND PART FRONT ELEVATION OF SIDEBOARD AND CHINA CABINET. scale 1 1/2" = 1'-0"

DETAILS OF HANDLE AND STUD. scale 1/2 full size

WORKING DETAIL

STAIRCASES : 6

STAIRCASE: LION AND UNICORN PAVILION, SOUTH BANK EXHIBITION

R. Y. Gooden and R. D. Russell, architects: John Morton, assistant architect: R. T. James and Partners; E. Lewis, consulting engineers.



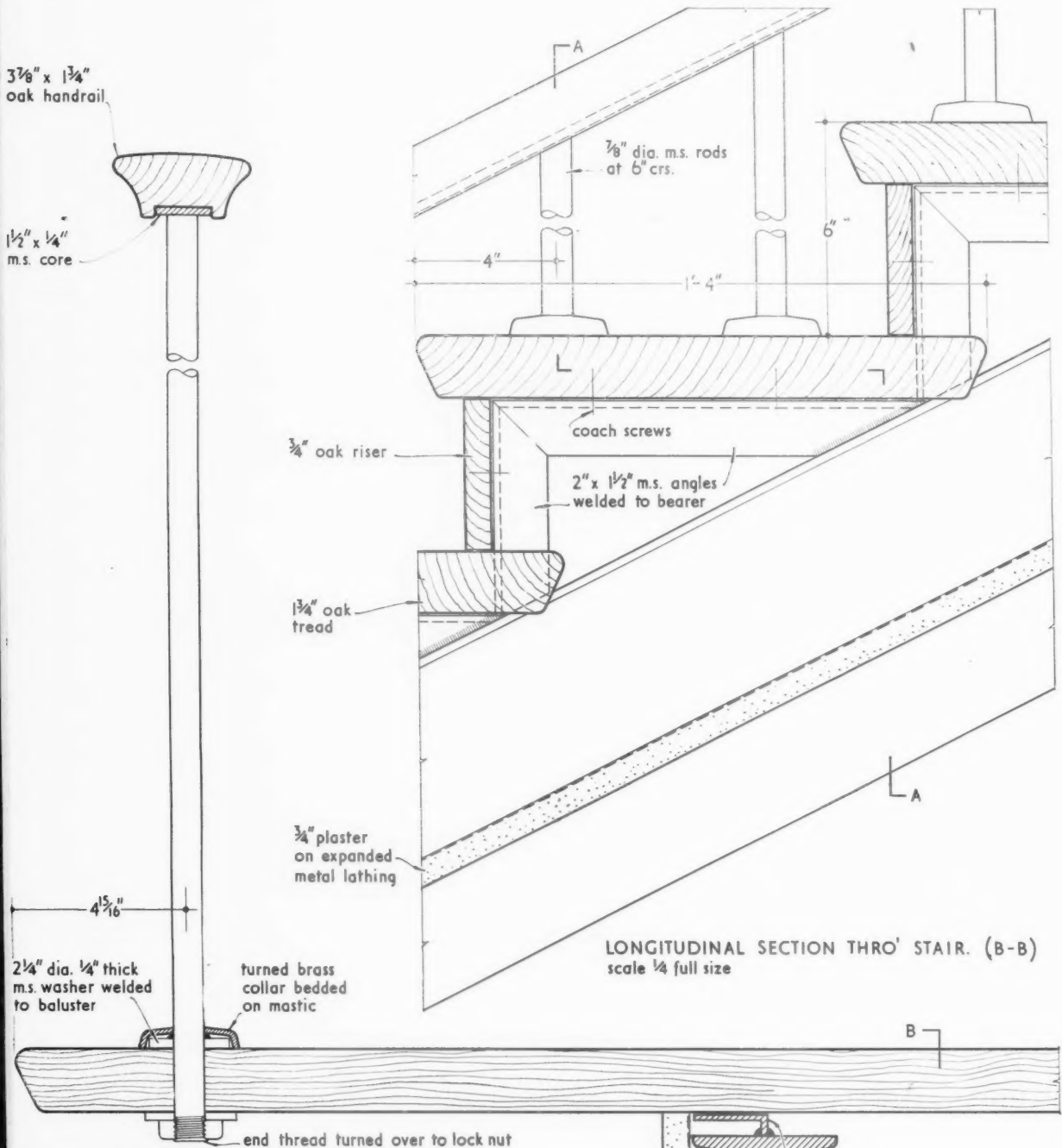
The oak treads of the staircase project just over a foot on either side of the central carriage and are pierced by the ends of the baluster rods covered by large brass nuts.

WORKING DETAIL

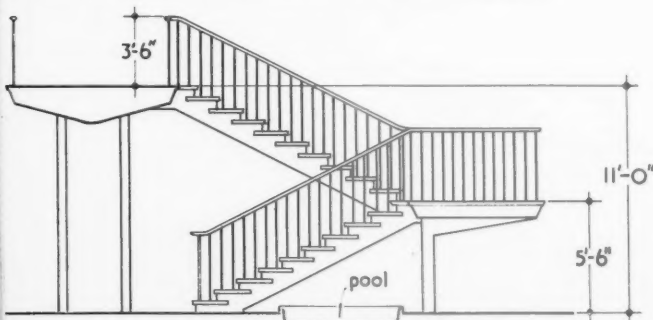
STAIRCASES : 6

STAIRCASE : LION AND UNICORN PAVILION, SOUTH BANK EXHIBITION

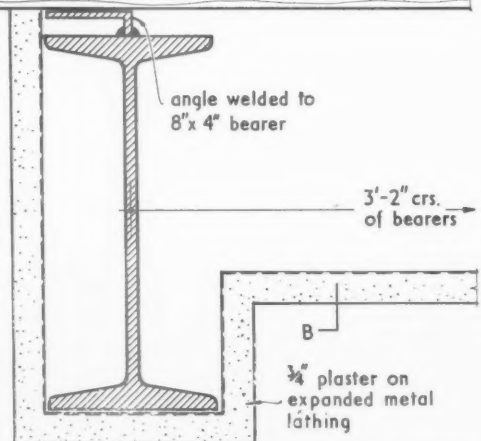
R. Y. Gooden and R. D. Russell, architects : John Morton, assistant architect : R. T. James and Partners ; E. Lewis, consulting engineers.



CROSS SECTION THRO' STAIR. (A-A). scale 1/4 full size



SIDE ELEVATION OF STAIRCASE. scale 1/8" = 1'-0"

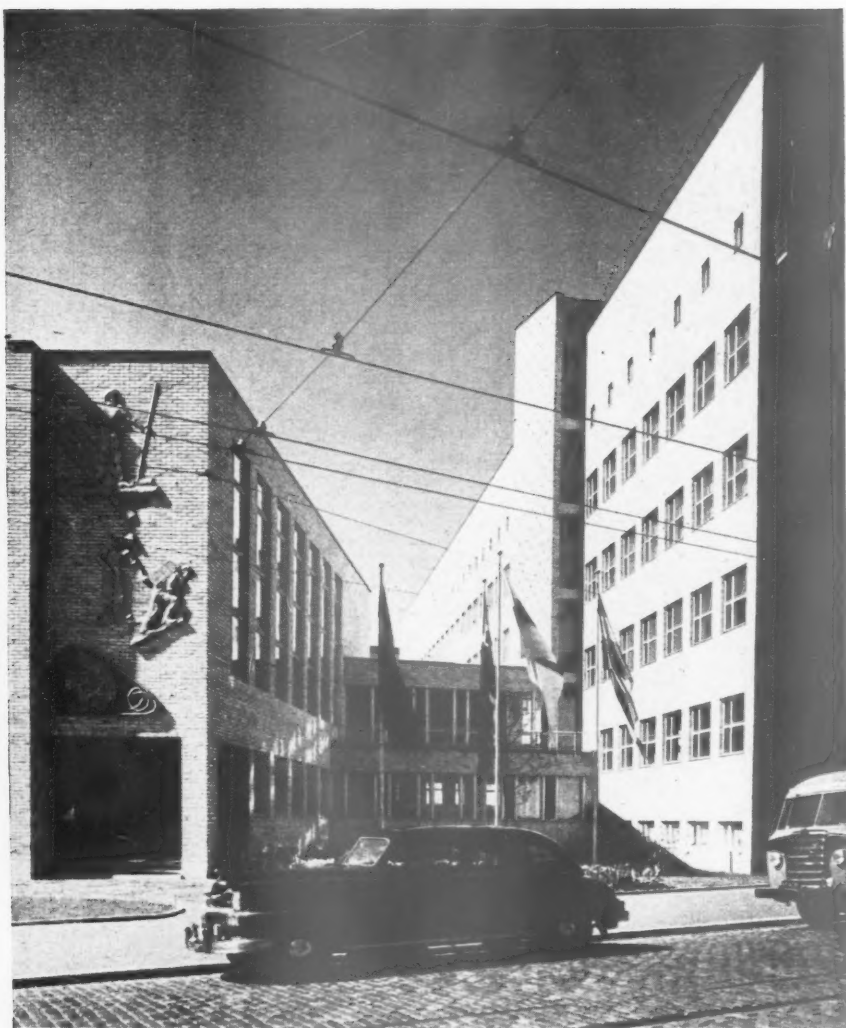


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*The theatre.*

and easily removable seats. It is equipped with a small stage and cinema projectors. The theatre's acoustic properties can be altered to suit the varied purposes for which it is used. This was achieved by placing movable slats on the side walls, with varying degrees of resonance and absorption on each side.

The theatre seats 772 people. The large lecture hall can also be used for conferences. The lecturer from his desk can control air-conditioning, illumination and blinds. Small roof lights enable students to take notes even when the hall is otherwise dark. The hall accommodates 600 students.



Left, part of the east elevation showing the link between the theatre block, on the left, and the teaching block, on the right. Below, the library on the fourth floor of the teaching block.



COLLEGE

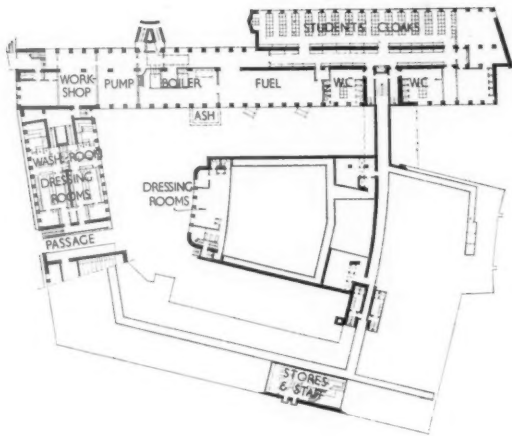
in HELSINKI, FINLAND
designed by HUGO HARMIA and
WOLDEMAR BAECKMAN

CONSTRUCTION.—The supporting construction consists chiefly of cavity walls. The exterior skin is of yellow clinker blocks of two sizes used alternately. The interior is of red brick. The party walls consist of reinforced concrete slabs under which are layers of glass wool. Under the floors of the laboratories there are removable and renewable inner coverings of fibre

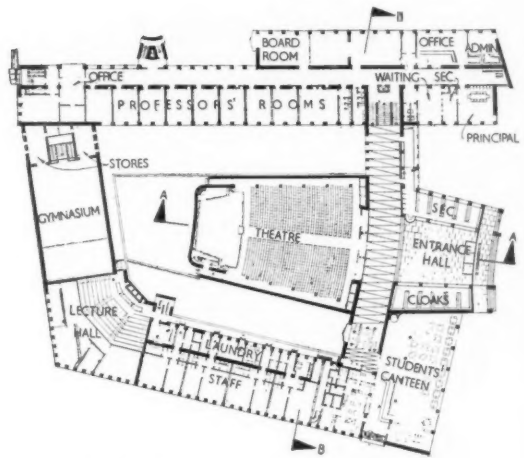
and plaster board to facilitate repairs to the pipe system. All the roofs are flat. The heat insulation consists of a layer of light concrete. The covering is a double layer of bitumen felt.

The college from the south-west.

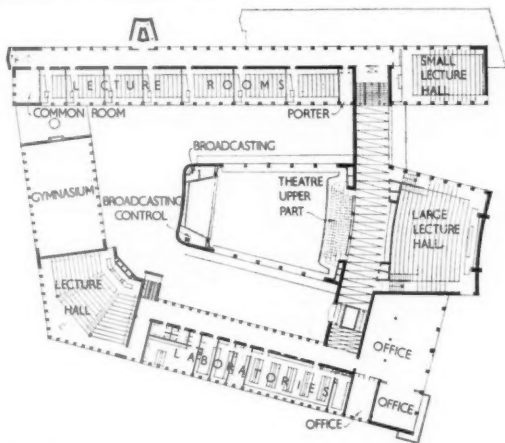




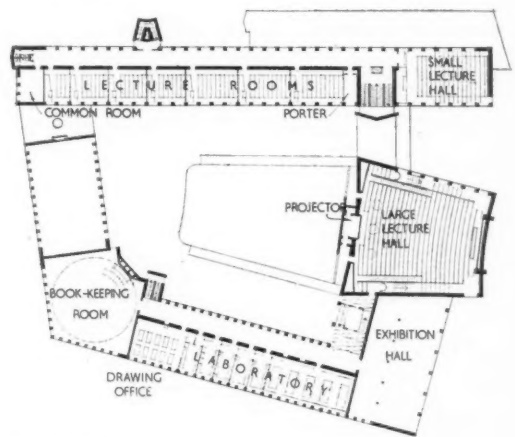
Basement [Scale: $\frac{1}{8}" = 1'0"$]



Ground floor plan



First floor



Second floor

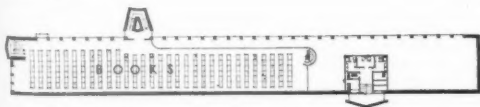
The staircase on the south side of the theatre block, with the landing between ground and first floor in the foreground.



Third floor



Fourth floor

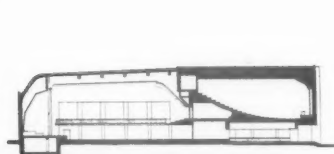


Fifth floor

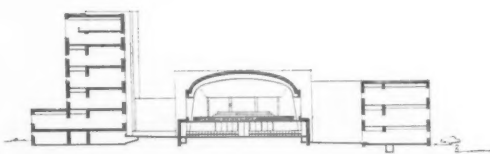




One of the small lecture halls at the east end of the teaching block. There are two such theatres, one on the first floor and one on the second floor. Each seats 180 persons.



Section A-A [Scale: $\frac{1}{8}'' = 1' 0''$]



Section B-B

COLLEGE

in HELSINKI, FINLAND

designed by HUGO HARMIA and

WOLDEMAR BAECKMAN

SERVICES.—The major part of the building is furnished with mechanical air-conditioning equipment. Each hall or group of rooms has machinery of its own. The small lecture halls and the gymnasium contain spaces for machinery and ducts for air conditioning equipment in case it becomes necessary to instal them later on.

The classroom where book-keeping is taught on the second floor.



TECHNICAL SECTION

The day before yesterday the Building Research Congress, 1951, began. Never before have

so many distinguished men connected with the building industry been gathered together, and the discussions which are taking place should be equally distinguished. Many of these discussions will appear in our special Congress issue of September 27. In the meantime, we shall select, from the papers presented to the three concurrent divisions of the Congress, those of most direct interest to the architect and publish summaries of them. This week's Technical Section is devoted to papers already presented in Division I of the Congress. These all come under the heading of engineering and structural aspects of building. The remainder of Division 1, will be dealt with in next week's issue. Divisions 2 and 3, which cover, respectively, building materials and the design of buildings, will be dealt with in our issue of September 27. We commence with a general review of Division I, Part I, quoted in full.*

BUILDING RESEARCH CONGRESS, 1951

The Influence of Mechanization and Prefabrication on Techniques and Cost of Building.

GENERAL REVIEW by R. Fitzmaurice

It is often stated that the Building Industry is backward in adopting and applying modern industrial technique. In fact we can see that the general pattern of the industry has not changed in its essentials over a very long period of time. The Industrial Revolution which transformed so many other industries passed by the Building Industry and left it virtually unchanged. This state of affairs is not peculiar to the United Kingdom and the same criticisms are levelled at the Building Industry in other countries.

Can we say whether, in fact, the Building Industry is backward? How can we measure its backwardness? There are various criteria by which similar industries may be compared. Consumption of horsepower per worker has been used; expenditure in plant and equipment may be related with labour cost and this would be some measure of in-

dustrial efficiency. Actually, however, the simplest test and the one most worth while is merely to consider what is the trend of productivity with time. Are we today producing more building units per worker employed in the industry, or fewer than we did 15 years ago? Were we producing more units per worker 15 years ago than we were 30 years ago? Owing to the fact that records were not kept in any detail in the past, it is difficult to provide a categorical answer to these questions. Opinions may differ and arguments can rage, but it is indisputable that productivity in the industry in the year 1950 is certainly no higher than it was 15 years ago, or 15 years before that.

Let us contrast this with the public works side of the industry and we see a vast difference. Actual figures are hard to find but the facts stare one in the face. The author had occasion to visit some of the Scottish hydro-electric sites last year, and the impression on the dams, for instance, is of a small force of labour and a vast

amount of machinery. Casting one's mind back to the 1920's, quite a small dam in Yorkshire had a navy camp for 1,100 and the whole site teemed with humanity.

What happens in other industries? Almost invariably we find a consistent increase in productivity with time. New machinery, new methods of organization, standardization, and a hundred and one factors have contributed to this result.

FACTORS TENDING TO HINDER THE DEVELOPMENT OF NEW TECHNIQUES

What are the factors in the Building Industry which operate to prevent rapid developments in technique of the kind which are obvious in other industries?

Firstly there is the lack of homogeneity in the industry. Let us consider the phases of activity which go to the making of any complex product. They are design, regulation of costs and prices, manufacture of materials, production and assembly of components, and marketing of the product. It is perhaps trite to say it, but it must be emphasized that all these phases of activity are inter-related and must be closely co-ordinated if there is to be any hope of progress. Equally, no one of them is more important than the others and none should be allowed to dominate the others. As it is, in the Building Industry, these phases of activity are split up and compartmented to such an extent that efficient co-ordination is quite impossible. It is believed that there are signs of a realization of the inefficiency of the present structure of the industry, with its lack of homogeneity, and this has resulted in the formation of large industrial organizations which are assuming all the functions under one roof. Design, cost control, obtaining of materials, manufacture of components and their assembly have been carried out under a single direction. This kind of organization springs from the need to provide for particularly difficult kinds of work such as major industrial developments in undeveloped areas. Time will show whether this is to be the pattern for building in the future, but it certainly seems to be a reasonable and probable solution.

Secondly, there is the conception of a building as a work of art and as a manifestation of craftsmanship. These characteristics have a strong emotional appeal, but, like a lot

* As far as possible summaries are given in the authors' own words. Summaries and illustrations are published by courtesy of the Building Research Congress, 1951.



The first overseas delegate to arrive for the Congress—A. Marini, director of the Centre Scientifique et Technique du Batiment. A summary of his paper appears on pages 329 and 330.

of other things, they have to be considered in the light of all the factors existing in a country at a particular time. We have to ask ourselves whether there is any hope of creating the "work of art" quickly or cheaply, and there does not seem to be any indication at present that we can do so. Then there has to be considered the pros and cons of craftsmanship as a basis for an industry. Craftsmanship may be defined as the handing down of knowledge and skill in the performance of certain operations from generation to generation. It has the great advantage that it is based on an all-pervading knowledge of the way in which the principal operations of building should be carried out. As a result, the designer's task is simplified because he only need indicate his broad intention and the craftsman will fill in the details. Equally, the organization and supervision of the work is easy because there is a common fund of knowledge as to the way in which work is laid out and performed. On the debit side, however, the craft basis of an industry is the greatest possible deterrent to any form of innovation. The whole emphasis is on "things as they were done yesterday," and the psychological inertia on the part of the operative, the contractor and the designer is enormous. Fortunately, there have always been restless spirits in the industry and, despite every imaginable handicap, they have succeeded by sheer persistence in introducing new techniques.

Thirdly, and closely linked with the foregoing factors, is the standard of technological education in the industry. Here again, there is a marked contrast between the building and public works side of the industry. On the public works side the designers and contractors alike are amply staffed by men with honours degrees in technology. The proceedings of the professional institutions and the technical journals give ample space for descriptions not only of the design problems, but also of the more interesting developments that arise in the execution of the works and these papers are on a high technological level. One has only to pick up the transactions of the American Society of Civil Engineers or the Proceedings of the Institution of Civil Engineers to appreciate the keen interest which is taken in every new development as soon as it is tried out.

On the purely building side, however, the picture is very different. Architectural education in most countries places the main emphasis on aesthetic studies, followed by a somewhat abstract treatment of planning, with building technology bringing up the rear, but a long way behind. The educational standard of entry into the architectural profession in the United Kingdom is such that there is no compulsion on the student to be grounded in the elements of the natural sciences which alone provide a sound basis for technological studies. The case of the contractor is even worse. There is no generally applied standard of entry into the industry and only the most perfunctory attempts have been made to set any standard of technological education for the aspirants to managerial status, and certainly nothing approaching the high professional status which has come to be regarded as essential for the public works contractor. This being the case, it is hardly surprising to find that there is no recognized forum for the exchange of ideas on technological development in the Building Industry and, considering the magnitude and importance of the industry, there is a regrettable paucity of ideas to exchange. In effect, the major deficiency in technological education for the building industry is in those spheres which, in other industries, are embraced in the terms "production engineering" and "business management," taken at a professional level.

The author has little knowledge of the professional status of the participants in building operations in other countries. It is believed, however, that in many

European countries the situation is not very different from that described above for the United Kingdom.

Fourthly, the Building Industry in the United Kingdom, and in many other countries as well, comprises a very large number of very small units. It operates with very modest capital resources and, as a corollary, with very modest overhead charges. Since the trend of technological development is liable to lie in the direction of greater complexity of equipment and a higher professional standard of management, it would not be surprising to find a considerable resistance to changes in technique from financial as well as personal reasons.

Fifthly, the Building Industry in most countries is subject to codes and regulations imposed by law. In some cases, these controls are definitely onerous in their application if not in their intention. Regulations are necessary to control stupid people and dishonest people. Unfortunately, they apply equally to the professionally competent and to the most honourable. They do little harm when technique is well established and unvarying, and they do the greatest harm when innovations are being introduced. It is, unfortunately, an axiom of administrative psychology all the world over that it is safest and easiest to say "No." The man who introduces an innovation into an industry has to devote to it a great deal of his energy for a long time. To succeed he must have something of the fervour of a missionary. In addition, however, he has to spend a lot of good, hard cash in the necessary trials and experiments to prove his ideas. It is unfortunate, to say the least of it, that there is often an element of doubt whether the device which he has proved to his own satisfaction will be permitted under the more rigid codes of building.

Finally, there is the difficult problem of governmental control. When the demand for buildings far exceeds the supply of material and labour available it may be necessary to impose some system of priorities. It is not the purpose here to discuss the pros and cons of the various forms of control of these priorities, but to examine what is likely to be the effect of these controls on the development of building technique. As in the case of building regulations, it is much more easy from the administrative point of view to deal with cases which fall into the stereotyped pattern. Thus the man who interjects an innovation in technique into a project must face the strong possibility that his project will be delayed whilst the innovation is weighed in the official balance. Even at the best, there is inevitably a delay and an element of uncertainty as to the outcome. Only the strongest and most persistent will persevere under these conditions and, in consequence, this is a very strong deterrent to developments in building technique.

To summarize, it is considered that there are powerful forces in opposition to any radical changes in building technique. Some of these are due to the structure and nature of the industry itself, and to the methods of education and recruitment of personnel in the industry. Others are due to circumstances outside the control of the industry itself. Regulations and controls, however necessary, can be a powerful deterrent to "enterprise," using the word in its literal and desirable sense.

Owing to the enormous needs for building arising out of the war, many attempts have been made to introduce improved building techniques in many countries. Official organizations have been set up to assist in the development of new techniques, to vet them and control them and even to evaluate their usefulness. After five years of intensive effort, however, we find no striking decrease in building costs or increase in productivity. There are two reasons for this. In the first instance, the opposing forces indicated above

have been too strong, and in the second the new ideas have been introduced piecemeal, in the main without relation to each other or to the pattern of the industry as a whole.

At first sight this is very discouraging, but, in point of fact, it need not be so. If we look at the period which has just elapsed as a period of study and experiment, and if we take the trouble to make an objective assessment of the results achieved during the period, we can start off on the next stage with a basis of solid knowledge behind us where, before, we only had conjecture. A congress of this kind is extremely valuable in that it provides a forum for the international exchange of information and experience. We may hope ourselves, by taking heed of the experience of others, to avoid some of the pitfalls which beset the path of the innovator and, equally, where others have shown the way to a promising line of development, we may follow in their footsteps and adapt it to our own conditions.

THE PART PLAYED BY RESEARCH IN INTRODUCING IMPROVED TECHNIQUES

It is reasonable to reflect a little at this stage as to the part which research can play in the introduction of improved techniques. In some of the newer industries, technical developments follow rapidly from the results of research and it is perhaps useful to reflect for a moment as to the reasons why this happens, and why it does not happen in the building industry. It seems to the author that the main reason for the rapid assimilation of research into everyday practice in the newer industries is due to the fact that research and production are so closely integrated. Both research and production are served by technologists having similar attainments. Those on the production side can appreciate the research method and its limitations and can pose problems. Equally, the practical application of the research result is merely a logical extension of research itself.

In the building industry the tendency is for research to be conducted by organizations outside the bounds of the industry and, inevitably, staffed in the main by technologists with entirely different training and experience. There is a gap to bridge and there are various ways of bridging it, which can be more or less successful, depending on the goodwill of the personalities on either side of the gap. But to help bridge that gap, research must be introduced into the industry itself, so that ultimately it comes to be regarded as an indispensable tool by the industry. When it comes to the development of building techniques, this closer liaison between research and industry is essential and inevitable. The field of research very quickly moves away from the laboratory into the factory and on to the building site, and the burden of the work then must fall on the industry.

In the development of technique, the essential part which research must play is to identify the factors involved, to find ways and means of separating and studying their effects, and to integrate the results. This is the normal function of research, and the main task is to substitute measurement and scientific method for hunches and subjective judgment.

The research organization has a major task to perform in developing the research method for separating the effects of the various operative factors and for measuring them. Unless, however, the industry is prepared itself to make use of the methods when developed, and to carry out its own researches as a matter of course, progress is going to be slow and intermittent. There is always opposition and inertia to moves of this sort and this was well exemplified during the war by the initial resistance to the use of operational research methods. Fortunately, however, there are always people with the

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necessary vision and initiative who, once they are seized with the basic idea, will give the new method a trial. The Building Industry has many people of this calibre as any other.

HOW TO STIMULATE THE DEVELOPMENT OF MECHANIZATION AND PREFABRICATION

Some useful developments will be produced as the result of intuition, or by mere chance of selection from among the results of a painful process of trial and error. These, however, will be sporadic as they have been in the past, and cannot be expected to have any rapid effect on the industry as a whole.

Only by methodical study is it likely that an appreciable improvement can be effected in a reasonable time. What is the nature of this study?

If we take building processes, operation by operation, or groups of operations by groups of operations, it is possible to dissect and analyse them in terms of work and material content and cost. This must be the first step in any process of substitution. It must be done thoroughly and it must be reduced to essentials. A certain amount of work of this kind has already been carried out in the United Kingdom and other countries have started to do it.

When an analysis of this sort has been made, it is possible to make an intelligent forecast where a change of method is likely to give an improved result. It provides the essential background for the development of the new method. The principle is the same, whether the innovation consists of the substitution of a mechanical for a manual process, or of the substitution of a factory-made component or assembly for a series of site operations.

The new method normally has to go through the steps of prototype construction for the testing which will establish the basic performance; of pilot production for the preliminary studies of the economics of production and of performance in the field; and finally of full production. Even then it will normally be profitable to continue the collection of field data.

The various stages indicated above will not always be sharply divided. They may merge into one another and in some instances a stage may be supported where the need for it is not so apparent. In principle, however, the general pattern needs to be followed and a new venture which comes successfully through all the stages should easily pass into general currency.

On the basis of experience in the United Kingdom a word of caution is necessary. Let us suppose that a new process or a new component has come satisfactorily through all the preliminary stages of development. There still remains the question of the personal reaction to it of the people on the building site who will have to use it. Experience has shown that there may develop quite unexpected resistance to it, for reasons which may not immediately be apparent. This was vividly illustrated when certain prototype machines were sent out for pilot trials on building sites. On some sites the machines met with the most favourable reception; on others the identical machines were condemned as useless. The same thing has happened with some of the new methods of building which have been introduced since the war: a conspicuous success on one site and an equally abject failure on another. At first sight one would be inclined to suggest that the failures were due to malice, or even to blind prejudice, but, on investigation, it was found that the difficulties were real and deep-seated. To make successful use of a new process it is nearly always necessary to make the appropriate changes in site or workshop organization. In a traditional industry the organizational pattern tends to be very stable, and there are many supervisors who are

incapable of appreciating the nature of the changes in organization which may be necessary to adopt an innovation, and even with the best will in the world they cannot depart from the methods of a lifetime.

These considerations lead one to the conclusion that an ancient industry, rooted in traditional and craft practices, cannot accept changes in technique rapidly. Parallel with the development of the technique, it is necessary to educate and train the people who are to apply it, and this latter process is at least as important as the development of the technique itself. This need for a progressive outlook is not confined to the man who actually carries out the work. New methods of construction call for a new approach to design and organization alike. In principle we are trying to save labour and material by using keener methods of design and organization of building operations. This means a very appreciable increase in the planning and thought which has to be done in advance of the actual operations. It raises the whole process to a higher intellectual plane but it does mean much harder work behind the scenes. Are we, as an industry, prepared to accept the need for hard thinking and detailed planning which new techniques involve? Or do we continue to work to the stereotyped pattern whereby the need for constructive thought is reduced to a minimum? This is the hard core of the problem and the real reason why our industry is so slow in advancing in productivity.

J. P. Mazure (Netherlands), Professor at the Technical College of Delft, discussed, with an historical and economic introduction (omitted from this summary), the advantages and disadvantages of various methods of building, with particular reference to work in Holland.

THE EUROPEAN APPROACH TO NEW METHODS OF HOUSE CONSTRUCTION

By J. P. Mazure

The traditional methods of house construction—though less influenced by modern ideas than other industries—have certain characteristics which make it extremely difficult for new methods of construction to surpass or even to equal them, taking account of technical, economical and architectural qualities.

For this reason it may be regarded as practically certain that until unexpected developments occur, the bulk of house building will remain traditional, even though some inherent inefficiencies are present in this method of construction.

It is of importance, however, that non-traditional building does not disappear from the market. Certainly, new methods of house construction, in which houses are built with qualities comparable with traditional housing and with competitive prices should be protected against discrimination based on traditionalism and other interests.

Even if the balance of the directly considered features (quality and price) of non-

traditional building should remain less favourable than for traditional houses, it will be good policy to exercise a certain discrimination, and to reserve—even at the expense of some small financial sacrifices—a small part of the housing programme for those systems of house construction that show a reasonably good efficiency and the existence of which has indirect advantages.

As indirect advantages that justify a certain amount of discrimination and even small financial facilities in favour of certain systems may be counted:—

- (a) a chance that the present relation between the cost of the traditional and the non-traditional house may be reversed, either through the development of the non-traditional methods or through changes in the prices of the basic materials;
- (b) less loss of working hours through bad weather conditions, especially frost;
- (c) less use of skilled labour that tends to become a bottleneck for house production (bricklayers and plasterers);
- (d) the necessary presence of scientific management, which may stimulate traditional building.

IN SITU CONCRETE

A prominent example in the "in situ concrete" category is the "no-fines" concrete house, which, after the first application of this material in the Netherlands in the years after World War I, has spread all over the world. A salient feature of it is that it uses cheap materials. For this reason it may be cheaper than traditional building, provided the organization and the shuttering are efficient.

The fact that it requires no bricklayers may be counted as an indirect advantage and, because the unfinished walls are smoother than brick walls, less labour is needed for inside plastering, although this is offset in most cases by the necessary outside rendering. There is, however, a traditional aversion to facings other than brick.

The advantages of the "in situ concrete core" are that the three layers in each wall (two permanent shutterings and the core) offer more opportunities to adapt the wall to the sometimes contradicting requirements strength, durability, appearance, thermal and sound insulation, nailability) and that the labour in striking down and cleaning the shuttering is saved. On the other hand, materials for permanent shuttering are more expensive than the in situ concrete, and the combination of prefabricated elements for the shuttering and site concreting for the core requires a double organization, which may cause inefficiency.

BLOCKS

The use for wall construction of blocks that only differ from traditional bricks in that they are larger and are made of a different material can hardly be called a new method of construction. It may prove that traditional bricks are not the optimum size for economy but it will not essentially change the characteristics of traditional building. Experience and the relative prices of bricks and blocks will decide which are the most efficient. However, care must be taken to ensure that efforts to diminish the price of blocks will not unduly prejudice their quality and strength.

The same holds to a large extent for blocks of more intricate construction, often hollow or consisting of several layers of different materials. They are generally more expensive to manufacture, but may permit thinner walls and single-leaf external walls to be built.

The use of blocks may have indirect advantages if the construction of the blocks is such that less craftsmanship is needed to place them in the right position or if they can be placed without mortar. As yet, however, only a few systems of this kind have been developed and it is not yet possible to

reach definite conclusions about their efficiency.

SMALL PREFABRICATED ELEMENTS

As with blocks, the use of small prefabricated elements, which can be easily man-handled, brings no essential changes in the organization of the site. No special cranes or hoists are needed. In general, the assembling of the elements needs less craftsmanship than traditional building and an essential saving in bricklaying and, perhaps, plastering labour will be achieved. Less use is made of mortar joints and several systems use dry assembling, which permits work to continue during light and medium frosts.

As to efficiency, the manufacturing of the element will, in general, be more expensive than blocks, but there may be compensations. Each element only needs to answer one or two requirements and can be designed to be highly efficient for its purpose (e.g., posts for load-bearing, outer panels for protection against wind and rain, inner panels for heat insulation and finishing).

MEDIUM-SIZED PREFABRICATED ELEMENTS

These are often of ceiling height with a width of from 0.5 to 1.0 m. The wall elements are generally load-bearing, sometimes of cavity construction. Cranes or similar devices are necessary to place the elements and careful planning is needed.

Though some systems of this type have done quite well, it might be expected that, if the principle of manhandling the elements is abandoned, it will ultimately be wiser to use the larger elements described below. Essential changes in site organization are required and adaptability is lost even when medium-sized elements are used and the efficiency is likely to be raised by diminishing the number of elements, even at the expense of raising their size and weight. Moreover, medium-sized elements have a tendency to restrict the freedom of the architect in choosing the dimensions for doors, windows, etc. Whereas, if the elements become so large that doors and windows are completely contained in them some freedom returns.

LARGE ELEMENTS

The use of large elements, having at least the size of the walls and floors of a room, is the most radical solution which may give good results. If carefully designed and planned, ducts and pipes can be installed in the prefabricated elements, thus saving much site labour. The manufacturing and the site assembling need careful planning to be efficient and require scientific management. The use of large elements promotes mechanization on the building site and avoids the heavy and dirty skilled jobs which tend to become bottlenecks in house production. More than any of the previously mentioned types, it may be expected to reduce the amount of site labour, and the character of the activities is such as to be least liable to hindrance from frost.

So the indirect advantages, mentioned above, are all present in this type of construction, and for this reason it deserves encouragement and even some financial discrimination as a compensation for the costs and risks involved in the intensive preparation and the heavy investment needed. If this type of construction succeeds in building at the same prices as traditional building, it will be a great contribution to the modernization and industrialization of building and will open the way to substantial savings in future.

The sponsors of these systems should retain an open mind on the possibilities of using different materials for this type of construction. A dogmatical separation has existed between systems using concrete elements and systems using lightweight construction. It is probable that a judiciously designed combination of these two possibilities will ultimately prove the best.

C. O. Christenson (USA), of the Federal Housing Administration, described methods of house-construction and house-heating now gaining increased popularity in the USA and the organization of the house-building industry there. This last is omitted from the summary.

THE CONSTRUCTION OF SMALL DWELLINGS IN THE USA

By C. O. Christenson

The Federal Housing Administration has established minimum requirements for the construction of houses and, although these have, in the main, been based on established practice, provision has been made for the acceptance of new materials and methods of construction upon submission of details, descriptions, test data and service records.

The post-war housing drive has given considerable impetus to research on and development of new materials but, so far, this has been left largely in the hands of individuals or private organizations. While this leads to some duplication of effort, competition provides a constant incentive to produce a better product at lower cost.

Although many of the newly-developed constructional techniques cannot be described as prefabrication, there are, at present, about 60 well-established firms in the USA concerned with the factory production of housing units. In 1949 they produced nearly 7 per cent. of the year's output of new houses.

Shop fabrication of dwellings ranges from units for one element of the construction only, such as the exterior walls, to shop-fabricated units for the entire superstructure, including floors, exterior walls, partitions, ceiling and roof. The units vary in size, with 4 ft. as the most common module, since it lends itself to the usual standard framing spacing of 12, 16 and 24 inches. Exterior walls are usually of ceiling height and are frequently made room length and, occasionally, the full width or length of the house. Shop fabrication of the units varies from the structural frame only to complete units, with sheathing, insulation, interior and exterior covering materials and sometimes with electric wiring, and even heating and plumbing piping included.

A few shop fabricators provide houses built in three-dimensional sections, completed in the shop even to the final coat of paint. The number of sections varies from two to seven and they are transported on low-bed trailer trucks from the shop to the site and placed on previously prepared foundations. At least one concern builds complete houses on a shop assembly line and then transports and erects them on selected sites.

These are some of the methods of construction being used:

WOOD

1. Conventional wood frame units for walls, partitions, floors, ceilings and roofs, of storey height, various lengths and with various coverings, either shop-fabricated or site-assembled from pre-cut materials.

2. Stressed skin construction, with plywood covers glued under pressure on both sides of framing members with resin glues. High-

frequency dielectric heating sometimes used to accelerate setting of glue.

3. Vertical wood plank construction, usually 2 in. thick, spliced or tongued and grooved. Interior finishes usually site applied.

4. Independent wood frame, with curtain walls of fibreboard, covered on both sides with asbestos cement.

CONCRETE

1. Pre-cast RC units, either 2 skins connected by ties with insulation between or 6 in. solid wall units, storey height and about 10 ft. long, cast horizontally on the site and placed by crane. Ceiling and roof units also of pre-cast RC. Lightweight aggregates used.

2. *In situ* foamed cement for walls, flat roof and partitions. Special shuttering. Special mixer, mixtures (in slurry form) pumped through hose.

3. Walls of pre-cast RC units, channel-shaped, usually 16 in. wide and 8 ft. high. Flanges 3 in. wide, $3\frac{1}{2}$ in. thick. Concrete, lightweight, nailable. Interior wall finish and insulation nailed to units.

4. RC ribbed walls, cement gun applied. Variety of formwork used, some removable, some permanent for insulation.

METAL

1. Shop-fabricated wall and floor units with 16 gauge sheet steel channel framing ($3\frac{1}{2}$ in. \times $\frac{1}{2}$ in. up to 16 c/c for walls; $6\frac{1}{2}$ in. \times $1\frac{1}{2}$ in. up to 20 in. c/c for floors). Externally, plywood, shingles or boarding. Wall units, storey height and full wall length; floor units 8 ft. wide and up to 12 ft. long. Framing members connected by shop welding.

2. Aluminium framing with exterior covering of 0.031 in. corrugated aluminium, spot welded to framing, and interior lining of $\frac{1}{2}$ in. gypsum board. Partition units are similar. Wall units are storey height and full wall length, framing includes 2 in. \times 2 in. H-shaped extruded aluminium studs at 24 in. c/c. Floor and roof units 14 ft. long, up to 8 ft. wide, with extruded aluminium joists, 6 in. deep, flanges $1\frac{1}{2}$ in. wide, at 24 in. c/c., and ceiling of 0.031 in. embossed aluminium over $\frac{1}{2}$ in. dense fibreboard. Insulation incorporated in units. Connections shop welded.

3. 16-in. wide sheet steel wall and partition units, storey height, $3\frac{1}{2}$ in. thick, filled with vermiculite. Framing, 16 gauge; covering 22 gauge, tongued and grooved connections between units. Erection by screwing to 16-gauge channel anchored to foundations, with similar channel capping. Special units for door and window openings and corners.

HEATING

In the field of heating a number of changes have taken place during the last few years. In particular, there are several modifications of warm-air systems which are becoming increasingly popular. For example: 1. Counterflow forced circulation with the heated air discharged at low level. This achieves a very low vertical temperature gradient. 2. Discharge of warmed air through supply registers located near external walls (at low level). The ducts under the floor give a moderate panel heating effect. 3. High velocity, small duct systems marketed as a package system with all components, including special diffusing registers or re-circulating blenders, supplied by the furnace manufacturer. 4. Systems circulating heated air through hollow masonry built into floor or ceiling. The heated floor or ceiling acts as a radiant panel, although sometimes some heated air is discharged to provide convection heating as well. 5. High discharge systems with the furnace on the ground floor. Outlets are near the ceiling which is heated sufficiently to act as a radiant panel and supplement convection circulation.

With regard to heating by hot water, radiant panels in floor or ceiling and skirting heaters, both radiant and convective, are



RYLANDS BUILDING, MANCHESTER

THERE is a good deal more of this building than is shown in the photograph, for it has a basement that provides valuable space for the display of merchandise, and below that a sub-basement which houses the engineering services that play so large a part in the functioning of a modern commercial structure. Deep excavation always requires careful provision against the danger of flooding by subsoil water, and the necessary protection was provided in this case by the inclusion of 'PUDLO' Brand Waterproofer in the concrete that forms the retaining walls. The waterproofing work was done, as part of their general contract, by Messrs. J. Gerrard & Sons, Ltd., to the specification of the Architects, Harry Fairhurst & Son, F. & A.R.I.B.A., who had previous experience of its use in the deep basements of buildings in Manchester for "The Manchester Guardian," The English Sewing Cotton Co., Ltd., and The Bleachers' Association, which last is beside the River Irwell.

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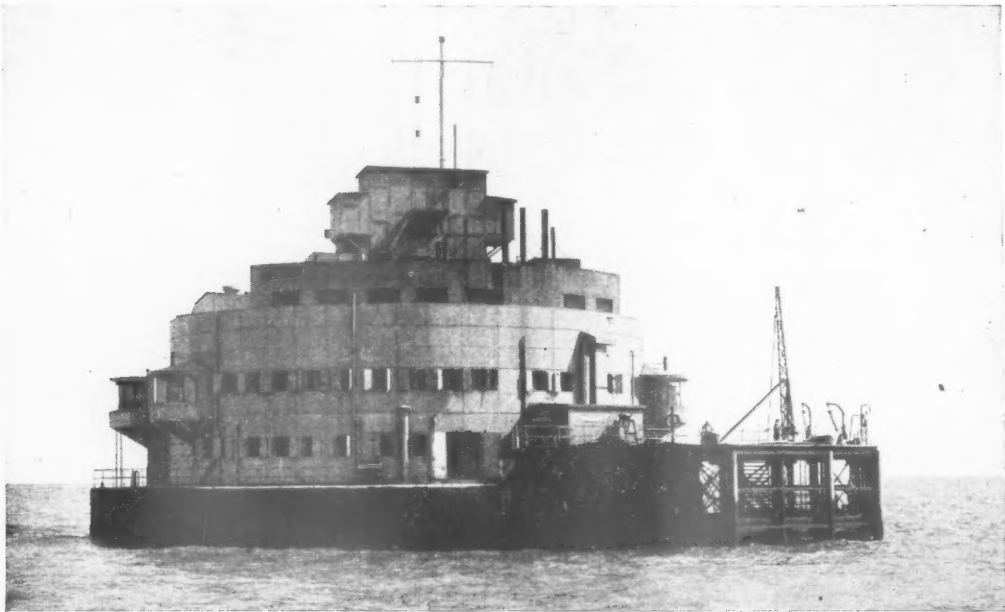
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being used more frequently. A comparatively new method of providing radiant panel heating is by means of finned tubing installed in joist spaces, heating the air and thereby the floor and/or ceiling.

The economical use of electricity for heating is restricted to exceptionally well-insulated buildings or districts enjoying a low electricity rate for heating. However, radiant panels of various materials, heating cables embedded in ceiling plaster or concrete floors, and skirting radiators are all finding increased favour. New are high temperature (around 340° F.) radiant panels of glass, heated by a grid fused to the glass. These can be mounted in a frame which allows air to circulate behind the panel, thus providing both convection and radiant heat.

GENERALLY

Major attention is being given in the USA to efficient job organization and the use of mechanical equipment. Organization is the responsibility of the general contractor, who must achieve intelligent co-operation with his sub-contractors. Good planning results in efficient dovetailing of trades on the site. Site pre-cutting and assembly of framing, plumbing and heating installations at a central point on the site is now normal with large firms and quite common with smaller ones.

The mechanical equipment to be found even on a small site includes: electric hand saws with special blades for cutting masonry and some metals, radial saws, electric sanders (floor and hand models), electric lock mortisers, electric drills, electric pipe cutters and threaders, power concrete mixers, factory-made forms for concrete work, paint sprayers, and power shovels.

In addition large firms often set up temporary, but completely equipped, shops at the site for fabricating practically all of the house elements, and most large-scale builders are making much use of jig tables and general jig equipment in order to standardize and simplify construction and site assembly.

A. Marini (France), director of the Centre Scientifique et Technique du Batiment, Paris, described house-construction methods developed in France during the immediate post-war period and also more recent trends in the construction of walls and floors. This summary deals only with walls.

RECENT TRENDS IN CONSTRUCTION TECHNIQUE IN FRANCE

By A. Marini

In 1945, bricks and cement were scarce, wood very expensive, and there was a shortage of skilled labour, which the war had scattered. It is not surprising that under such conditions research work was chiefly concerned with remedying the serious difficulties of the moment. The first systems of building which emerged after the war can be divided into three principal types:

1. Hollow concrete blocks.

2. Frame structures with non-load-bearing panels.

3. Slabs or panels, load-bearing or semi-load-bearing.

It was only later when metal, and particularly thin metal sheets, had become more generally available that designs using concrete cast *in situ* were put forward. Even in this case, the need for economy in materials led to the design of hollow walls, sometimes with very large air spaces, in order to reduce to a minimum the volume of concrete required and, consequently, the cement content.

PRESENT DAY TRENDS

Since 1948 economic conditions have changed a great deal. The supply of materials has improved, skilled labour has returned and new workers have been trained, competition between contractors is keener, clerks of works now set higher standards, and contracting firms which had hitherto specialized in public works are competing for building contracts. Hence, new trends have appeared which, in our opinion, deserve to be examined with care. We think they correspond to the true needs of the building industry and may make a permanent and important contribution to building technique.

IN SITU CONCRETE

1. Concrete, cast *in situ* between recoverable shuttering as high as one storey of the building; the concrete used for this purpose is generally a clinker or pozzolana concrete or a no-fines concrete.

The large amount of formwork requires a large capital investment and the maintenance costs are far from negligible, but these systems have important advantages: they are rapid, they require a minimum of skilled labour, no structural frame is required and the system can be adapted to practically any type of building, or any plan, providing the windows are not too large. The disadvantages are that they require rendering and plastering, involve the use of scaffolding in order to apply the external finish, are sometimes prone to shrinkage troubles and presuppose a large scale building programme.

Cast *in situ* systems are economical for buildings where finish is not important. But the use of expensive finishes, such as may be provided by permanent shuttering, requires more skilled labour and then the economy tends to be lost.

PREFABRICATED FACING SLABS

2. Reinforced prefabricated concrete slabs of different sizes, the essential characteristic of these slabs being that they are faced with a good external finish. These slabs may be part of the load-bearing structure or not; in any case they are used with a reinforced concrete frame and an internal wall made of bricks, building blocks or plaster slabs.

In this case the prefabrication is restricted to the external facing only, in the form of slabs, generally of storey height and stiffened with central, lateral or peripheral ribs (see Fig. 1). Special panels are sometimes cast with openings for the windows. The elements are fixed directly to the main frame and the problems of fastening the slabs seem to have been solved.

Manufacturers of faced building blocks have themselves been led to develop their ideas and to separate the external facing from the blocks. For economic reasons they prefer to manufacture the blocks on the spot, and to make the facing slabs in the factory, for the latter are light and easy to transport (see Fig. 2).

Walls of this type can be built quickly, yet the final appearance compares favourably with that of brick or even, in some cases, dressed stone. The facing slabs are made of high grade concrete and are watertight,

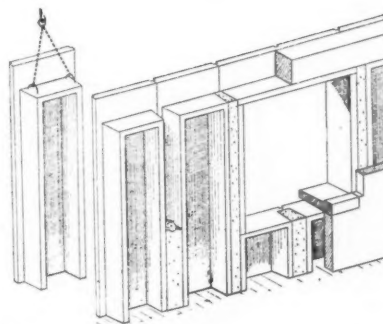


Fig. 1. Ribbed slabs, storey height.

frost-resisting, extremely durable and require very little maintenance—in fact, they are far superior to any form of rendering.

The blocks are light (they seldom weigh more than 500 kg.), they can be handled by normal lifting equipment and can be used for very high buildings. They do require, however, internal finishing, (although in some parts of a building the external facing can be used internally too), and their use is only economical if they are manufactured on the site, as would be the case only on sites of at least 100 dwellings. Great care must be taken in jointing the facing slabs, since they are so thin.

COMPLETE WALL ELEMENTS

3. Complete wall elements, one storey high, partly or entirely load-bearing, consisting of a good external face, the wall itself complete with window openings and the necessary fittings for fixing joinery and for forming junctions with adjacent panels and with internal partitions.

It seems that this relatively new concept of heavy prefabricated elements, which is beginning to be applied by large contracting firms, tends rather rapidly to develop into an even more advanced degree of prefabrication including internal finishes and joinery. Although a wall section complete with external rendering presents a certain amount of interest, a section which includes internal finishes, woodwork and metalwork would be much more interesting for the building industry, and would largely compensate for the difficulties involved in handling heavy elements. Consequently it seems likely that the design of complete wall sections will be further developed in the near future because this makes it possible to finish both sides of the wall in the factory, and the only specialized labour required on the site will be that for assembly (see Fig. 3).

This system of building saves manpower, and builds quickly. It is largely independent of weather conditions, eliminates plasterwork and masonry work, makes finishing more economical and simplifies the installation of services. But, heavy lift-

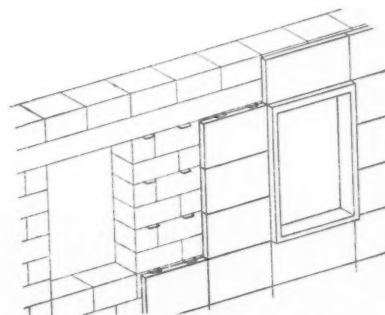


Fig. 2. Prefabricated facing slabs for exterior surface.



Saxone Shoe Store at 297, Oxford Street, London, W.1, is equipped with a balanced system of warmed fresh air ventilation and radiator heating. The incoming air is warmed and filtered before being distributed into the showrooms and offices through ornamental grilles, and the vitiated air is extracted and discharged above the roof level. The heater batteries and convector type radiators are served by a 'Rex' 3/8 Gas-fired boiler, rated at 1,000,000 B.Th.U per hour. Hot water for the shops and offices over is supplied by an 'Empire' No. 3 boiler, rated at 45,000 B.Th.U per hour.

Heating installation by

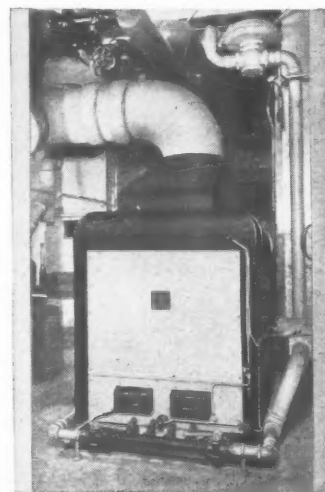
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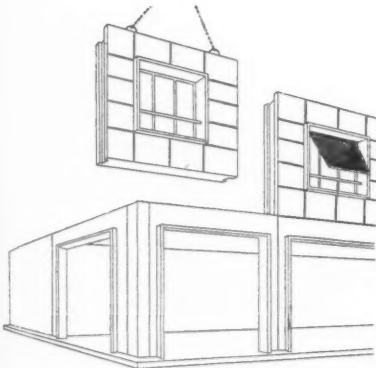


Fig. 3. Large wall panels completely pre-fabricated.

ing equipment is required, pre-planning must be comprehensive and the site must be organized very efficiently. Special arrangements are required for multi-storey building. Incidentally, handling difficulties can be partly eliminated if the elements are manufactured on each floor under the protection of the next floor (see Fig. 4).

On large schemes (300 to 600 dwellings) this system of building has enabled large firms to tender below the cost of traditional building.

EXTERNAL FACINGS

A number of firms seem to have solved the problem of external facings satisfactorily, but it has yet to be studied systematically. Any treatment of the concrete after casting must be simple and economical. It should not involve extensive handling of the units and it must not affect the shape of the units or the strength or physical properties of the concrete. Yet it must produce a hard, weather-resistant and easily cleaned surface.

So far, the treatments found most economical are: exposing specially chosen aggregates by washing and the use of richly coloured mortars, afterwards brushed, rubbed, scraped or press-moulded. Also in use are pumice and sand treatments and brushing. Research in this field would be of great interest to the French building industry.

Most contracting firms are using concrete, but other materials are being used. A few successful attempts have been made to combine a traditional reinforced concrete framework with light steel or aluminium panels. Another section of the industry is specializing in lightweight construction, using wood and its derivatives, asbestos-cement, steel and aluminium alloys and plaster. The use of these lightweight systems for small dwellings should, in the future, become increasingly popular.

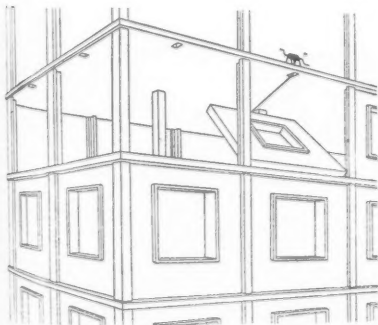
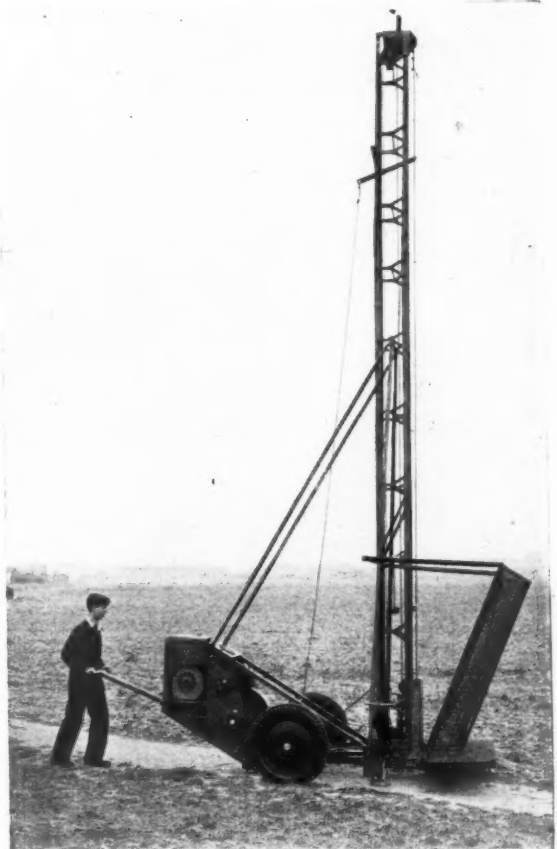


Fig. 4. Large panels built at floor level and raised into position.

Fig. 5. Free-standing mobile platform hoist which can be struck and moved in a few minutes.



A combined paper (Gt. Britain) by a director of a large firm of building contractors (N. S. Farrow) and an engineer of the Department of Scientific and Industrial Research (J. F. Eden) described plant now in use in this country and research which led to its development. The following summary deals mainly with the plant itself.

MECHANICAL AIDS FOR BUILDING

By N. S. Farrow and J. F. Eden

No one would suggest that building operations, which are essentially of a transitory nature involving the movement of plant from site to site, are susceptible to such a high degree of mechanization as is natural, and indeed inevitable, with repetitive manufacturing processes. But it is indisputable that the proper use of appropriate mechanical plant can greatly reduce building costs and increase the speed of construction. Moreover, it appears that the main obstacle to future progress in the mechanization of building lies more in tradition than in any fundamental peculiarity of building operations.

However, it is important to realize that, as the design of the building determines the work to be done and very largely fixes the sequence in which it can be carried out, the

architect is as much concerned as the engineer and the builder in problems of mechanization. Unless the work is arranged in a fashion suitable for the use of machines, no machine, however cleverly designed, can work with full effect.

COMPARISON WITH POSITION IN OTHER COUNTRIES

Bulk earth moving and excavation has for many years been carried out mechanically in all industrialized countries. Mechanization in other fields has been mainly confined to the handling of materials and less progress has been made in the mechanization of the crafts. There has been a tendency in Great Britain to separate vertical and horizontal handling. Dumpers and power-driven runabout barrows are used at ground level to some extent and show a reduction in cost, but most of this work, except in large building projects, is still done manually, as also is horizontal transport above ground level. Vertical handling is usually mechanized, the platform hoist being extensively used. The use of cranes, and in particular the Scotch Derrick, is very often limited to cases where the material has to be held in position while some manual fixing is carried out. In other words, the crane in British practice is primarily a device for erection and fixing and is only secondarily used for movement of materials. It is also interesting to note that few cranes in this country have been designed specifically for use in the building industry and the types available are used to a greater extent in other industries.

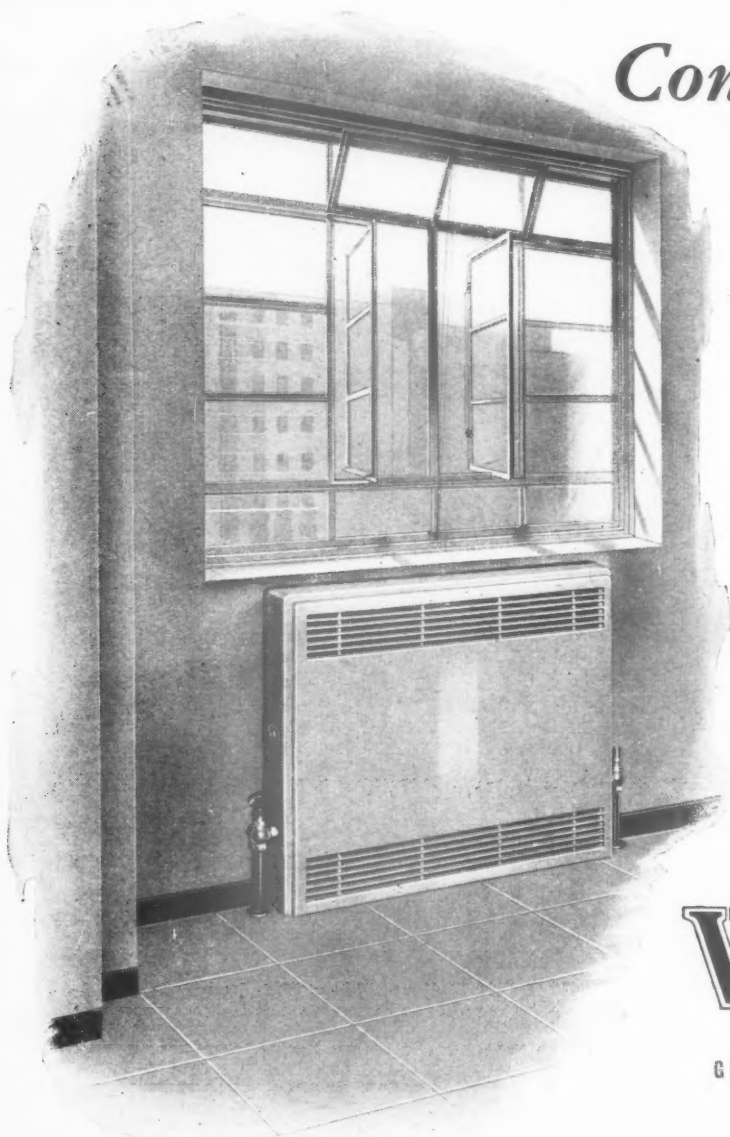
In America, as is generally known, the extent of mechanization is very much greater than in the United Kingdom. The types of plant used are similar, but greater use is made of the crane as a handling device.

In France, Switzerland, and some other continental countries, handling methods are

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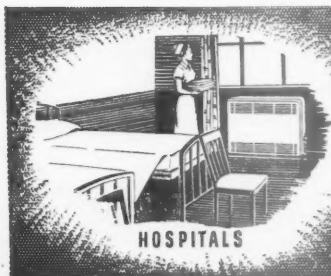
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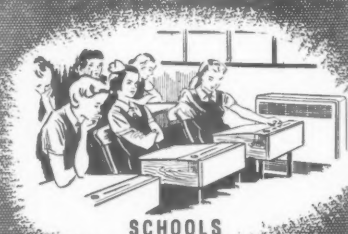
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different and rail transport on the sites is still used extensively. Cranes, mounted on rails and standing 50 to 100 ft. high, with jibs extending an equivalent distance, have been developed into efficient machines for building purposes, and offer advantages well worth exploring over those used in the United Kingdom or even in the USA. The popularity of these cranes on the Continent seems to be highly significant and in certain countries they are used on most buildings over two storeys in height, whatever the form of construction, and handle all materials from foundations to roof.

Ready-mixed or transit-mixed concrete is used extensively in many parts of the United States, but, with a few exceptions, has not gained popularity in the United Kingdom or the Continent, nor are concrete pumps used to a great extent for building work in this country.

RESEARCH

In the past, machines have been developed by plant manufacturers largely by trial and error. The cost of development work, particularly of plant for smaller firms, and its speculative nature made it essential that the Government should organize research into materials handling in order to rationalize this development work. For five years now, building operations on sites all over the country have been studied, and from the data collected and analysed it was decided that the operations normally carried out by unskilled workers would most rapidly benefit from further mechanization. Levels of productivity were found to vary by as much as 300 per cent, and directly productive time is often only one-third of the man-hours on the site.

TYPES OF MACHINE IN USE

As a result of this research, a number of small mobile machines have become available for the house-builder, such as power-driven barrows (usually 3-wheeled), concreting booms and mono-rail transporters. The use of these machines, which cost between £120 and £500, for concreting can save three or more men in the mixing and placing team, speed up the work considerably and reduce costs by several shillings per cubic yard.

The booms are particularly useful for the small builder, as they have no engine and can be operated by workers with little experience of mechanical plant.

Considerable research has been devoted to the problem of improving the performance and mobility of concrete mixers, and many light weight models and trailer types are now in use. The problem of raising bricks and mortar has also been tackled. The difficulty here is that the requirements are small and intermittent. The solution is the mobile, free-standing, platform hoist; a wide range of these are now widely in use, and a number of special brick trucks have been devised to work with these hoists (see Figs. 5 and 6).

Another significant trend recently in evidence is an increase in the number of portable power-operated winches which are being used to mechanize the old manual gin hoist. An improvement has been to mount the power-operated winch on a pivot fixed to the scaffold so that the load can be swung in and placed on the scaffold (see Fig. 7).

Several types of quickly-erected steel scaffolding have been developed since the war. One of these, consisting mainly of H-shaped units, can be erected in about half the time required for normal steel scaffolding. Aluminium scaffolding is also being used more extensively. Although it costs more than steel, maintenance, handling and transport costs are lower, and, if moved more than six times per year, it can be more economical than steel.

Fig. 6. Special brick barrow for use with hoist shown in Fig. 5. This will pick up, wheel and deposit in a neat stack, 40-50 bricks at a time.



Another new development of interest is the one-man, portable working platform, which can be raised to any height up to 17 ft. by means of a hand pump on the working platform which operates the hydraulic ram. This is particularly useful for maintenance work.

GENERALLY

Most of the machines available are devices for speeding up normal building processes;

so far there has been no large machine developed in this country capable of radically altering the methods of site organization, as long-jibbed cranes have, to some extent, in the USA.

Even the materials-handling devices described above have had only a limited success. Large firms of builders make good use of them, but smaller firms often fail to exploit them fully, mainly because they are unable to organize their jobs so as to use the machines continuously. However, there

Fig. 7. Power-operated gin-hoist mounted on swivelling bracket fixed to the scaffold, so that the load can be swung in and placed on the scaffold.



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is a much greater awareness, on the part of building contractors and others, of the possibilities of mechanization, and a healthy interest is now taken in new equipment.

G. Schindler, consultant to the Housing Sub-Committee of the ECE—the Swiss architect whose system of house construction was described recently in the JOURNAL, explained the effect of prefabrication on the organization of the architect's office and stressed the importance of close collaboration with research organizations.

THE INFLUENCE OF PREFABRICATION ON DESIGN AND OFFICE PROCEDURE

By G. Schindler

The factory production of windows, doors and other similar building components which were formerly the work of craftsmen has had comparatively little influence on drawing office procedure. But the prefabrication of complete sections of buildings, although still in its early stages, is already beginning to have an effect.

When building materials are used in a traditional manner and are in the hands of skilled workers the work of the drawing office is much reduced. The obvious can be omitted. The master craftsman has a background of traditional knowledge and needs no more than the minimum of instructions. This arrangement provides freedom and flexibility and the high degree of co-operation between designer and craftsman which can be attained has been responsible for many architectural masterpieces.

It is often felt that the industrialization of building and, to a greater extent, prefabrication, is responsible for standardization and inflexibility. But it should be remembered that, even without prefabrication, houses that come closest to meeting the public's requirements are reproduced by the thousand, for differences in living standards and habits are tending to disappear. This state of affairs, found also in the case of school and other public buildings, must, therefore, be regarded as characteristic of the present age, and industrialization and prefabrication are the concomitant phenomena of the present levelling of requirements, not the causes of it.

It is true that industrialized building has often been inflexible and, in fact, ugly. These designs have for the most part been developed by industries with a view solely to the utilization of their products or methods of production. Human feelings and needs have been subordinated to technical requirements. However, reference to the motor car industry shows that, in spite of mass production, changes in design are always taking place and there is no reason why there should not be as many separate designs as there are requirements, particularly since in the building industry the bulky nature of the materials to be transported and fluctuations in local requirements make the

over-centralization of manufacture economically unsound.

This diversity is only limited by the necessity within the concerns themselves for a certain amount of continuity in development in the interests of mass production. Such continuity should not, however, be considered merely as a restriction on design, but as a more certain way of building up a new tradition.

Improvements can be introduced continuously and a closer approach achieved to customer's wishes. It is still too early to say whether forms of expression bordering on true art will develop. In any case, that will finally not depend on the building method, but will merely be a question of the cultural standard of the age.

DRAWINGS AND DRAWING OFFICE PROCEDURE

When certain parts of a building are built in factories or workshops, special plans are required for each of such parts. Such a multiplication of plans is, even now, required in the case of traditional building. It is, however, characteristic that preparatory work in workshops and factories has hitherto only had reference to a single trade. Should industrialization not develop further, and the products of the various trades—stone, ironwork, joinery, etc.—be delivered separately to the building site, a great deal of assembly and supplementary work will have to be done there.

Comprehensive industrialization and prefabrication, however, require that as much as possible of the assembly and supplementary work be done in the factory, and that work on the site be reduced correspondingly. Hence, in the factory components are produced from materials which, on the site, would be handled by men of a number of different trades. Such components call for a number of factory drawings differing fundamentally from those used in traditional building.

In addition to factory drawings, a further series, classified by trade or material group, are required. For large-scale manufacture, detailed drawings are also required for each individual part within the material group. Factory instructions and specifications must also be provided.

The drawings usually required in traditional building are supplemented by the following:—

- drawings for assembly on the site;
- drawings for supplementary work on the site;
- drawings for industrially produced building components;
- drawings for the individual parts of such building components (grouped according to materials);
- drawings and specifications for each individual part within the material group;
- where necessary, drawings for moulds, etc., required for the manufacture of individual parts.

Amongst other new features, it should be noted that in these drawings, tolerances for factory-produced components need to be smaller than is the case in traditional building, where they are, naturally, fairly large. The dimensions on the drawings must, accordingly, be more closely calculated. In countries where the metric system is in force, they are usually shown in millimetres. In the case of individual parts it may be necessary to use fractions of a millimetre.

The closer calculation of dimensions does not, in itself, create any special difficulties for drawing offices. The calculation of large tolerances, as used in traditional building, also requires care and experience. Nevertheless, this working method is something to which building technicians and draughtsmen are unaccustomed.

A further innovation consists in the fact that in some cases the drawings need not be produced for the traditional trades, but for work carried out in factories by semi-trained workers and representing a new occupation.

In making the drawings, allowance must

be made for these new working methods. For instance, in the case of components on which the work is done from the back, it may be necessary in some cases to show the reverse image of the finished article on the drawings.

Allowing for manufacturing processes in making drawings gives rise to certain difficulties at first, but the factors involved are not very different from those that have to be considered in making drawings for joinery work, etc., in traditional building. They apply in the main to new work processes.

On the other hand, the preparation of drawings, including everything down to the last detail, and of specifications, as is customary in the engineering industry, for instance, is something to which building technicians are entirely unaccustomed. This type of work is so entirely foreign to the building trade that the question arises as to whether the present staffs of drawing offices are capable of coping with the new requirements.

However, the problem is not so difficult in practice. It will be seen that drawing office work falls into two parts. The first consists in preparing a main concept regarding the form of the building and the technical requirements for its completion. With the help of the drawings of the building components, of their assembly and completion on the building site, this concept can easily be understood.

This part covers the activities of building technicians. The chief difference from preparation of drawings as hitherto conducted consists in the fact that the main emphasis is on the delineation of the intermediate stages of the building processes, whereas, in the case of traditional building, such intermediate stages are taken for granted and are not depicted.

The second part of the work consists in dividing up the structure into a number of detail drawings in which allowance is made for special manufacturing conditions. Such drawings hardly affect the main concept at all and are, therefore, best prepared by the manufacturers' own technicians, who, alone, are in a position to make allowance for all manufacturing requirements.

Generally speaking, the influence of industrial building processes and of prefabrication on drawing procedure will not, therefore, necessitate any fundamental alteration in the character of drawing and designing offices.

DESIGN AND TECHNICAL PROCEDURE

If the new methods of using materials are to become competitive, countless new solutions to old problems are required. Much knowledge, work and care is needed, if the loss resulting from the abandonment of tradition is to be made good. A source of special difficulty lies in the fact that much experience that was entirely valid under the traditional system, is not applicable to the new. This experience must largely be replaced by technical knowledge and insight into the nature of building processes and materials.

Experience has shown that the demands made on knowledge and insight by the numerous problems are so great that they are scarcely within the compass of the individual. So far as architects' offices are concerned, the question arises whether the necessary knowledge can be obtained by employing specialists. Experience in designing has, however, shown that important problems, such as the behaviour of walls constructed of separately fabricated sections, are often only of temporary interest. When a satisfactory solution has been found, it is often months before a similar problem crops up.

It is, therefore, hardly possible for ordinary architects' offices to employ the necessary specialists themselves. The requisite knowledge must be obtained by collaboration with other organizations, particularly with material testing institutions.

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A.J. 13.9.51

Announcements

British Insulated Callender's Cables Ltd. announce that, as from September 10, 1951, the address of their Dublin office will be 53, South William Street, Dublin, C.1. The telephone number, Dublin 78475, remains unchanged.

High Duty Alloys, Ltd., announce that from September 1, 1951, their telephone number will be Slough 23901. Their telegraphic address remains the same.

Julian Leathart & Tingay announce that they have taken into partnership Mr. John Anthony Leathart, M.A., A.R.I.B.A., as from September 5, 1951. The name of the firm will be changed to Leathart, Son & Tingay.

The Copper Development Association has pointed out that it is now more imperative than ever to obtain expert advice on how to make the most of the copper available to the building industry. The user can always obtain such expert advice and information without charge or obligation by writing to the CDA. The CDA Building Engineer, Dr. E. Carr, and his assistants, H. Glover and S. G. Clements, answer hundreds of inquiries by letter, and if desired visit sites and give practical guidance while work is in progress. They also give lectures and demonstrations, supplemented by sound films and lantern slides, to technical colleges and trade groups. Principals of colleges and secretaries of masters' and operatives' organizations wishing to book such lectures are advised to make early application to the CDA, Kendals Hall, Radlett, Herts.

The firm hitherto styled Mauger & May, F.R.I.B.A. announce that Arthur May has

retired from partnership, but remains the firm's consultant. The partners in the firm now are:—Paul V. Mauger, F.R.I.B.A., M.T.P.L., Alick Gavin, B.A., A.R.I.B.A., George Mathers, A.R.I.B.A., John Mitchell, A.R.I.B.A. They are continuing to practise from Parkway Chambers, Welwyn Garden City and 25, Marylebone Road, London, N.W.1 under the title Paul Mauger and Partners.

Messrs. J. Amory Teather & Hadfield announce that from September 10, 1951, the title of the firm has been altered to Teather & Hadfield. There will be no alteration in the partnership and the firm will continue to practice at Mazda Buildings, Campo Lane, Sheffield.

Correction

We regret that on page 304 of our last issue the introduction to an announcement by Bakelite Ltd. was omitted. The full text of the announcement should read:

Bakelite Ltd. announce that Sir James Swinburne, F.R.S., who was Chairman of the Company from its inception until 1948, has resigned his directorship. Sir James began his work on the development of phenolic plastics in 1904, when he formed the Fire-proof Celluloid Syndicate Ltd., which in 1910 was changed to the Damard Lacquer Co. Ltd., this Company being one of the three companies which were later merged to form Bakelite Ltd. In recognition of Sir James's long and valued services he has been appointed Honorary President to the Company. To fill the vacancy on the Board thus caused, and other vacancies which were created at an Extraordinary General Meeting, the following have been appointed to the Board: P. Huffman, N. H. Docker and C. C. Last and G. W. Hodds as Joint General Managers.

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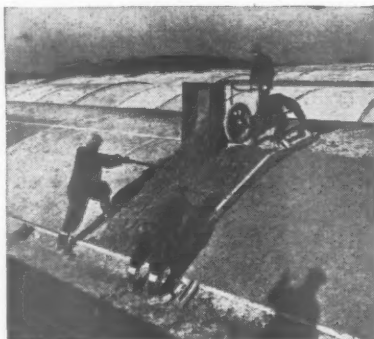
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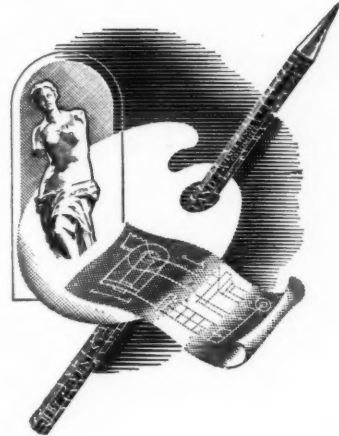
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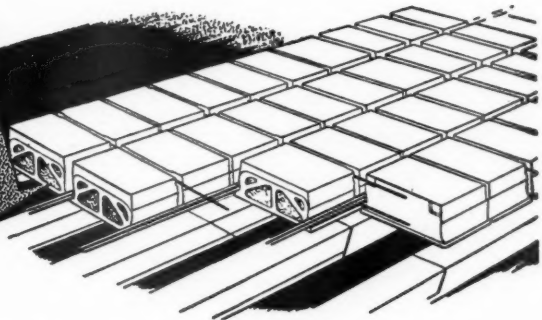


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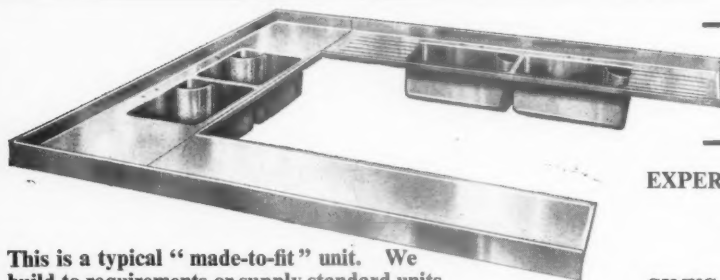
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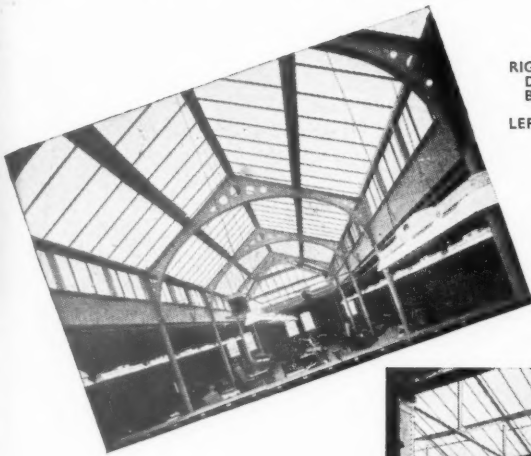
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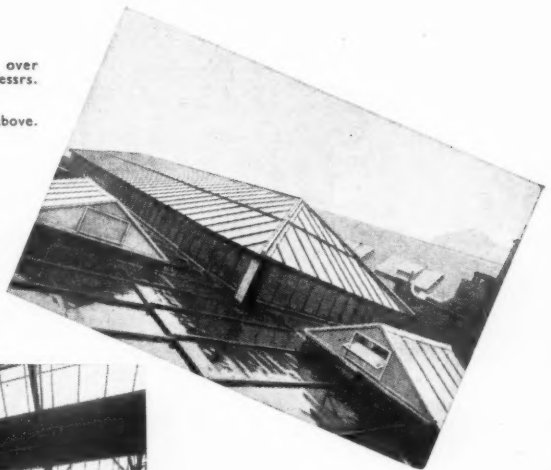
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LEFT: Interior view of above.



BELOW: Roof Glazing over Joiners Shop of Messrs. Harland Wolff Ltd. North Woolwich.



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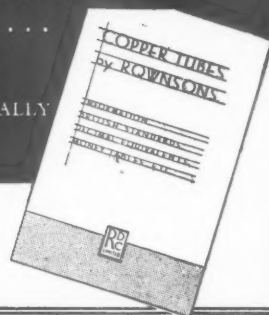
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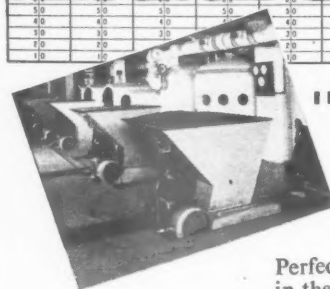
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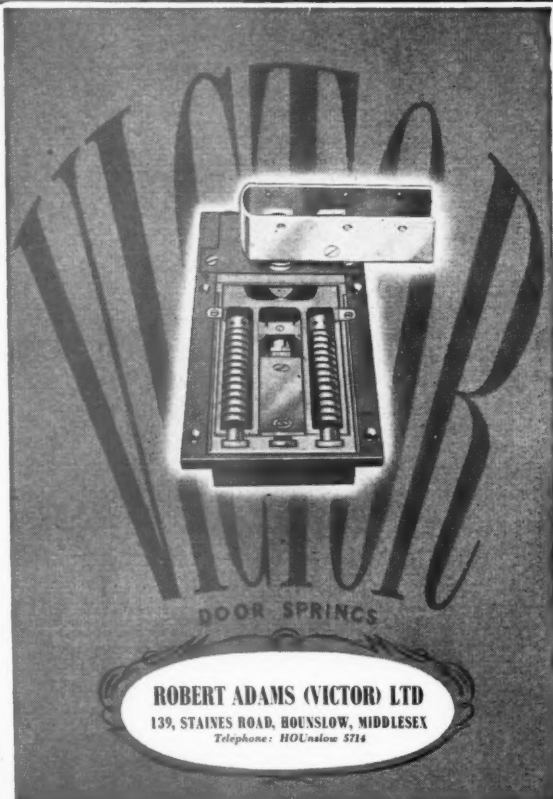
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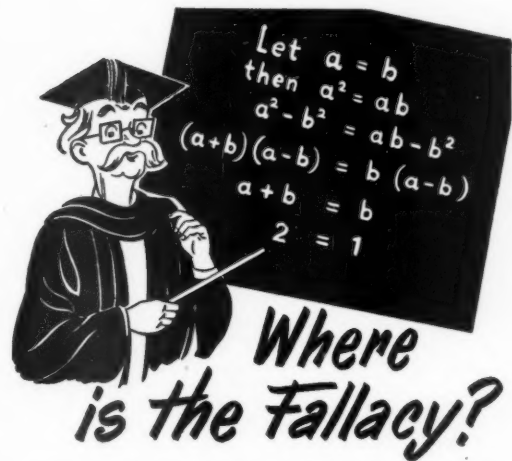
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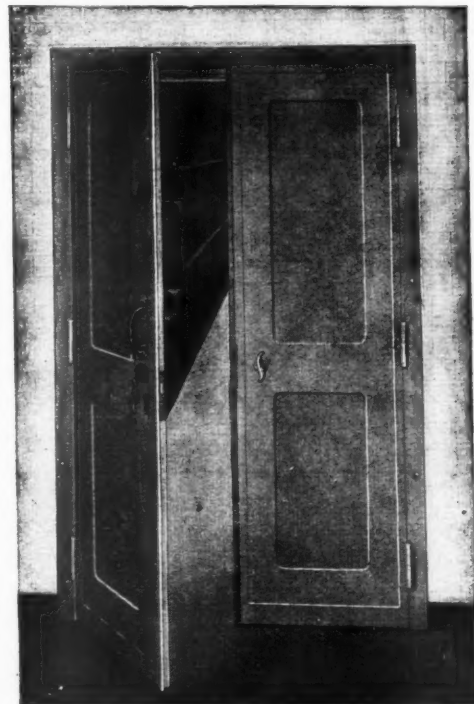


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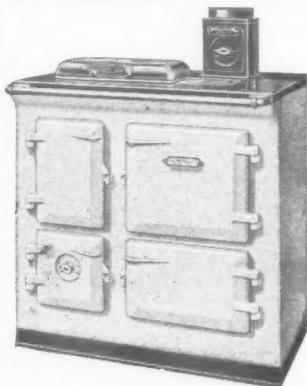
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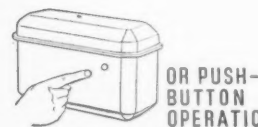
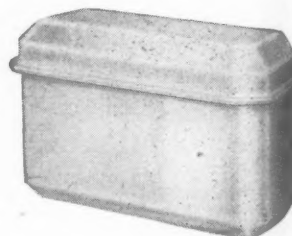
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CLASSIFIED ADVERTISEMENTS

Advertisements should be addressed to the Advt. Manager, "The Architects' Journal," 9, 11 and 13, Queen Anne's Gate, Westminster, S.W.1, and should reach there by first post on Friday morning for inclusion in the following Thursday's paper.

Replies to Box Numbers should be addressed care of "The Architects' Journal," at the address given above.

Public and Official Announcements

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LONDON COUNTY COUNCIL.

Applications are invited for positions of ARCHITECTURAL ASSISTANT (salaries up to £580 basic a year) in the Housing and Valuation Department. Commencing salaries will be determined according to qualifications and experience. Engagement will be subject to the Local Government Superannuation Acts, and successful candidates will be eligible for consideration for appointment to the permanent staff on the occurrence of vacancies.

All rates of pay up to £600 a year (basic) are at present subject to an addition of 10 per cent. Successful candidates will be required to assist in the design, layout and preparation of working drawings for housing schemes, cottages and multi-storey flats, and will be employed in the Housing Architect's Division.

Forms of application may be obtained from the Director of Housing, The County Hall, Westminster Bridge, S.E.1 (stamped addressed envelope required and quote reference A.A.1). Canvassing disqualifies. (816) 2615

BOROUGH OF CHATHAM.

APPOINTMENT OF ASSISTANT ARCHITECT. Applications are invited for the appointment of Assistant Architect within Grade V (£570-£620). Housing accommodation will be made available if required.

Conditions of appointment and form of application may be obtained from Mr. H. D. Peake, M.Sc.(Eng.), Borough Engineer and Surveyor, Town Hall, Chatham, to whom completed application forms should be returned not later than Tuesday, 25th September, 1951. 4280

COUNTY BOROUGH OF DERBY.

BOROUGH ARCHITECTS' DEPARTMENT. Applications are invited for the following appointments on the permanent staff, in accordance with the National Scale of Salaries—

(a) ONE ASSISTANT ARCHITECT, Grade III/IV/V. £500-£620. Commencing salary £500 per annum. Applicants should be of R.I.B.A. Intermediate Examination standard, and have had good architectural experience.

(b) ONE JUNIOR QUANTITY SURVEYOR, Grade III/IV/V. £300-£520. Commencing salary £300 per annum. Applicants should be of R.I.C.S. Intermediate Examination standard, and be fully experienced in abstracting and billing, measuring on site, preparation of final accounts and taking off quantities for small building works.

(c) ONE JUNIOR QUANTITY SURVEYOR, Grade I/II. £440-£515. Commencing salary £440 per annum. Applicants should have passed the R.I.C.S. First Examination, be not less than 21 years of age and be experienced in working up bills of quantities and measuring up on site.

The appointments will be subject to one month's notice in writing on either side and to the terms of the National Joint Council's Scheme of Conditions of Service and the provisions of the Local Government Superannuation Act, 1937, and the successful applicants will be required to pass a medical examination.

Forms of application may be obtained from the Borough Architect, The Council House, Corporation Street, Derby, and should be returned when completed, together with a copy of one testimonial and the names of two persons to whom reference may be made, to arrive not later than Monday, 24th September, 1951.

Canvassing directly or indirectly will be a disqualification.

E. H. NICHOLS,
Town Clerk. 4279

CITY OF PETERBOROUGH.
CITY ENGINEER AND SURVEYOR'S
DEPARTMENT.

Applications are invited for the appointment of ARCHITECTURAL ASSISTANT, in accordance with the National Scheme of Conditions of Service, and at a salary in accordance with A.P.T. Division, Grade IV (£530-£575).

Applicants should be good draughtsmen, possess a sound knowledge of building construction, and be capable of preparing working drawings, etc., with the minimum amount of supervision.

Applications, stating age, details of qualifications and experience, together with copies of not more than three recent testimonials, and suitably endorsed, must be sent to reach the City Engineer (Mr. F. J. Smith, M.B.E., A.M.I.C.E.) not later than 22nd September, 1951.

Applicants must disclose whether they are related to any senior official or member of the Authority.

It must be distinctly understood that the Council do not guarantee to find either a house or living accommodation, but they will, if necessary, assist as far as they are able the successful applicant to obtain accommodation.

C. PETER CLARKE,
Town Clerk. 4273

Town Hall, Peterborough.
August, 1951.

SURREY COUNTY COUNCIL.

COUNTY ARCHITECT'S DEPARTMENT.
Applications are invited for the following appointments—

1) PRINCIPAL ASSISTANT ARCHITECT at a commencing salary of £790 per annum rising by annual increments of £40/50 to a maximum of £1,000 per annum plus London Allowance of £30 per annum. Applicants must be Members of the Royal Institute of British Architects, and should have had experience in the organisation of work, and in the design and construction of modern buildings.

(2) ARCHITECTURAL ASSISTANT Grade III at a commencing salary of £500 per annum rising by annual increments of £15 to £545 plus London Allowance of up to £30 per annum, according to age. Applicants must be of good general training and give full details in their applications, and preference will be given to applicants who have passed the Intermediate Examination of the Royal Institute of British Architects.

The appointments will be subject to the provisions of the Local Government Act, 1937, and the successful applicant will be required to pass a medical examination.

Applications, stating age, qualifications and experience and accompanied by copies of three recent testimonials, should be sent to the County Architect, Surrey County Council, County Hall, Kingston-upon-Thames, not later than 20th September, 1951.

Canvassing, either directly or indirectly, will disqualify a candidate from consideration.

The Council will be unable to provide any housing accommodation, and the successful applicant will be expected to make his own arrangements in this direction.

T. W. W. GOODERIDGE,

Clerk of the Council.
County Hall, Kingston-upon-Thames. 4282

ARCHITECTURAL AND PLANNING DEPARTMENT COVENTRY.

Appointment.
CHIEF ASSISTANT QUANTITY SURVEYOR, GRADE A.P.T. IX (£790-£940-£910).

Applications are invited for the post of Chief Assistant Quantity Surveyor in this Department. The man appointed will be required to take charge of the Quantity Surveying Section of 20 Assistants. He must have a thorough knowledge and experience in all various aspects of Quantity Surveying, in negotiating with large and small contractors, and in settling accounts. He must be a good administrator, capable of handling a large section, which at the moment undertakes the preparation of Bills of Quantities and all relevant matters in very large housing, schools, office and central area contracts.

Only those who are technically sound, with good experience, initiative and will to work, need apply.

Housing accommodation will be made available in certain circumstances, and consideration might be given to a review in the salary in the near future.

All employees are expected to belong to an appropriate organisation in accordance with para. 44 of the "Charter."

Applications, on forms to be obtained from the undersigned, are to be received not later than Thursday, 20th September, 1951.

D. E. E. GIBSON,

City Architect and Planning Officer.
Bull Yard, off Warwick Row, Coventry.
25th August, 1951. 4259

LEEDS REGIONAL HOSPITAL BOARD
invites applications for the appointment of TEMPORARY CLERK OF WORKS, to supervise building contracts in the Hull area, the appointee to reside in or near Hull. Salary £520 per annum.

The appointment will be subject to the provisions of the National Health Service (Superannuation) Regulations, 1950, to the passing of a medical examination where the candidate is not already in the Health Service, and will be terminable by one calendar month's notice on either side.

Applications, stating age, details of qualifications, experience and present employment, together with the names of two referees, to be forwarded to the Secretary to the Board, Park Parade, Harrogate, as soon as possible. Canvassing in any form, either directly or indirectly, will disqualify. 4300

COUNTY BOROUGH OF SOUTHPORT.
WORKER-UP (QUANTITY SURVEYING
ASSISTANT).

Applications are invited for the above post in the Borough Architect and Town Planning Officer's Department. Intermediate Examination of the R.I.C.S. (Quantities Section) necessary. Salary on A.P.T., Grade V (£570-£620).

Further particulars may be obtained from the Borough Architect and Town Planning Officer, Pavilion Buildings, Lord Street, Southport.

R. EDGAR PERRINS,

Town Clerk. 4299

THE UNIVERSITY OF LIVERPOOL.
ROScoe CHAIR OF ARCHITECTURE.

The Council of the University of Liverpool invites applications for the Roscoe Chair of Architecture.

Further particulars may be obtained from the undersigned by whom twelve copies of applications (one in the case of overseas candidates) should be received not later than 17th November, 1951.

STANLEY DUMBELL,

Registrar. 4298

CITY OF NOTTINGHAM.

CITY ENGINEER'S DEPARTMENT.
APPOINTMENT OF SENIOR ARCHITECTURAL ASSISTANT, GRADE VIII (£735-£810).

Applications are invited for the above position, and candidates should be Associate Members of the Royal Institute of British Architects, with considerable experience in the design of public buildings, particularly schools.

The position is permanent, and the successful applicant will be required to pass a medical examination.

Deductions will be made from the salary for superannuation purposes.

Applications on forms to be obtained from R. M. Finch, O.B.E., M.I.C.E., City Engineer and Surveyor, Guildhall, Nottingham, are to be returned to him by not later than Saturday, 22nd September, 1951.

T. J. OWEN,

Town Clerk. 4312
Guildhall, Nottingham.

SCOTTISH SPECIAL HOUSING ASSOCIATION, LIMITED, invite applications for the appointment of ARCHITECT, Grade II. Salary scale £490-£725, with placing for age and experience. The post is superannuable under the Local Government Superannuation (Scotland) Act, 1937. Forms of application with full particulars can be obtained from the Secretary, 15/21, Palmerston Place, Edinburgh, 12. Completed forms of application must be lodged within 10 days of the appearance of this advertisement. 4311

NATIONAL COAL BOARD

Applications are invited for posts of ARCHITECT, Grade II, in the Welfare Building Branch at London Headquarters.

Candidates should be Associate Members of the R.I.B.A., and have experience in preparing sketch working drawings and specifications. Experience in planning modern workshops would be an advantage.

Starting salary, depending on qualifications and experience, in the scale £450-£725-£700, plus London Location Allowance.

Apply in writing, giving full particulars (in chronological order) of age, education, qualifications and experience (with certificates), to the National Coal Board, Establishments (Personnel), Hobart House, Grosvenor Place, London, S.W.1, marking envelope TT/373. Original testimonials should not be forwarded. Closing date 29th September, 1951. 4317

SURREY COUNTY COUNCIL.

COUNTY ARCHITECT'S DEPARTMENT.
Applications are invited for the appointment of ASSISTANT QUANTITY SURVEYOR, Grade VII, at a commencing salary of £735 rising by annual increments of £25 to a maximum of £810 per annum, plus London allowance of £30 per annum.

Applicants should possess approved qualifications and experience, and preference will be given to those who are Members of the Royal Institution of Chartered Surveyors (Quantities Sub-Division). They should be capable of undertaking all stages of the work for the preparation of Bills of Quantities, including preliminary estimates, the preparation and settlement of final accounts, site measurement, and preparation of interim certificates.

The appointment will be subject to the provisions of the Local Government Act, 1937, and the successful applicant will be required to pass a medical examination.

Applications, stating age, qualifications and experience, and accompanied by copies of three recent testimonials, should be sent to the County Architect, Surrey County Council, County Hall, Kingston-upon-Thames, not later than the 6th October, 1951.

Canvassing, either directly or indirectly, will disqualify a candidate from consideration.

The Council will be unable to provide any housing accommodation and the successful applicant will be expected to make his own arrangements in this direction.

T. W. W. GOODERIDGE,

Clerk of the Council.
County Hall, Kingston-upon-Thames. 4316

CITY OF PLYMOUTH.

CITY ARCHITECTS' DEPARTMENT.
APPOINTMENT OF QUANTITY SURVEYOR.

Applications are invited for the appointment of a Quantity Surveyor A.P.T. Grade V (£570 to £620) on the established staff, subject to the Conditions of Service of the National Joint Council for local authorities administrative, professional, technical and clerical services, the Local Government Superannuation Act, 1937, and one month's notice on either side. Applicants must be thoroughly experienced in all branches of the work of a Quantity Surveyor and should be Corporate Members of the Royal Institution of Chartered Surveyors (Sub-Division III. Quantities). The successful candidate will be required to pass a medical examination.

Applications on forms obtainable from the undersigned, accompanied by copies of not more than three recent testimonials and/or names of persons to whom reference may be made, should be received at my office not later than Saturday, 29th September, 1951.

THE CORPORATION MAY MAKE HOUSING ACCOMMODATION AVAILABLE TO THE SUCCESSFUL MARRIED CANDIDATE IF REQUIRED.

H. J. W. STIRLING, A.R.I.B.A.,

City Architect. 4318
Seymour Road, Plymouth.

**DURHAM COUNTY COUNCIL.
COUNTY PLANNING DEPARTMENT.**

Applications are invited for the following permanent appointments in the County Planning Department:—

- (a) ONE PLANNING ASSISTANT. Grade VIII. A.P.T. (£735-£810).
(b) ONE PLANNING ASSISTANT. Grade Va. A.P.T. (£600-£660).
(c) ONE PLANNING ASSISTANT. Grade II. A.P.T. (£470-£515).

Applicants for:—
(a) and (b) must have passed the Final Examination of the Town Planning Institute or some other appropriate recognised professional institute.

(c) should have had training or experience in town planning work and technique, and must at present be undertaking a course of study to lead to an appropriate Town Planning qualification.

The appointments are subject to the National Scheme of Conditions of Service as adopted by the County Council; to the provisions of the Local Government Superannuation Act, 1937, and the successful candidates will be required to pass a medical examination by the Council's Medical Officer; to termination by one calendar month's notice in writing on either side. Canvassing either directly or indirectly, will disqualify and applicants must disclose in writing whether to their knowledge they are related to any member or senior officer of the Council.

Applications, stating age, whether married or single, and giving full particulars of qualifications and experience, and the names of three persons to whom reference may be made, must be delivered to the County Planning Officer, 10, Church Street, Durham, by Friday, the 21st September, 1951.

J. K. HOPE.

Clerk of the County Council.

Shire Hall, Durham. 4326
6th September, 1951.

**COUNTY BOROUGH OF STOCKPORT.
ARCHITECTURAL ASSISTANTS (GENERAL
AND HOUSING).**

Applications are invited for the following positions:—

ARCHITECTURAL ASSISTANT (GENERAL). Salary A.P.T. Grade V (£570-£620).

ARCHITECTURAL ASSISTANT (HOUSING). Salary A.P.T. Grade III (£500-£545).

TWO TRAINEES. Salary grade, General Division at age 21. Male, £245; female, £195.

The appointments will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidates will be required to pass a medical examination.

Applications, stating age, qualifications, and experience, together with copies of two recent testimonials, must be delivered to me not later than 29th September, 1951.

Candidates must disclose whether to their knowledge they are related to any member or senior official of the Council.

WM. F. GARDNER, M.I.C.E.,
A.M.T.P.I.

Borough Surveyor.

Town Hall, Stockport. 4325

ARCHITECTURAL DRAUGHTSMAN. DEPARTMENT OF HEALTH FOR SCOTLAND invite applications from experienced Draughtsmen for a temporary post of Architectural Draughtsman. The successful candidate will be employed on working drawings of various Government buildings. Salary range £330-£560 (women £485). Form of application obtainable from Establishment Officer, Department of Health for Scotland (Room 30), St. Andrew's House, Edinburgh, 1, must be returned by 29th September, 1951. 4327

THE SOUTH WALES ELECTRICITY BOARD. Applications are invited for the position of an ARCHITECTURAL DRAUGHTSMAN in the Civil Engineering Department of the Board at St. Mellons, Cardiff.

Applicants will be required to undertake the layout and preparation of working drawings for showrooms, offices and sub-stations, including measuring, up and alterations to existing buildings.

The salary for the position will be in accordance with Class D, Grade VI (£375-£500) of the National Joint Board Schedule for the Electricity Supply Industry.

Applications, stating age, present position, present salary, qualifications and experience, and whether married or single, together with the names and addresses of three referees, should be addressed to the Secretary (Establishments Section), The South Wales Electricity Board, St. Mellons, Cardiff, so as to reach him not later than 22nd September, 1951.

D. G. DODDS,

Secretary.

4323

TRACER (WOMAN). THE PRISON COMMISSIONERS invite applications for a WOMAN TRACER in their drawing office in London.

Candidates must be at least 16 years of age. Preference given to those between 20 and 25. Knowledge of tracing desirable.

Pay 57s. per week at age 16, rising to £5 per week at age 25, then annually by 4s. or 3s. to £5 15s. per week. Entry to pensionable post considered after one year's service.

Paid holidays of 12 working days for those under 18 years old and 18 days for others.

Application form from the Establishment Officer (E.126/2/6), Prison Commission, Horseferry House, Dean Ryle Street, London, S.W.1, to be returned by 28th September, 1951. 4328

METROPOLITAN BOROUGH OF

PAITINGTON.

JUNIOR ARCHITECTURAL ASSISTANT

(A.P.T. I, £470-£515-£515 p.a.)

(£10 less if under 26 years of age.)

Applications are invited for the above appointment in the Housing Department.

Applicants should be preparing for the Intermediate Examination of the Royal Institute of British Architects, be used to preparing working and detail drawings, and be good draughtsmen.

The appointment will be subject to one month's notice from either side; to the provisions of the Council's Superannuation Acts and Standing Orders; and to the National Joint Council's Scheme of Conditions of Service.

Candidates must furnish information under the following headings:—(i) Age; (ii) qualifications; (iii) present and previous appointments, with dates; (iv) experience, and (v) names and addresses of three referees. Covering envelopes must be endorsed "Appt. A.24," and should reach me by 10 a.m. on 24th September, 1951.

W. H. BENTLEY.

Town Clerk.

Town Hall, Paddington, W.2.
1st September, 1951.

4310

PUBLIC WORKS DEPARTMENT, HOBART,

TASMANIA.

Applications are invited for the position of ARCHITECT, Class I, required by the Public Works Department, Hobart, Tasmania. Salary range £A921-£A1,090 per annum. Applicants should be registered Architects and Associates of a recognised Institute of Architects, with at least 5 years' experience in the design of public buildings, schools, hospitals, etc.

Written application with references to the Agent-General for Tasmania, 457, Strand, London, W.C.2. 4308

TIMBER DEVELOPMENT ASSOCIATION,

LIMITED.

Applications are invited for the appointment of a SENIOR STRUCTURAL ENGINEERING ASSISTANT in the Research and Design Department of the Association. Applicants should be Corporate Members of the Institution of Civil Engineers and/or the Institution of Structural Engineers, who have had at least three years' practical design experience of framed structures.

The successful candidate will be engaged upon the advancement of timber structural design technique. Previous design experience in timber is desirable, but not essential. Commencing salary: £650 per annum.

The successful candidate will be required to join the Staff Superannuation Scheme if invited to do so.

Applications, stating age, qualifications and experience, should be addressed to The Director, Timber Development Association, Limited, 21, College Hill, E.C.4, by the 25th September, 1951. 4305

MINISTRY OF WORKS.

There are vacancies in the Chief Architect's Division for ARCHITECTURAL ASSISTANTS and LEADING ARCHITECTURAL ASSISTANTS, with recognised training and fair experience. Successful candidates will be employed in London and elsewhere on a wide variety of Public Buildings, including Atomic Energy and other Research Establishments, Telephone Exchanges, and Housing.

Salary: Architectural Assistants, £340-£575 per annum; Leading Architectural Assistants, £570-£675 per annum. Starting pay will be assessed according to age, qualifications and experience. These rates are for London; a small deduction is made in the Provinces.

Although these are not established posts, some of them have long term possibilities, and competitions are held periodically to fill established vacancies.

Apply in writing, stating age, nationality, full details of experience, and locality preferred, to Chief Architect, Ministry of Works, Abell House, John Islip Street, London, S.W.1, quoting reference WG10/BS. 4304

BOROUGH OF SUTTON AND CHEAM.**BOROUGH ENGINEER AND SURVEYOR'S**

DEPARTMENT.

APPOINTMENT OF ARCHITECTURAL

ASSISTANT

Applications are invited for the appointment of an Architectural Assistant in the Department of the Borough Engineer and Surveyor, at a salary in accordance with Grade IV of the A.P.T. Division of the National Scale of Salaries, plus London "weighting." Housing accommodation may be made available if necessary.

The appointment, which is terminable by one month's notice in writing on either side, is on the permanent staff of the Corporation, and is subject to the provisions of the Local Government Superannuation Act, 1937. The successful candidate will be required to pass a medical examination.

Forms of application may be obtained from Mr. N. H. Mitchell, A.M.I.C.E., M.I.Mun.E., Borough Engineer and Surveyor, to whom they should be returned, accompanied by copies of three recent testimonials, not later than 1st October, 1951, endorsed "Architectural Assistant."

Canvassing directly or indirectly, will be a disqualification.

A. PRIESTLEY.

Town Clerk.

Municipal Offices, Sutton, Surrey.
August, 1951.

4295

COUNTY COUNCIL OF THE COUNTY OF

LANARK.

PROPERTY DEPARTMENT.

Applications are invited for the post of JUNIOR TECHNICAL ASSISTANT in the Property Department, with headquarters at Motherwell.

Salary will range between A.P.T. Grade IV (£520-£565), and Grade VI (£645-£710), according to the qualifications and experience of successful applicant.

Applicants, who should preferably be Graduates of the Institution of Heating and Ventilating Engineers, must not be over 45 years of age, and be fully experienced in the design and preparation of drawings of all types of heating schemes and hot water supply, particularly of Schools, steam, electrical and gas installations for School Meals Service and Cooking Centres.

Applicants must have some knowledge of electrical and plumbing work.

The appointment will be subject to the County Council's Conditions of Service and to the provisions of the Local Government Superannuation (Scotland) Act, 1937, and successful candidate will require to pass a medical examination. Canvassing, directly or indirectly, will be a disqualification.

Applications, stating age, qualifications, experience, past and present appointments, and accompanied by the names and addresses of three referees, should be sent to Mr. Wm. R. Watt, County Architect, 34, Albert Street, Motherwell, Lanarkshire, not later than 14 days after the appearance of this advertisement.

WM. C. BROWNIE,

County Clerk.

Lanarkshire House, 191, Ingram Street,
Glasgow, C.1.

6th September, 1951.

4327

**COUNTY BOROUGH OF BLACKBURN.
ARCHITECTURAL ASSISTANT AND ASSISTANT QUANTITY SURVEYOR.**

Applications are invited for permanent appointments as Architectural Assistant, Grade VI (£645-£710) or Grade VII (£685-£760), according to experience and qualifications, and Assistant Quantity Surveyor, Grade VI (£645-£710), in the Borough Engineer's Department.

Architectural applicants must be Registered Architects and have good experience in the design and construction of schools and Municipal buildings, and preference will be given to Associates of the R.I.B.A. The Quantity Surveyor must be experienced in the preparation of Bills of Quantities, Specifications, Estimates, and the settlement of final accounts, preference being given to Professional Associates of the Chartered Surveyors' Institute.

Applications, stating age, qualifications, experience, present and past appointments, should be submitted, with not more than three recent testimonials, to the Borough Engineer and Surveyor, Town Hall, Blackburn, by the 26th September.

CHAS. S. ROBINSON.

Town Clerk.

4322

CITY OF WAKEFIELD.**CITY ENGINEER'S DEPARTMENT.**

Applications are invited for the following established posts in the City Engineer's Department.

(a) ENGINEERING ASSISTANT, A.P.T. V (£570-£620). Applicants must have experience in the design and supervision of road and sewer works and should be Chartered Engineers.

(b) ARCHITECTURAL ASSISTANT, A.P.T. II (£470-£515). Applicants must be good draughtsmen with experience in the preparation of detail drawings and general architectural work.

The appointments will be subject to the Local Government Superannuation Act, 1937, and to the passing of a medical examination.

Applications, endorsed according to the appointment applied for, stating age, qualifications, present and previous appointments and details of experience, together with the names of two referees should be sent to me not later than the 29th September, 1951.

W. S. DES FORGES.

Town Clerk.

5th September, 1951.

4319

LEEDS REGIONAL HOSPITAL BOARD

invites applications for the appointment of MALE

CLERK. Salary scale (at present under review), £480-£570 per annum. Candidates must have a knowledge of shorthand, experience in Committee work, possess initiative and an ability to deal expeditiously with a large volume of correspondence. Previous experience in clerical work in an Architect's office would be an advantage, but is not essential.

Applications, stating age, details of qualifications, experience and present employment, together with the names of two referees, to be forwarded to the Secretary to the Board, Park Parade, Harrogate, as far as possible. Canvassing in any form, either directly or indirectly, will disqualify.

4337

**NORTHAMPTON COUNTY BOROUGH.
ASSISTANT ARCHITECT—A.P.T., GRADE V**

(£570-£620).

Applications from Registered Architects for above permanent post, stating age, qualifications, experience, past and present appointments and salary, with names of two persons for reference, should reach J. L. Womersley, A.R.I.B.A., A.M.T.P.I., Borough Architect and Town Planning Officer, by 22nd September, 1951. Canvassing will disqualify.

C. E. VIVIAN ROWE.

Town Clerk.

4324

**COUNTY BOROUGH OF SOUTHAMPTON.
BOROUGH ENGINEER AND SURVEYOR'S
DEPARTMENT.**

Applications are invited for the following appointments:—

(a) ASSISTANT QUANTITY SURVEYOR.
Grade A.P.T. VI (£645-£710).

(b) QUANTITY SURVEYOR'S ASSISTANT.
Grade A.P.T. I (£440-£485).

(c) TEMPORARY CLERK OF WORKS
(HOUSING). £10 per week inclusive.

Applicants for (a) should have passed the Final Examination of The Royal Institute of Chartered Surveyors (Div. IIIQ), and should be experienced in all branches of housing work; for (b) should be experienced in site measuring; and for (c) should be thoroughly experienced in all branches of building, competent to set out, take levels, keep accurate records and progress reports, and will be required to carry out his duties during those hours when building work is in progress.

The appointments will be subject to the Scheme of Conditions of Service of the National Joint Council for Local Authorities for Administrative, Technical, Professional and Clerical Services; to the Local Government Superannuation Act, 1937; to the successful applicants passing a medical examination, and to termination by one month's notice on either side in respect of (a) and (b) and one week in the case of (c).

Applications, stating age, experience, qualifications, and war service (if any), together with copies of three recent testimonials, should be submitted to the Borough Engineer and Surveyor, Civic Centre, Southampton, not later than Wednesday, 26th September, 1951.

R. RONALD H. MEGGESON,

Town Clerk.

4338

**GLOUCESTERSHIRE COUNTY COUNCIL.
COUNTY ARCHITECT'S DEPARTMENT.**

Applications are invited for the appointment of a Clerk of Works on the Temporary Staff, to supervise the erection of new Schools, etc., in Cheltenham, at a salary of £10 per week.

Applications, stating age, experience, present position and salary, together with copies of testimonials or names for reference, to be sent to S. E. Urwin, Esq., F.R.I.B.A., County Architect, Shire Hall, Gloucester, not later than Friday, 21st September, 1951.

GUY H. DAVIS,

Clerk of the County Council.

Shire Hall, Gloucester.

6th September, 1951.

4340

**WORSLEY URBAN DISTRICT COUNCIL.
APPOINTMENT OF QUANTITY SURVEYOR.**

Applications are invited for the above position in the Engineer and Surveyor's Department.

The salary will be in accordance with Grade VII (£685-£760 per annum) or Grade VIII (£735-£810 per annum) of the A.P.T. Division of the National Salary Scales, according to experience and qualifications, and should the successful candidate be married the Council would, if necessary, assist in providing housing accommodation.

Applicants must be Associates of the R.I.C.S. Quantities Section, and have had considerable experience in the taking-off and preparation of Bills of Quantities in connection with houses, shops, etc., and the measuring up and checking of accounts for such work.

The Council has in preparation, and under construction, large scale Neighbourhood Units, which will total 4,000 to 5,000 houses and other buildings, and good experience is offered in the post of Quantity Surveyor.

The post is subject to the Superannuation Acts, and the applicant must satisfactorily pass a medical examination therefor. One month's notice will be given or required to terminate the appointment at any time.

Applications, endorsed "Quantity Surveyor," should be sent to the undersigned on or before the 29th September, 1951.

HAROLD LOMAX,

Clerk of the Council.

Town Hall, Walkden, Manchester.

7th September, 1951.

4341

BUCKS COUNTY COUNCIL.

The County Architect invites applications from qualified ASSISTANT ARCHITECTS who possess a keen and energetic enthusiasm for their profession. Candidates should preferably have been trained at a recognised School of Architecture. Salary Grade VI, £645-£710 per annum.

The appointment is superannuable, and subject to medical examination.

A weekly allowance of 25s. and return fare home once every two months may be paid for six months to newly appointed married officers of the Council unable to find accommodation.

Further particulars and form of application may be obtained from the County Architect, County Offices, Aylesbury, to whom applications must be delivered by 1st October, 1951.

4336

**URBAN DISTRICT COUNCIL OF
BILLERICAY.**

ARCHITECTURAL ASSISTANT.

Qualifications: Intermediate R.I.B.A. or its equivalent.

Salary: A.P.T. Division, Grade III or IV (£500

p.a. × £15 to £545, or £530 p.a. × £15 to £575), according to experience.

Consideration will be given to offering housing accommodation to the successful candidate.

Applications on forms to be obtained from the Surveyor, Council Offices, Billericay, should be forwarded to the undersigned not later than Saturday, the 29th September, 1951.

A. HATT.

Council Offices, 98, High Street,

Billericay, Essex.

4339

Tenders for Contracts

6 lines or under, 12s. 6d.; each additional line, 2s.

COUNTY BOROUGH OF BRIGHTON.

To Manufacturers of Passenger Lifts:—

TOWN HALL LIFT.

The Council invite tenders for dismantling the existing passenger lift and for the installation of a complete new lift at the Town Hall, Brighton. Detailed particulars and form of tender may be obtained from The Borough Engineer and Surveyor, 26/30, King's Road, Brighton, 1.

Tenders in envelopes provided are to be delivered to the undersigned not later than Wednesday, 31st October, 1951.

The Council does not bind itself to accept the lowest or any tender.

J. G. DREW,

Town Clerk.

Town Hall, Brighton, 1.

27th August, 1951.

4296

Partnerships

6 lines or under, 12s. 6d.; each additional line, 2s.

PARTNERSHIP offered to A.R.I.B.A. in busy Rural Practice in South-West. Applicant should reply, giving age, experience, etc., Box 4335.

PARTNERSHIP sought with Firm of contemporary outlook, where design and administrative ability may be fully employed. Capital available. Box 4330.

Architectural Appointments Vacant

4 lines or under, 7s. 6d.; each additional line, 2s.

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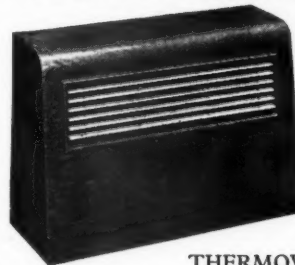
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GOLLINS, MELVIN & PARTNERS require JUNIOR STAFF, with office experience. Capable working drawings. Salary £350-£450 per annum. 5-day week. Telephone: Museum 0983. 4253

ARCHITECTURAL ASSISTANT required in Westminster office of Consulting Engineers. Apply, stating age, experience, qualifications, and commencing salary required. Box 4292.

SCHERRER & HICKS, F.F.R.I.B.A., require an **ARCHITECTURAL ASSISTANT**, post-Intermediate standard, preferably with office experience. Salary by arrangement. Telephone Museum 1105. 4256

ARCHITECTURAL ASSISTANT required by leading Oil Company to work in London office. Intermediate Examination and sound previous office experience essential. Progressive post, permanent and pensionable. Write, stating age, experience, and salary required, to Box 4301.

RONALD WARD & PARTNERS require an **ARCHITECTURAL ASSISTANT**, of Intermediate standard, to work in their Knightsbridge office. Telephone Sloane 8291. 4306

ARCHITECTURAL AND BUILDING DRAUGHTSMEN (one Senior and several Juniors) required for Consultants' office in London. Write, with full particulars of age, experience, and salary required, to Box 5190. c/o Charles Barker & Sons, Ltd., 31, Budge Row, London, E.C.4. 4309

TEMPORARY ARCHITECT'S ASSISTANTS required in Architect's office of the Civil Engineer's Departments, the Railway Executive, London Midland Region, Euston Grove, London, N.W.1. Applicants must be good draughtsmen and have design ability. Will be employed on large station reconstruction schemes. Salary according to age and experience up to £515 per annum. Certain residential travelling facilities granted. Applicants should state age, qualifications and experience. 4313

IMPERIAL CHEMICAL INDUSTRIES, LTD., NOBEL DIVISION, requires **ARCHITECTURAL ASSISTANTS**, to work at Stevenston, Ayrshire. Associateship of the Royal Institute of British Architects would be an advantage, but not an essential qualification. Applicants should have some experience in factory buildings, offices, canteens, etc. Applications should be made to the Staff Manager, Nobel House, 25, Bothwell Street, Glasgow, C.2. 4321

ARCHITECTURAL ASSISTANTS required immediately in Warrington office for preparation of detailed working drawings. Write, stating experience, qualifications and salary required, to Box 4320.

ASSISTANT required in small country office, N.E. Suffolk. Inter. standard. Salary £400-£500, according to experience. Box 4314.

LONDON FIRM, now engaged on large building schemes, require **TWO ARCHITECTURAL ASSISTANTS**, both qualified A.R.I.B.A., with experience of site supervision, in addition to the preparation of surveys and working drawings. Salaries £500-£650, according to experience. Write, stating qualifications, experience, and salary required, Box 4332, or telephone Welbeck 8962.

SENIOR ASSISTANT urgently required for permanent post in large General Practice in Jersey. Applicants should be 28 or over, preferably qualified, and may be interviewed by appointment in London. Assistance can be given in finding housing accommodation in Jersey. Reply, giving details of experience and salary required, Box 4334.

ARCHITECT'S ASSISTANT required. Good draughtsman and sound knowledge of building construction essential. Salary according to age and experience. Westmore & Sanders, 121, Cheapside, London, E.C.2. Tel. No. Monarch 3337. 4345

SENIOR ARCHITECTURAL ASSISTANT required by Industrial Architects in London. Salary £600-£700, according to experience and qualification. Box 4344.

EXPERIENCED ARCHITECTURAL ASSISTANT for busy general practice in Bath. Good practical man required, competent in planning and design, surveying, working drawings, detailing and supervision of works. State age, training, previous experience and salary desired. Box 4343.

Architectural Appointments Wanted

YOUTH (16), just left Technical College, seeks position in Architect's office, with a view to making career in this profession. L. Rust, 77, Gills Hill Lane, Radlett, Herts. 4303

ASSOCIATE (woman), 3 years' office experience, requires position in contemporary office. London or Sussex area. Box 239.

MALE ARCHITECTURAL ASSISTANT (24), Inter. and Final standard, 5 years' full-time training, seeks post, 15 miles Bath or Bristol area. Box 237.

YOUNG Lady, Intermediate R.I.B.A. standard, requires post, preferably West of England. 4 years' office experience. Box 238.

CHARTERED ARCHITECT desires responsible appointment. Wide experience in England and overseas. Box 242.

A.R.I.B.A. (30 years), with 5 years' experience in private practice, requires progressive position with London firm of designers, who specialise in interior decoration, industrial design, and exhibition work. Box 240.

STUDENT (22), recently completed the 5-year course at a recognised school, seeks position in London office. Box 241.

Other Appointments Vacant

4 lines or under, 7s. 6d.; each additional line, 2s.

EXPERIENCED DRAUGHTSMAN, capable of executing full size drawings, required by eminent firm of Electric Light Manufacturers. Salary according to qualifications. Box 4302.

ARCHITECTURAL REPRESENTATIVE, London area. Knowledge of Architects, Surveyors, etc. Age between 28-35. Details Box 4307.

BUILDING SURVEYOR required for Pickfords' Surveyors' Dept. in London. Duties mainly commercial works up to £2,000 in all parts of the country. Ability to prepare Specifications essential, and knowledge of draughtsmanship desirable. Salary around £500 p.a. Alternate Saturdays. Canteen facilities. Apply in writing, with full details of experience and salary required, to Surveyor, Pickfords, 205, High Holborn, W.C.1. 4342

ALFRED GOSLETT & CO., LTD., 127/131, Charing Cross Road, W.C.2, require a **CLERK** for a progressive position in their Sanitary Department. Knowledge of trade preferred, but not essential. Excellent opportunity for keen young men. 4315a

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Session 1951/52

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Full information on application to the Examinations Secretary, I.A.A.S., 75, Eaton Place, London, S.W.1.

N.B.—The Incorporated Association of Architects and Surveyors hereby give notice that the General Regulations governing examinations have been revised, and that the revised regulations will apply to the examinations to be held in May, 1952, and thereafter until further notice. Syllabuses containing the revised regulations are obtainable (price 1s.) on application to the Examinations Secretary, I.A.A.S.

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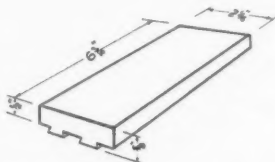
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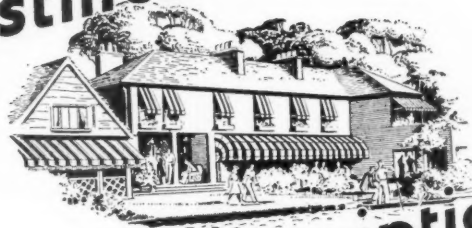
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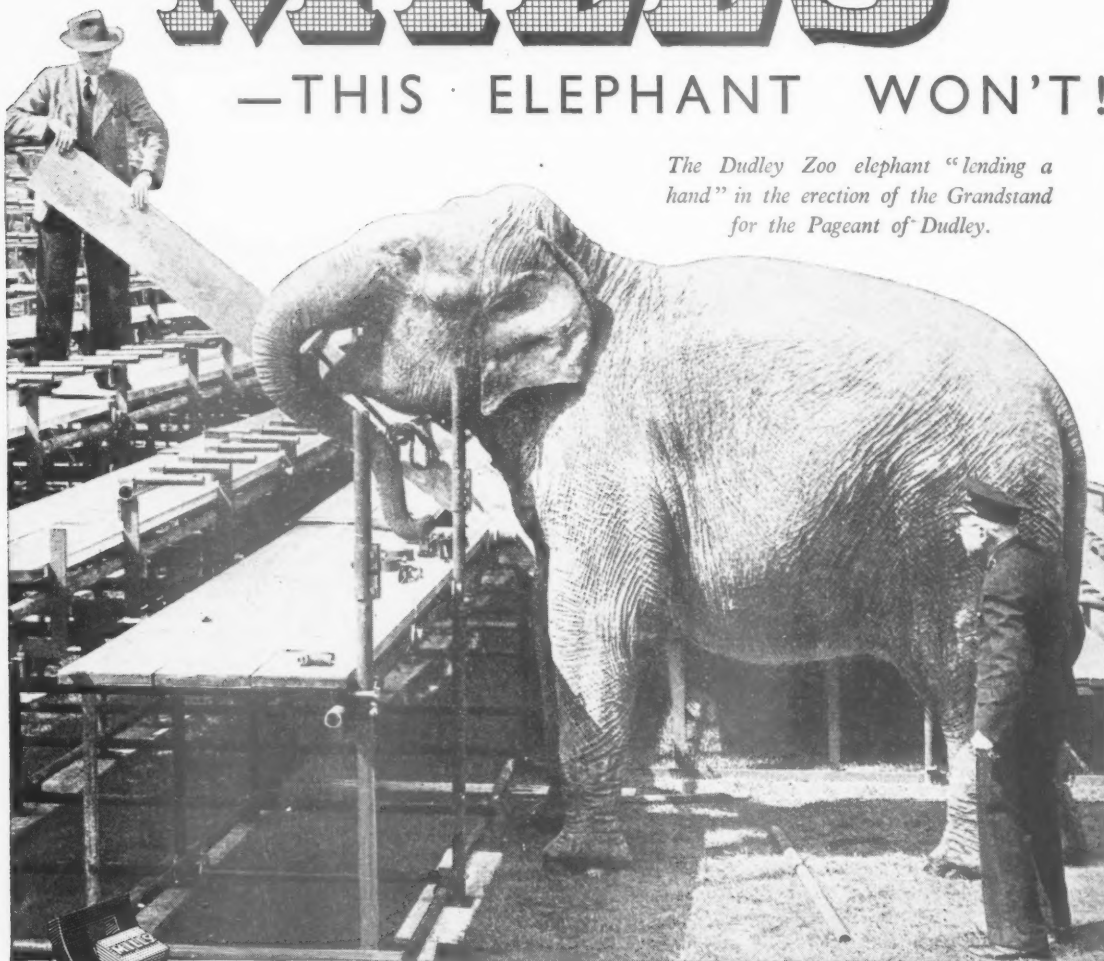
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