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The Architects' JOURNAL for August 7, 1958

THE ARCHITECTS' JOURNAL

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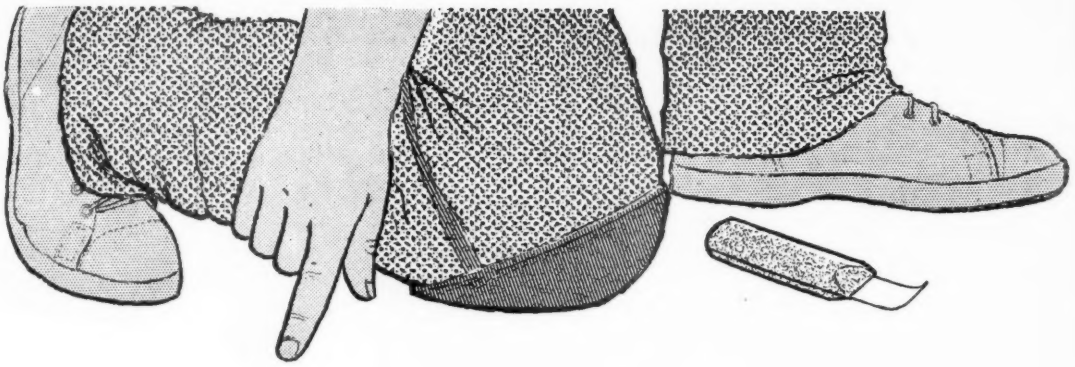
★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their full address and telephone numbers. The glossary is published in two parts—A to Ig one week, Ih to Z the next. In all cases where the town is not mentioned the word LONDON is implicit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

IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square. Sloane 1601/31 8
IIBDID	Incorporated Institute of British Decorators and Interior Designers. 100, Park Street, Grosvenor Square, W.1. Mayfair 7086
ILA	Institute of Landscape Architects. 2, Guildford Place, W.C.1. Holborn 0281
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand, W.C.2. Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1. Museum 7179
IQS	Institute of Quantity Surveyors. 98, Gloucester Place, W.1. Welbeck 185[illegible]
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3. Avenue 6851
IRA	Institute of Registered Architects. 47, Victoria Street, S.W.1. Abbey 6172
ISE	Institution of Structural Engineers. 11, Upper Belgrave Street, S.W.1. Sloane 7128
JFRO	Joint Fire Research Organisation (DSIR & Fire Offices' Committee). Fire Research Station, Boreham Wood, Herts. Elstree 1341/1797
LDA	Lead Development Association. 18, Adam Street, W.C.2. Whitehall 4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1. Museum 3891
LSPC	Lead Sheet and Pipe Council. Eagle House, Jermyn Street, S.W.1. Whitehall 7264/4175
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1. Trafalgar 7711
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1. Mayfair 9400
MOH	Ministry of Health. 23, Savile Row, W.1. Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1. Whitehall 4300
MOLNS	Ministry of Labour and National Service, 8, St. James's Square, S.W.1. Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, W.C.2. Gerrard 6933
MOT	Ministry of Transport, Berkeley Square House, Berkeley Square, W.1. Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1. Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1. Abb 1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1. Abb [illegible]
NBR	National Buildings Record, 31, Chester Terrace, Regent's Park, N.W.1. Welb[illegible]
NCBMP	National Council of Building Material Producers, 10, Storey's Gate, S.W.1 Ab[illegible]
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, W.C.2. Trafal[illegible] 5927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1. Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4. Macaulay 4451
NFHS	National Federation of Housing Societies. 12, Suffolk St., S.W.1. Whitehall 1693
NHBRC	National House Builders Registration Council. 58, Portland Place, W.1. Langham 0064/5
NPL	National Physical Laboratory. Head Office, Teddington. Molesey 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3. Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street, S.W.1. Trafalgar 6838
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1. Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1. Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1. Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh. Fountainbridge 7631
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1. Langham 5533
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1. Whitehall 5322/9245
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1. Whitehall 3932
RS	Royal Society. Burlington House, Piccadilly, W.1. Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2. Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1. Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19. Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1. Victoria 2186
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1. Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, E.C.3. Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, W.C.1. Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1. Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1. Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2. Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, E.C.4. City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1. Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4. City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1. Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1. Grosvenor 6636



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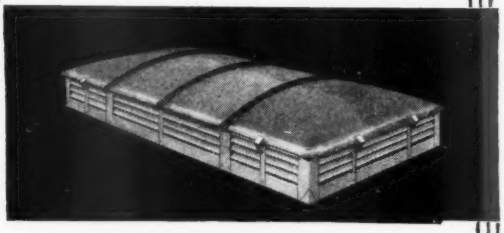

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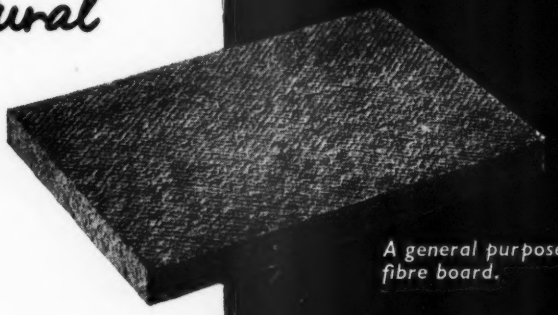

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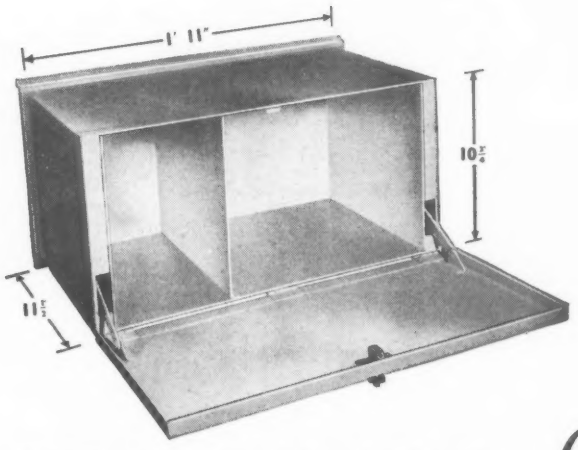

Constructed from "Zintec" pre-coated steel sheets. Divided into two compartments; inside door fitted with two 2" hinges and thumb-operated spring catch. Outside doors each fitted with two 2" hinges and handle. Finished in cream stove enamel.

BEACON DELIVERY HATCH

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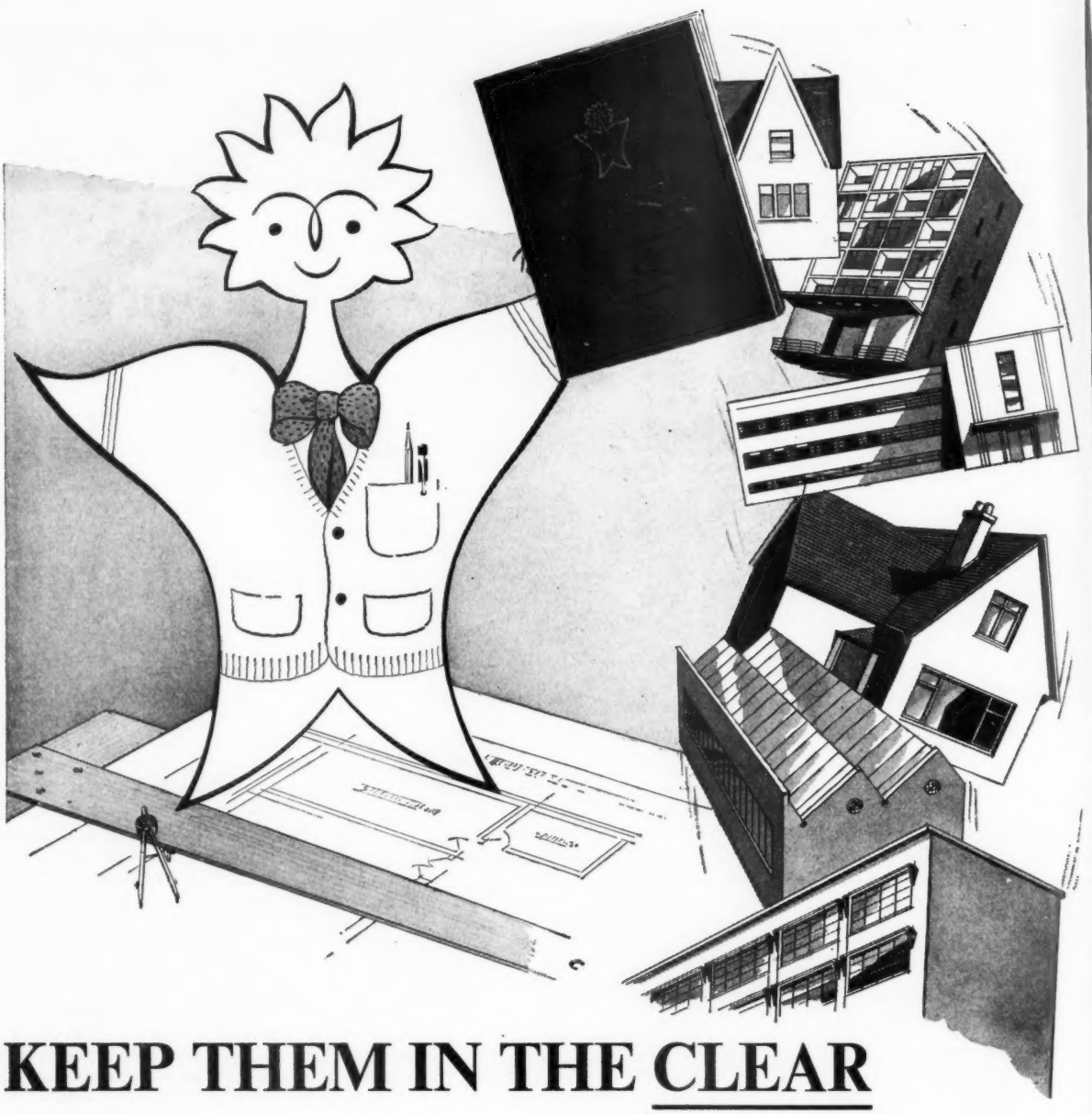

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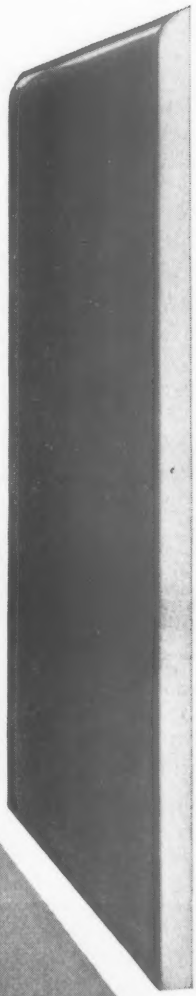

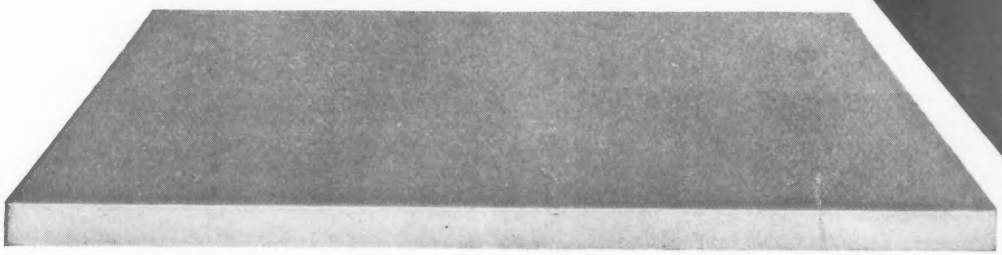

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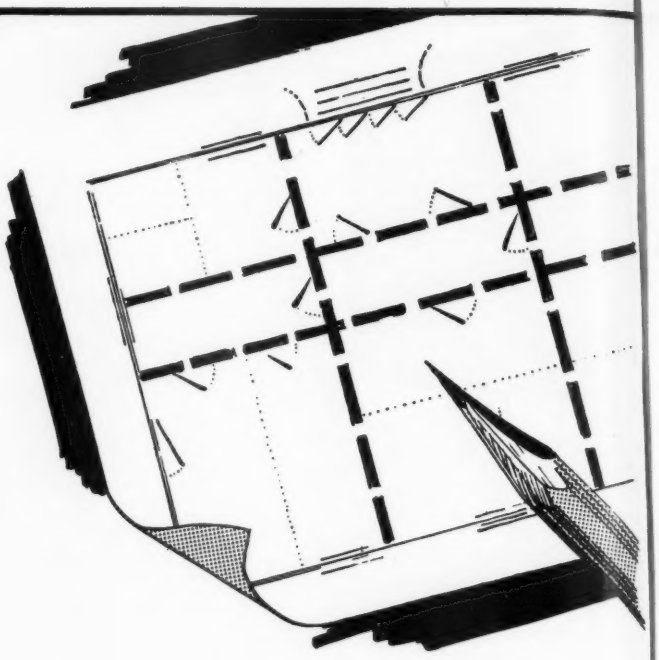

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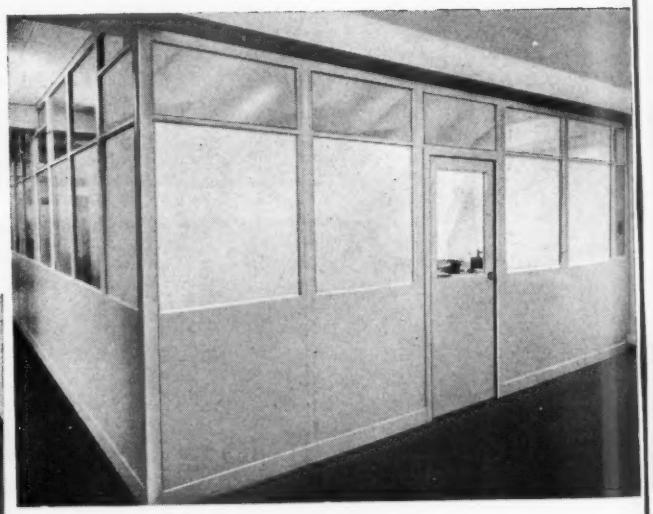

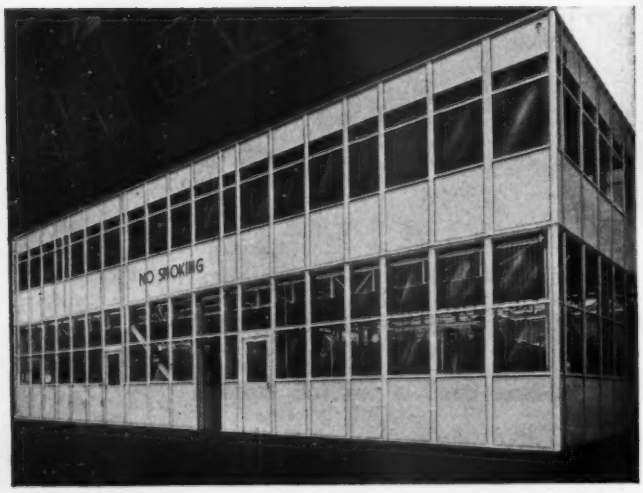

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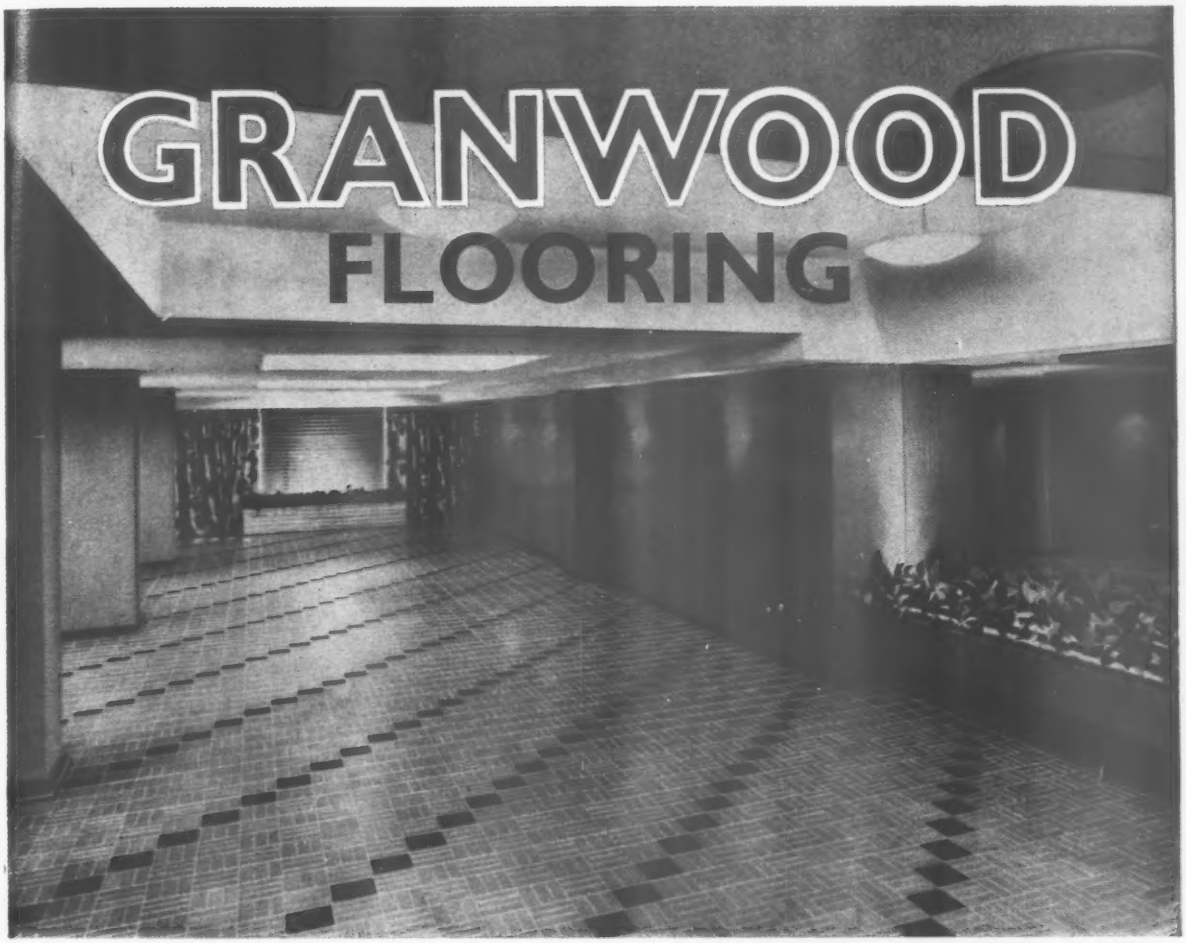

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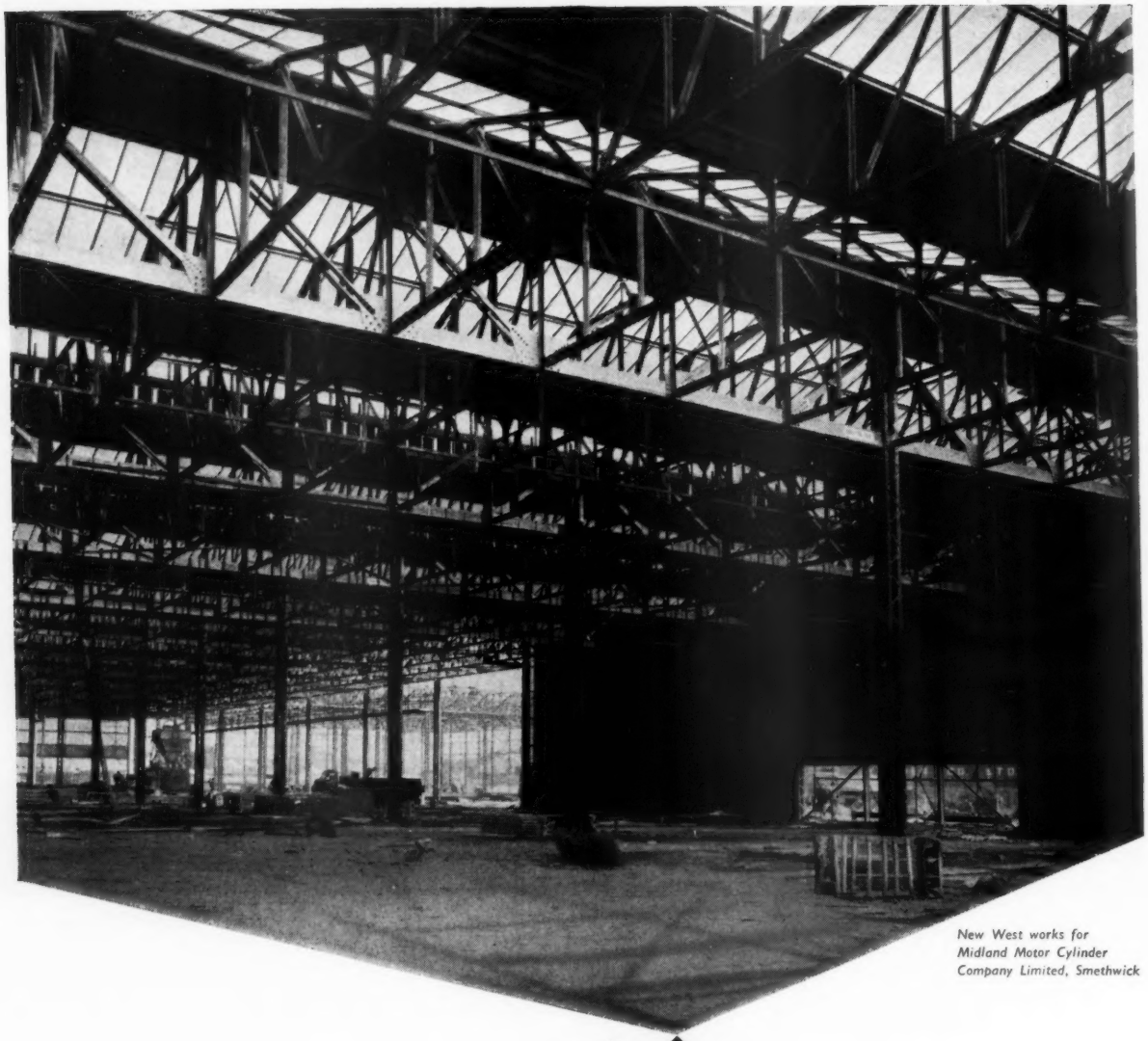

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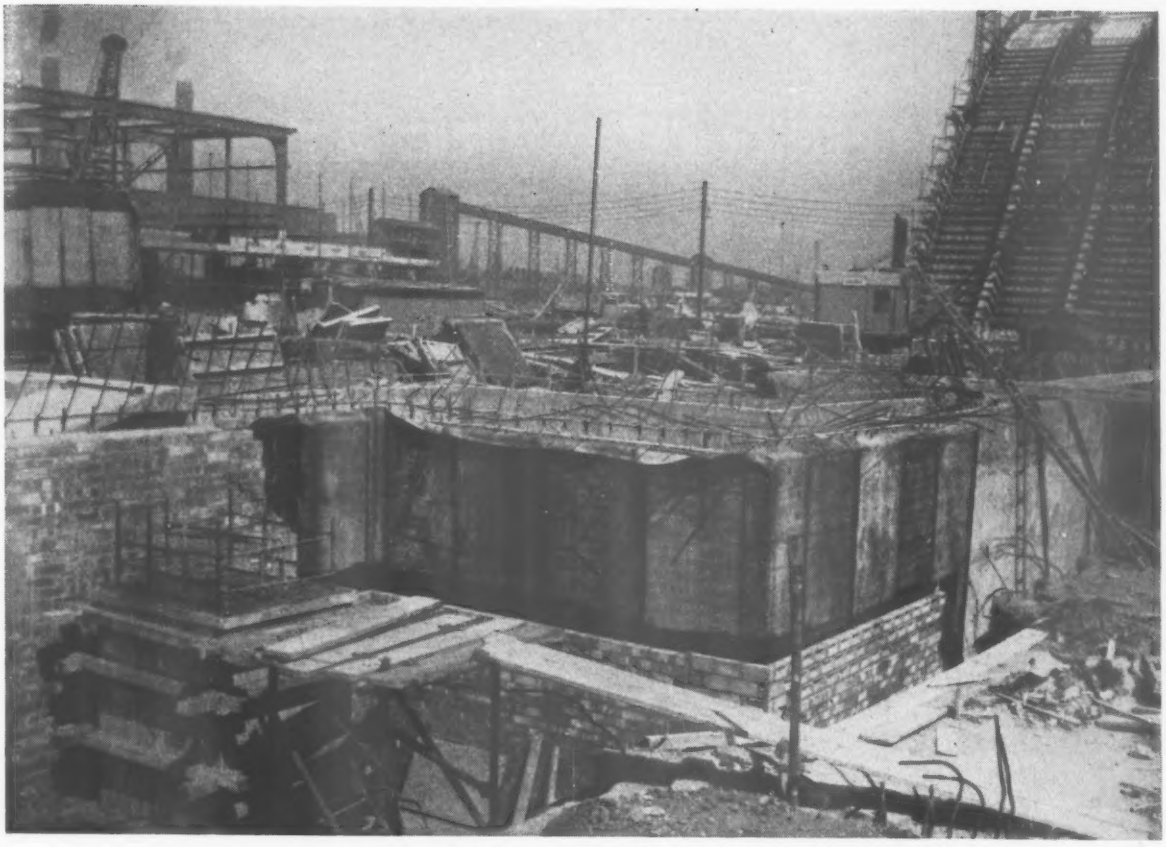

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British Government Pavilion

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Architects: Howard V. Lobb & Partners, F/F.R.I.B.A.
Consulting Engineer: Felix J. Samuely, B.Sc.(Eng.), M.I.C.E., M.I.Struct.E.
Main Contractors: Richard Costain Ltd., in association with Blaton Aubert.

British Industries Pavilion

The RTE curtain walling system used here was the first timber design ever used to cover multifloor walls. Glued laminated hardwood mullions cover the full height of 27 ft. 9 in., in one piece, placed at 6 ft. 10½ in. centres.

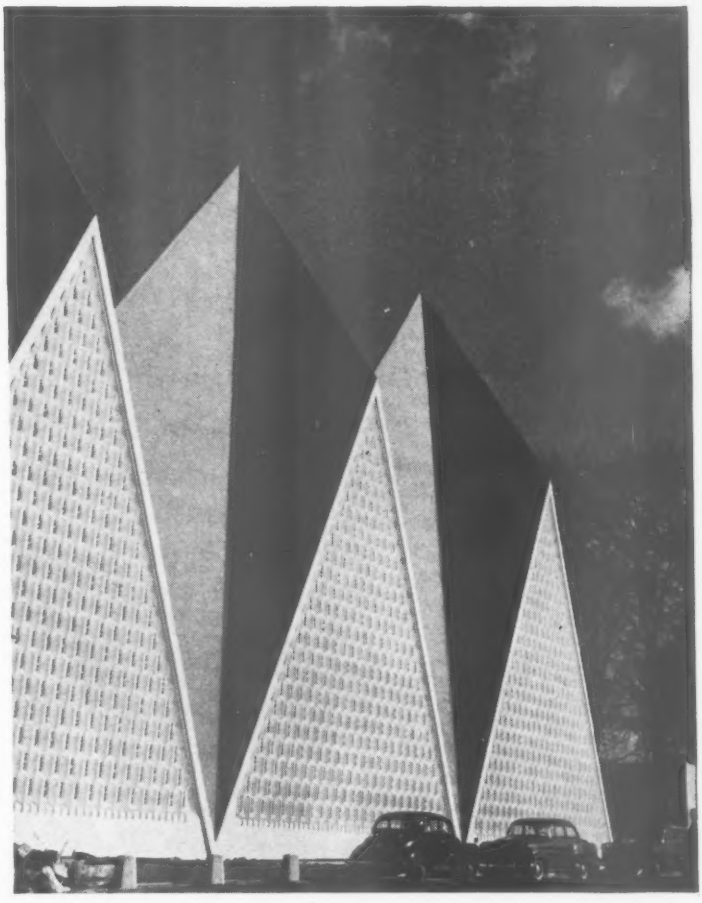
Architects: Edward D. Mills & Partners, Chartered Architects.
Consulting Engineer: Felix J. Samuely, B.Sc.(Eng.), M.I.C.E., M.I.Struct.E.
Main Contractors: Richard Costain Ltd., in association with Blaton Aubert.

Britannia Inn

Two bridges, both of two flights, lead on to the first-floor balcony at the front and deck at the side. Rainham produced both bridges, measuring 4 ft. wide, in laminated timber, as well as the laminated beams to support the balcony and decking.

Architects: Edward D. Mills & Partners, Chartered Architects.
Consulting Engineer: Felix J. Samuely, B.Sc.(Eng.), M.I.C.E., M.I.Struct.E.
Main Contractors: Richard Costain Ltd., in association with Blaton Aubert.

Photographs by courtesy of Edward D. Mills, Esq., F.R.I.B.A.



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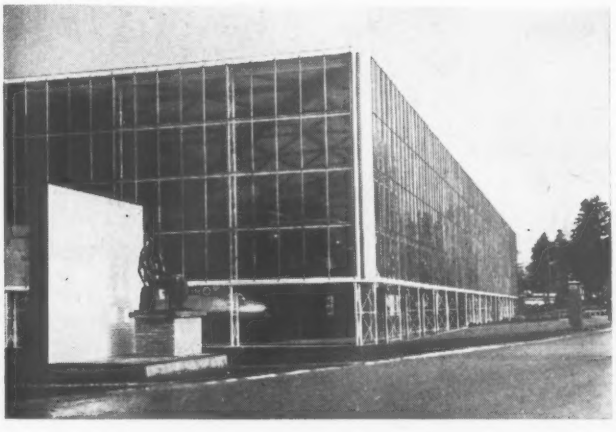

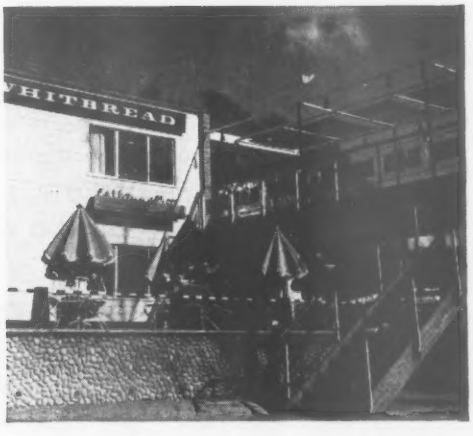

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One of thirteen lattice girders for a Power Station

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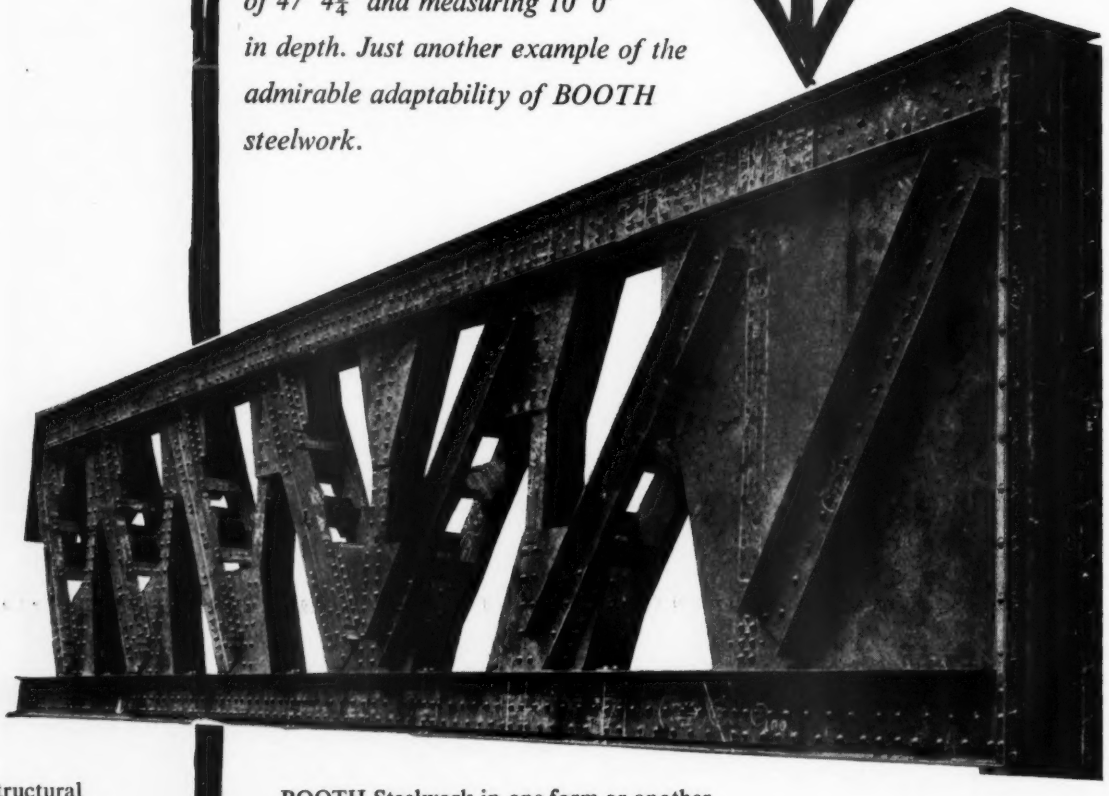

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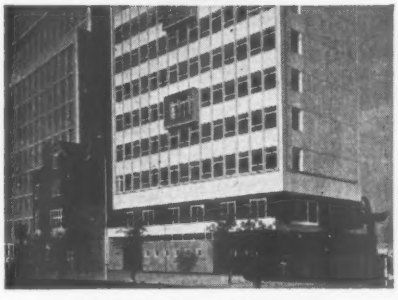

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For old buildings

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by courtesy of the Rector and consultant Architect

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		% Water absorption after 24 hours immersion	
		Initial test	*Retested after 3 years' natural weathering*
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Cement Block	untreated	6·0	5·9
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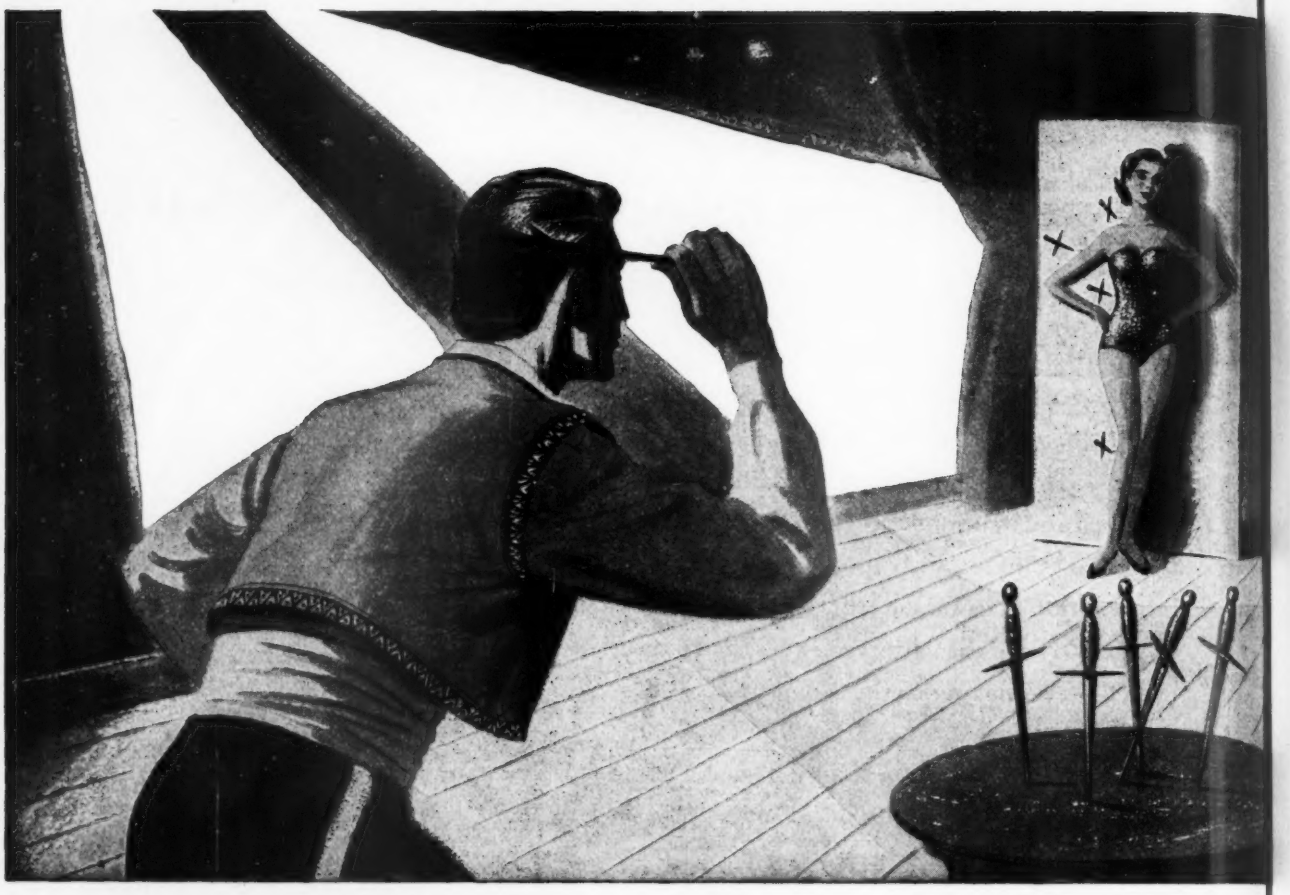

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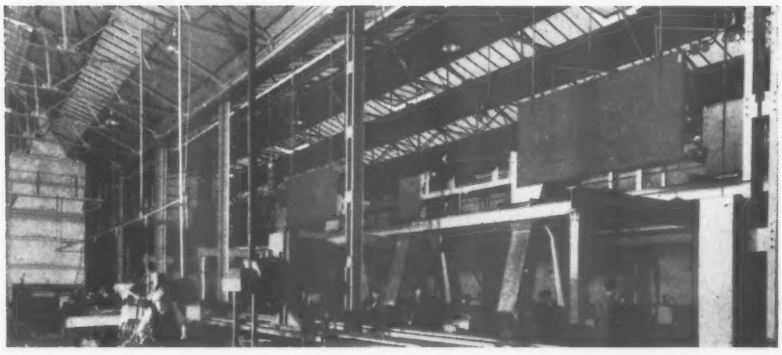

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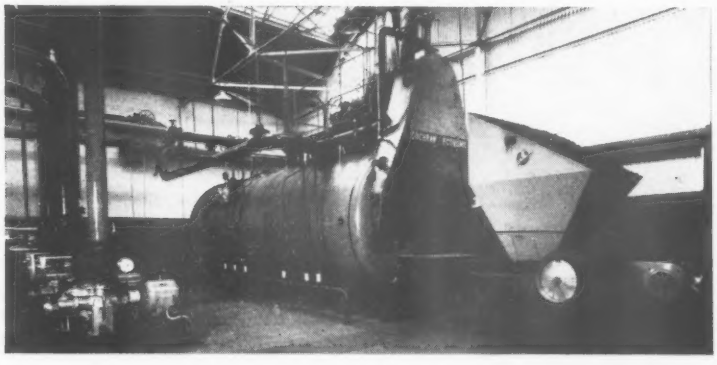

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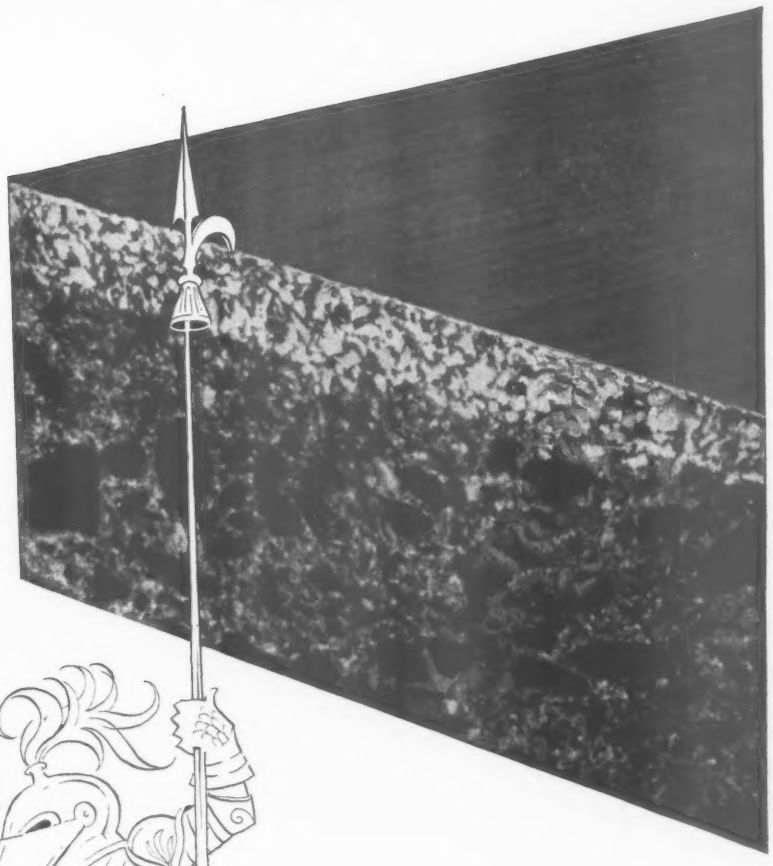

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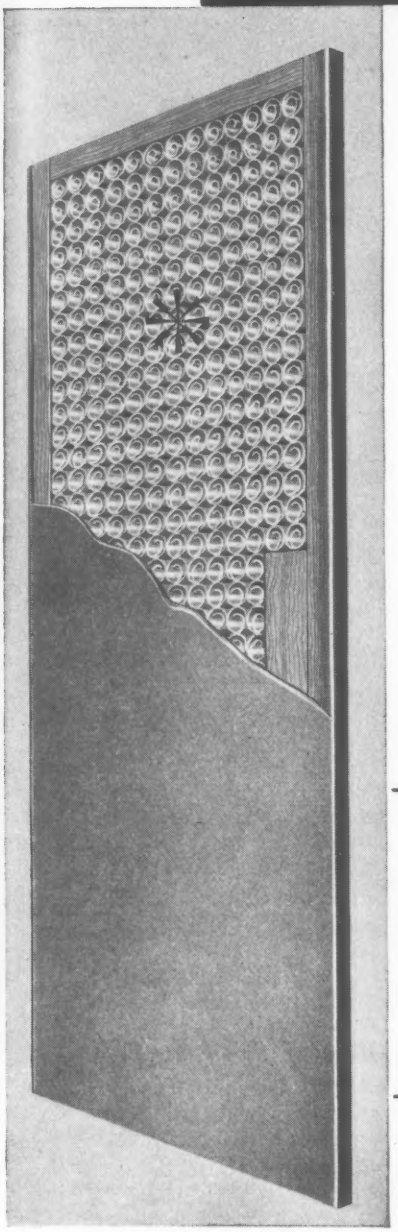

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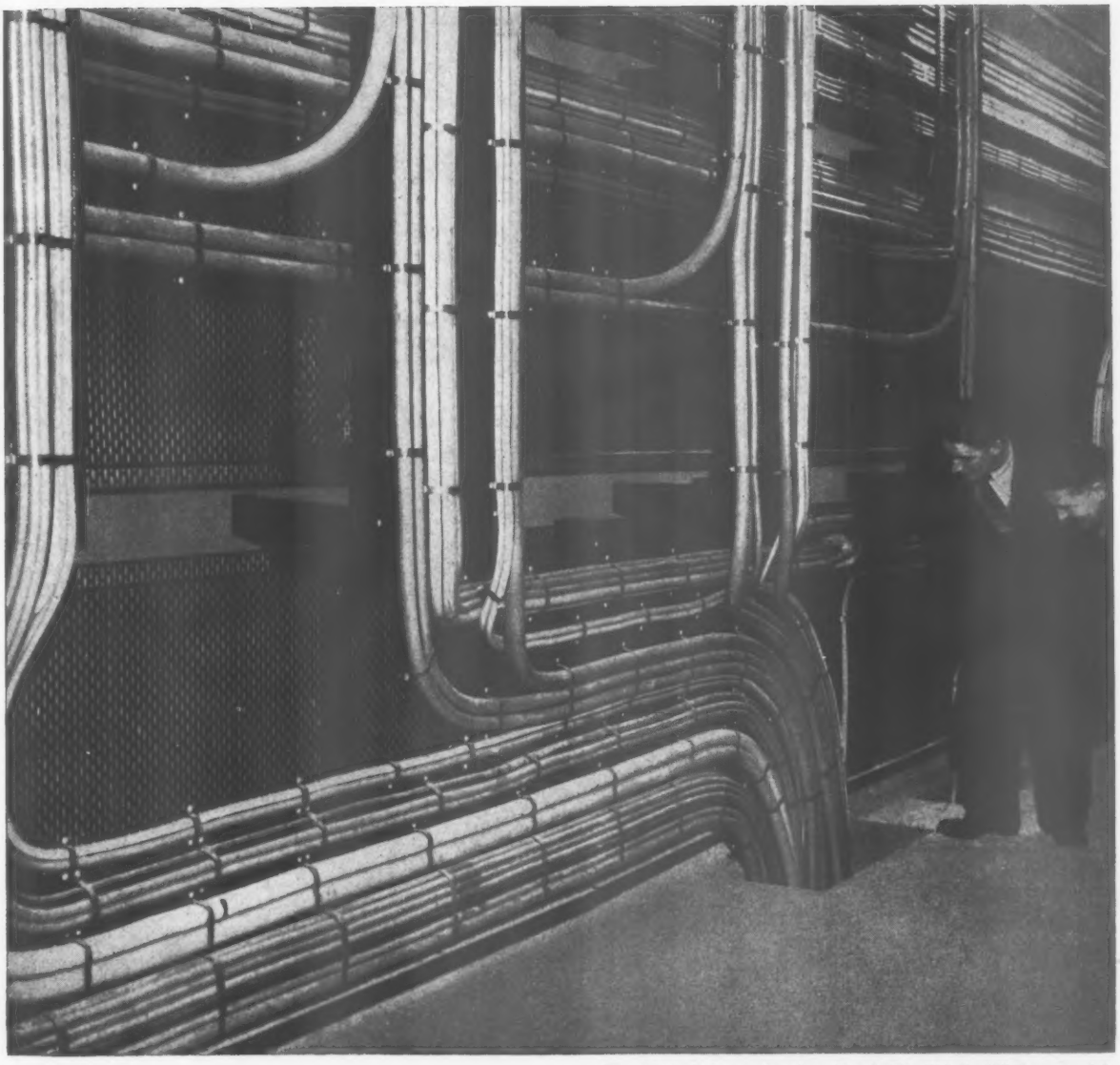

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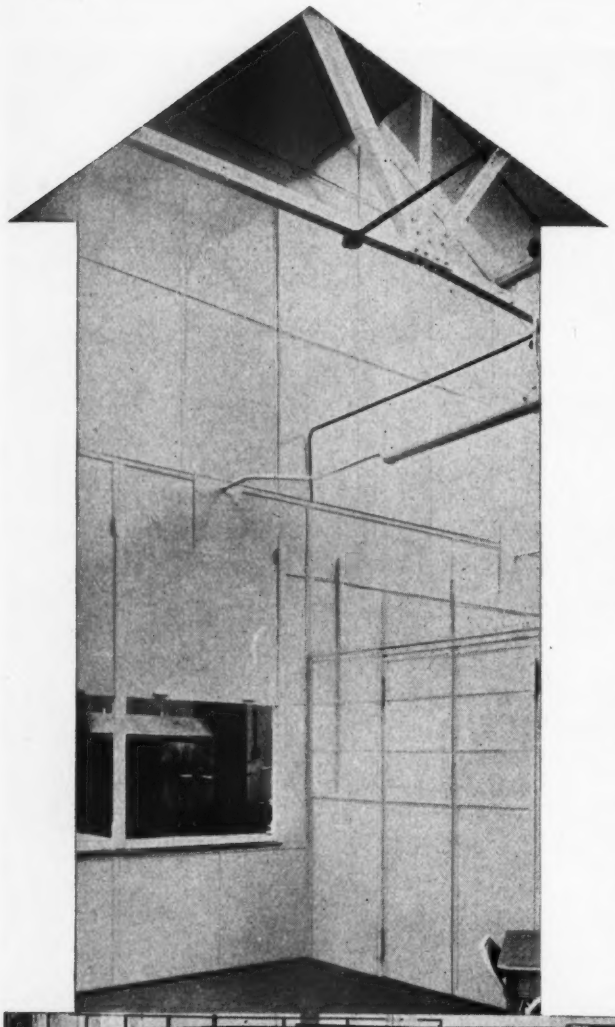

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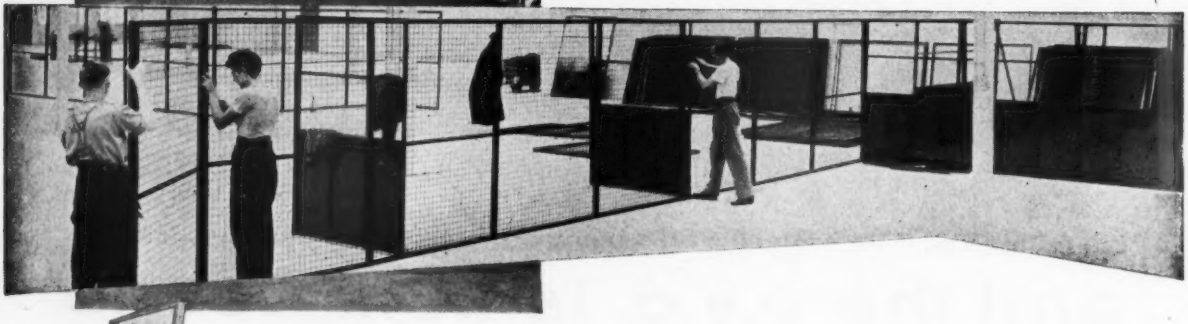

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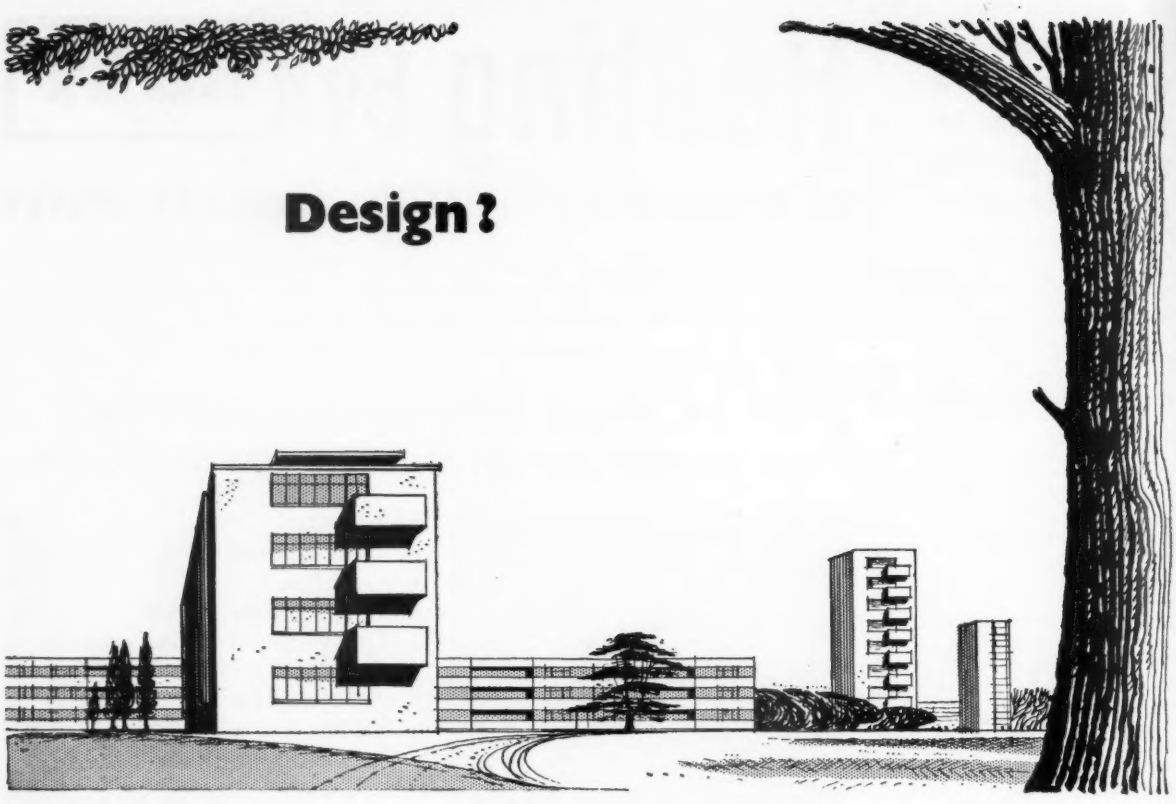

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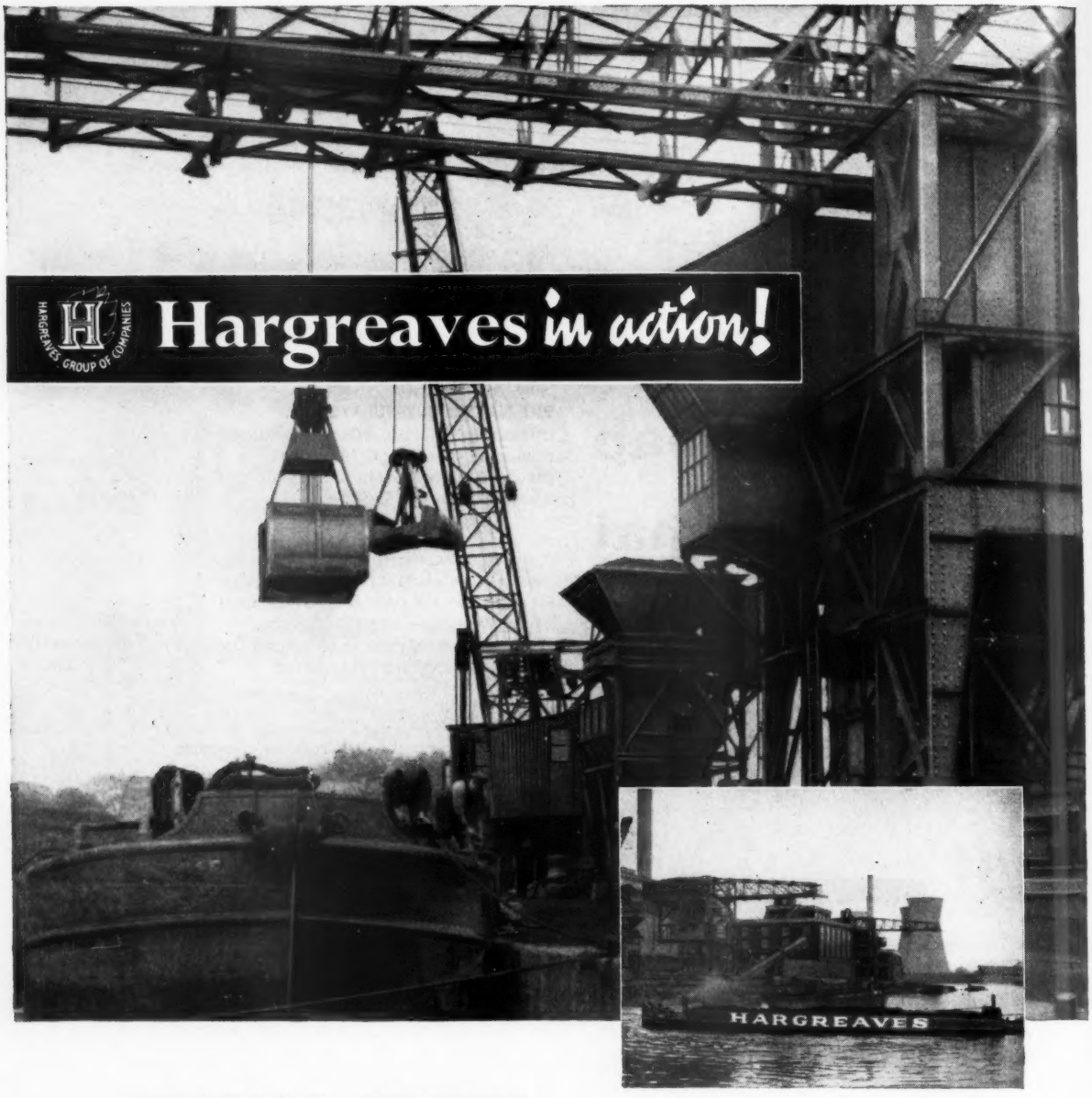

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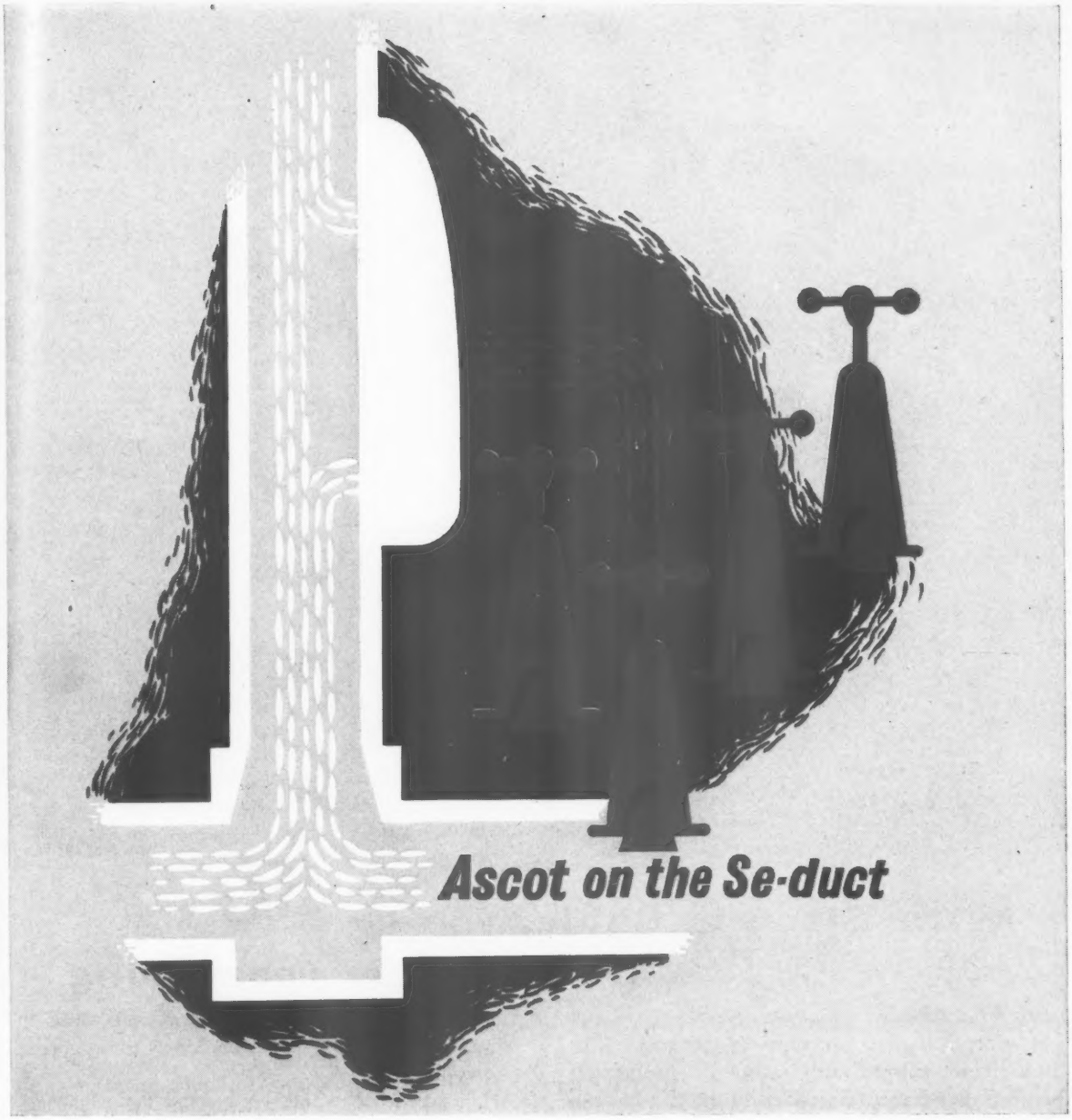

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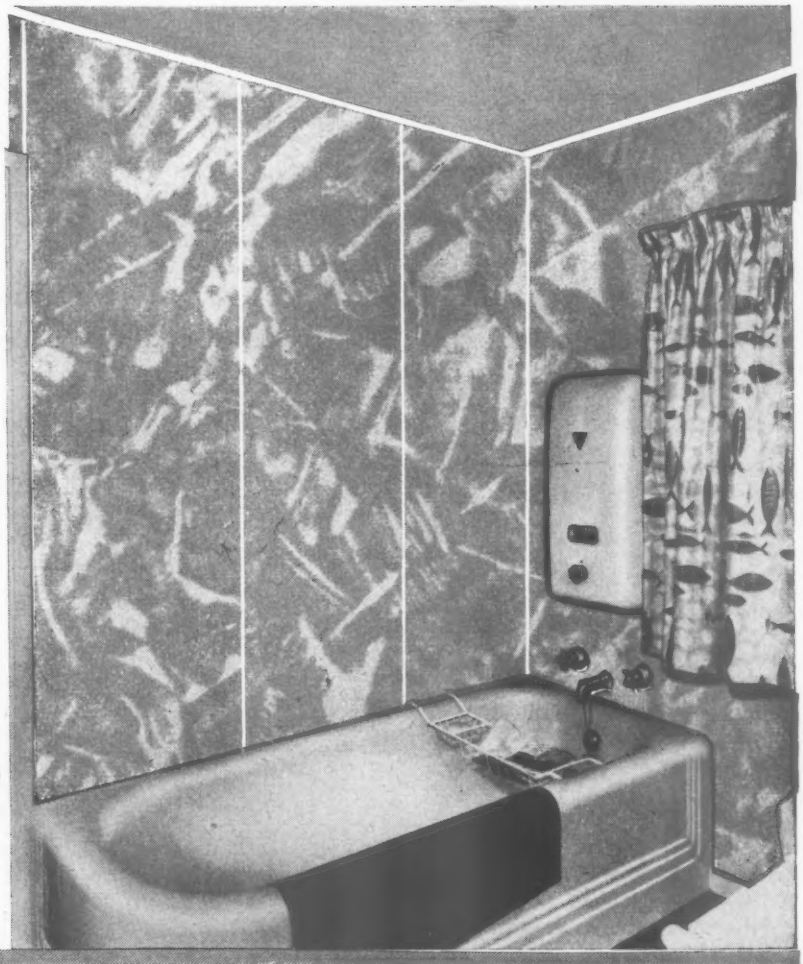

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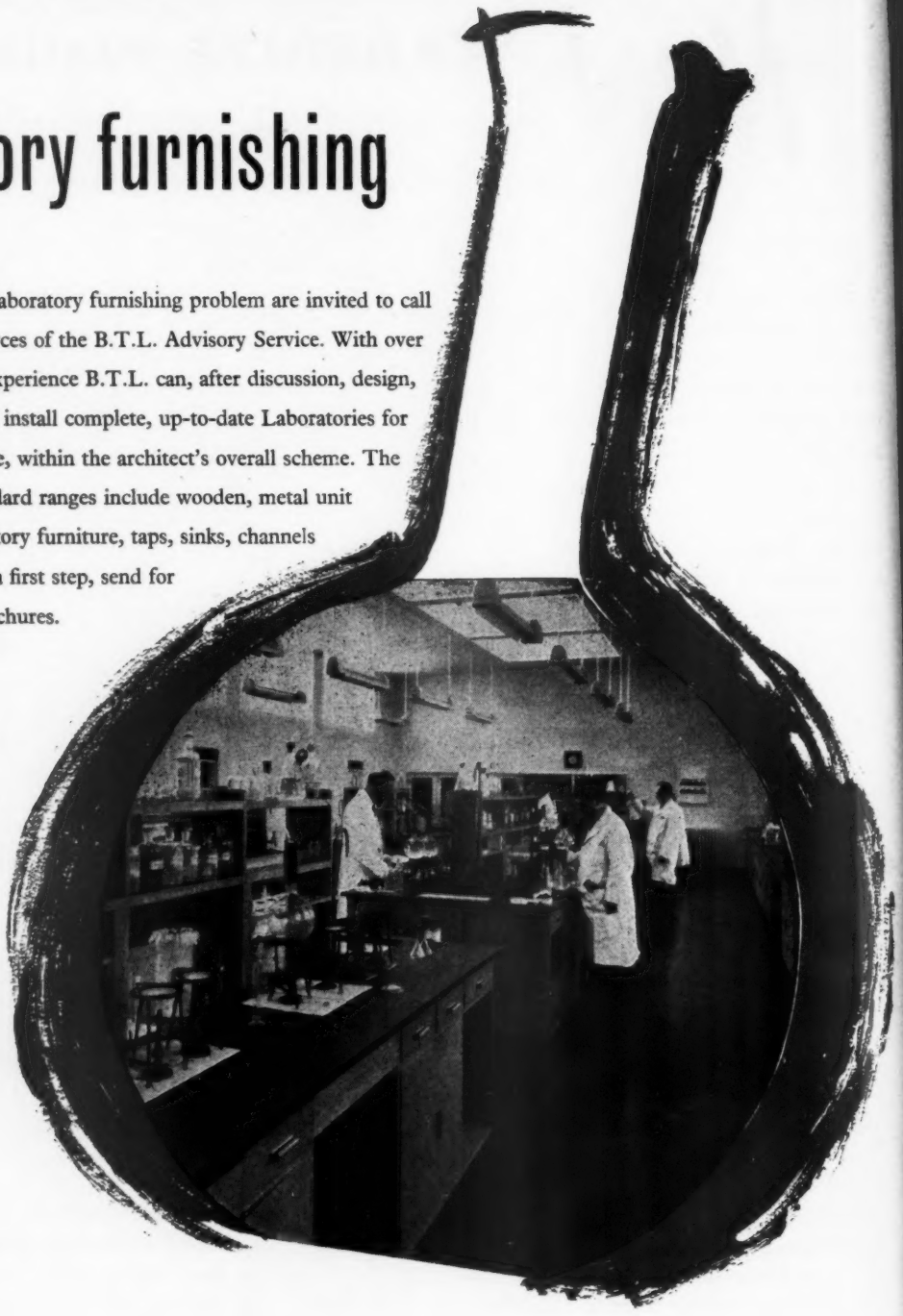

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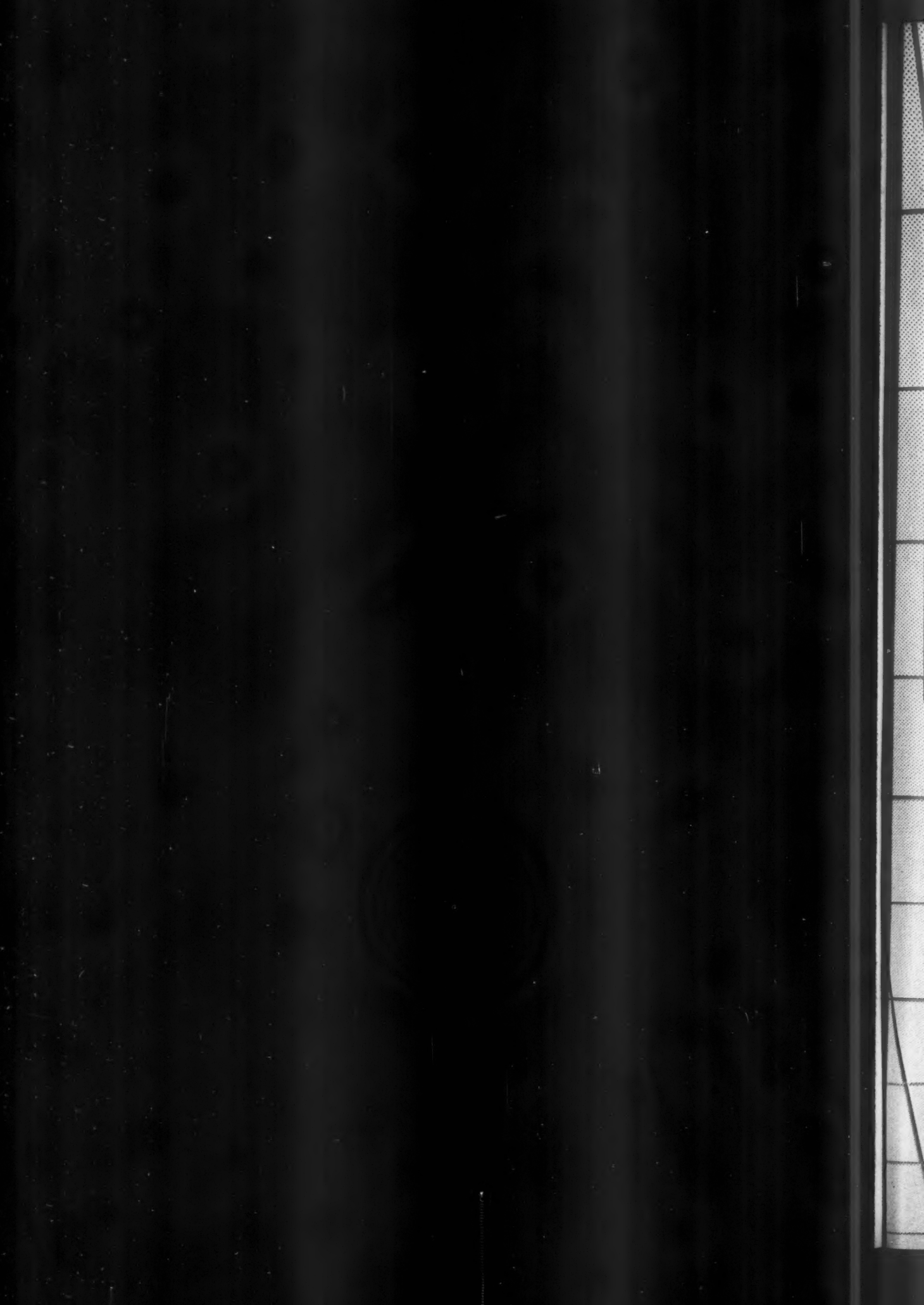

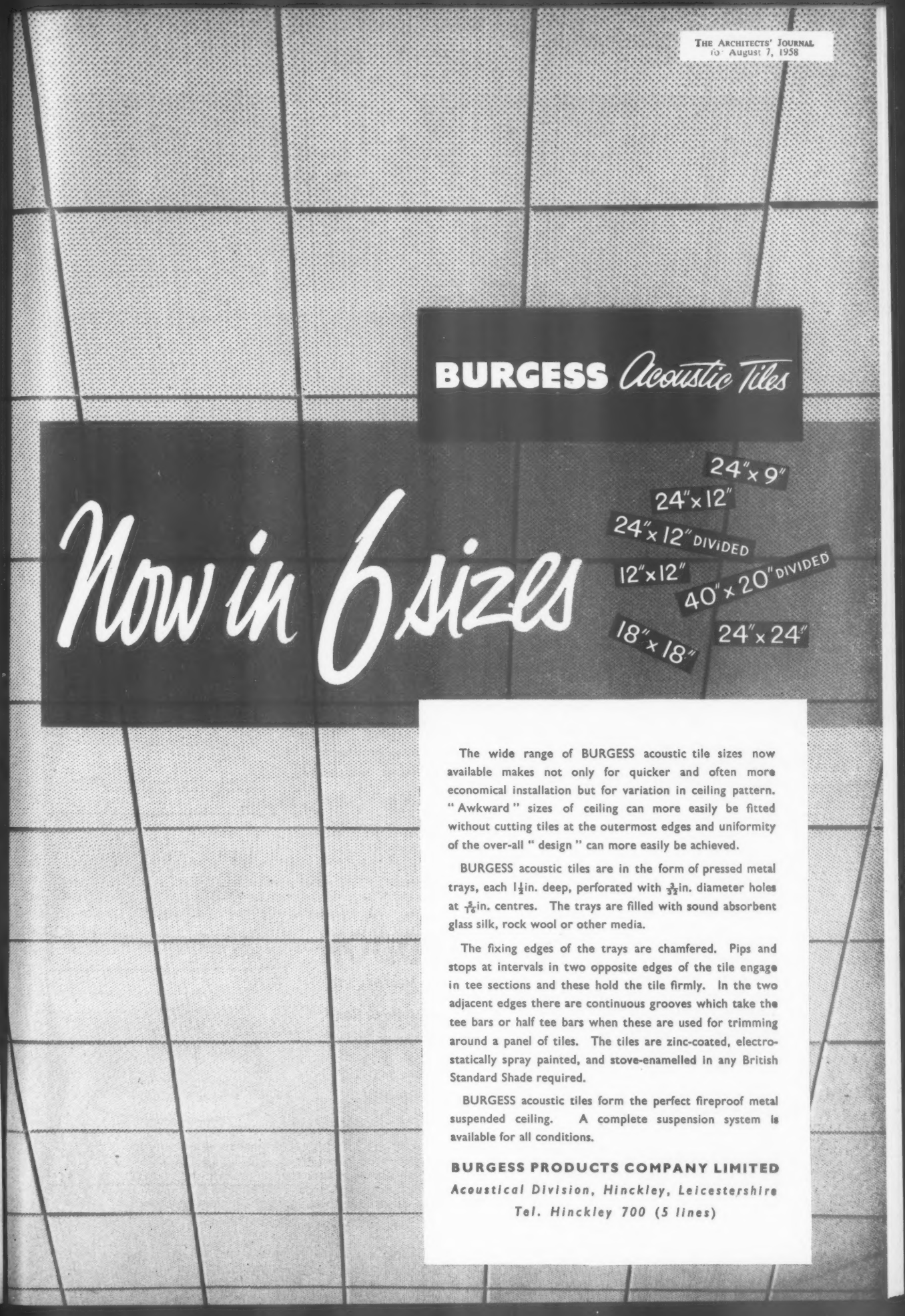

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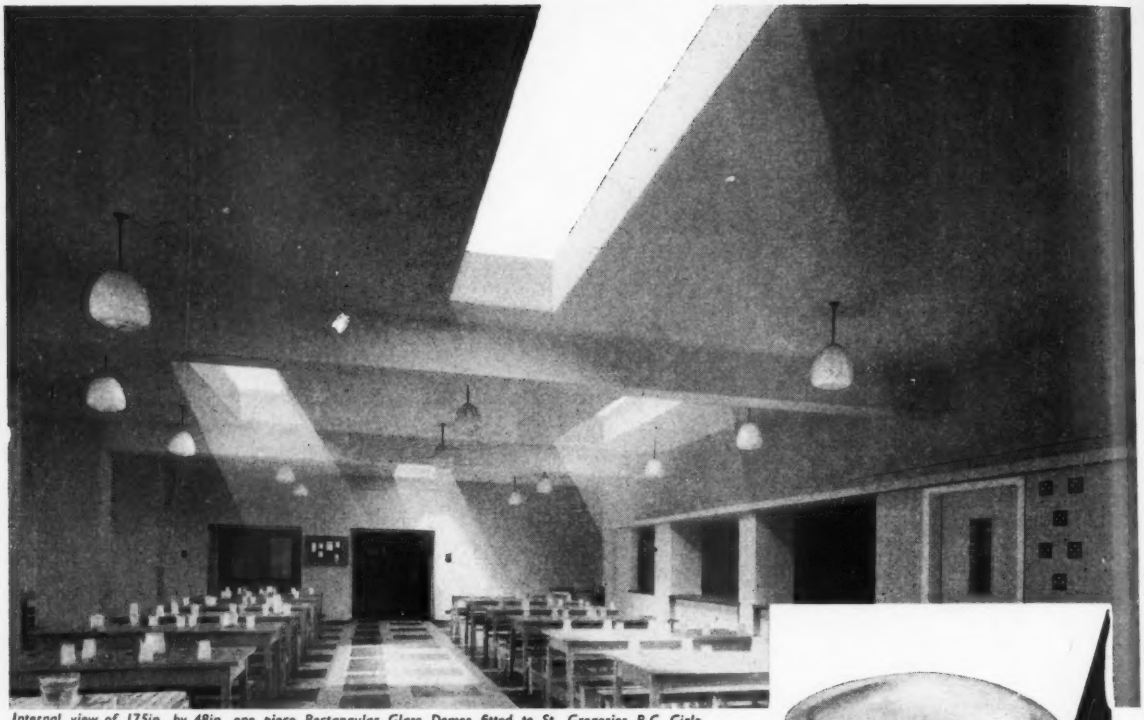

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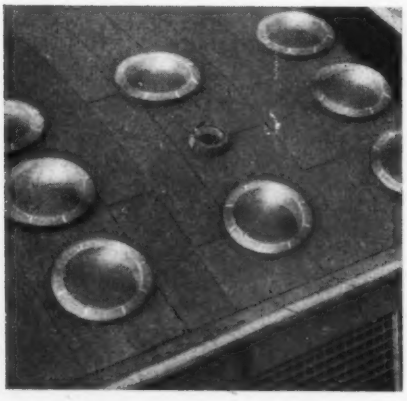

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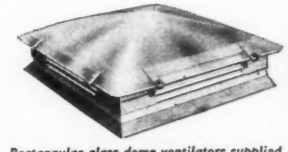

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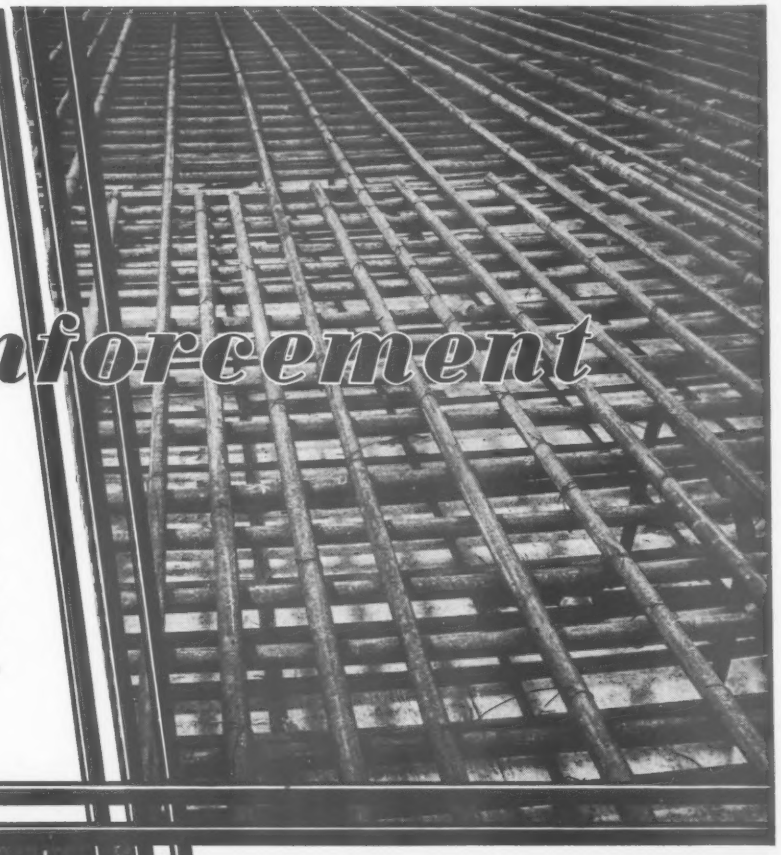

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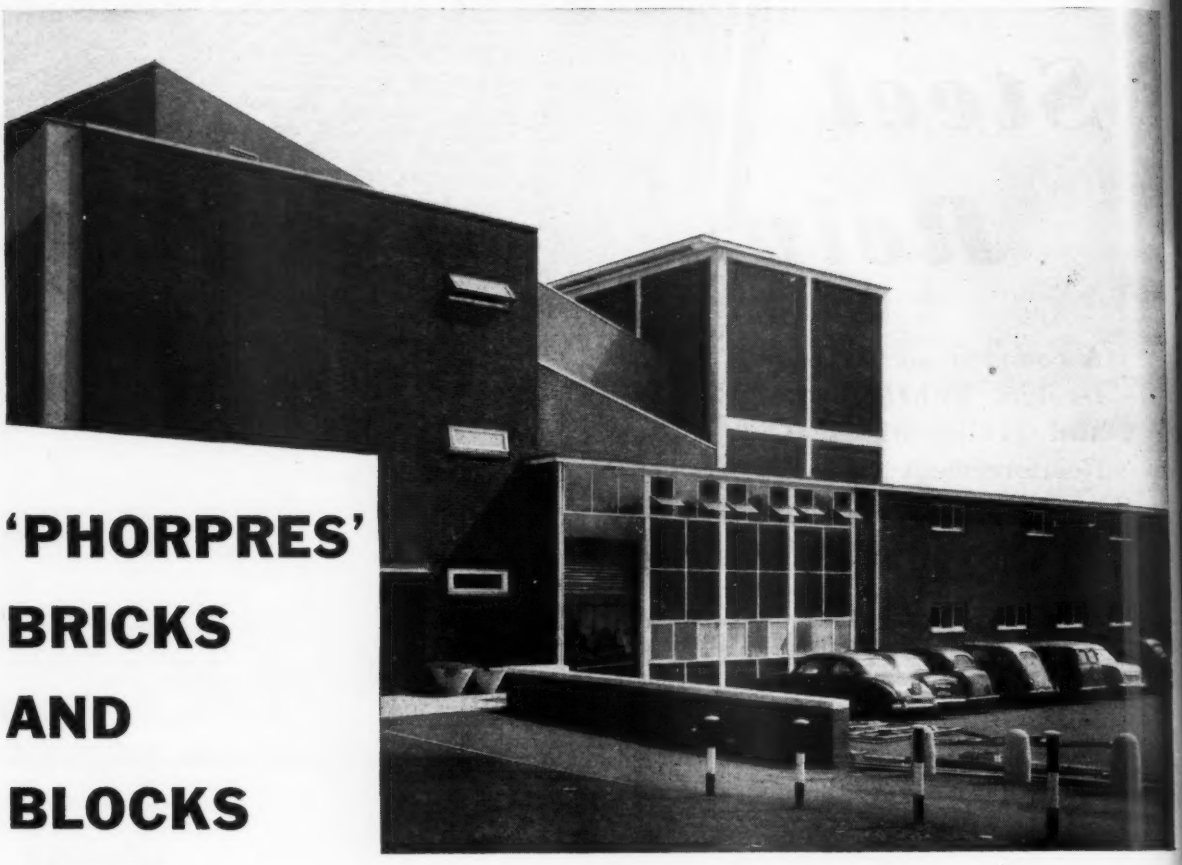

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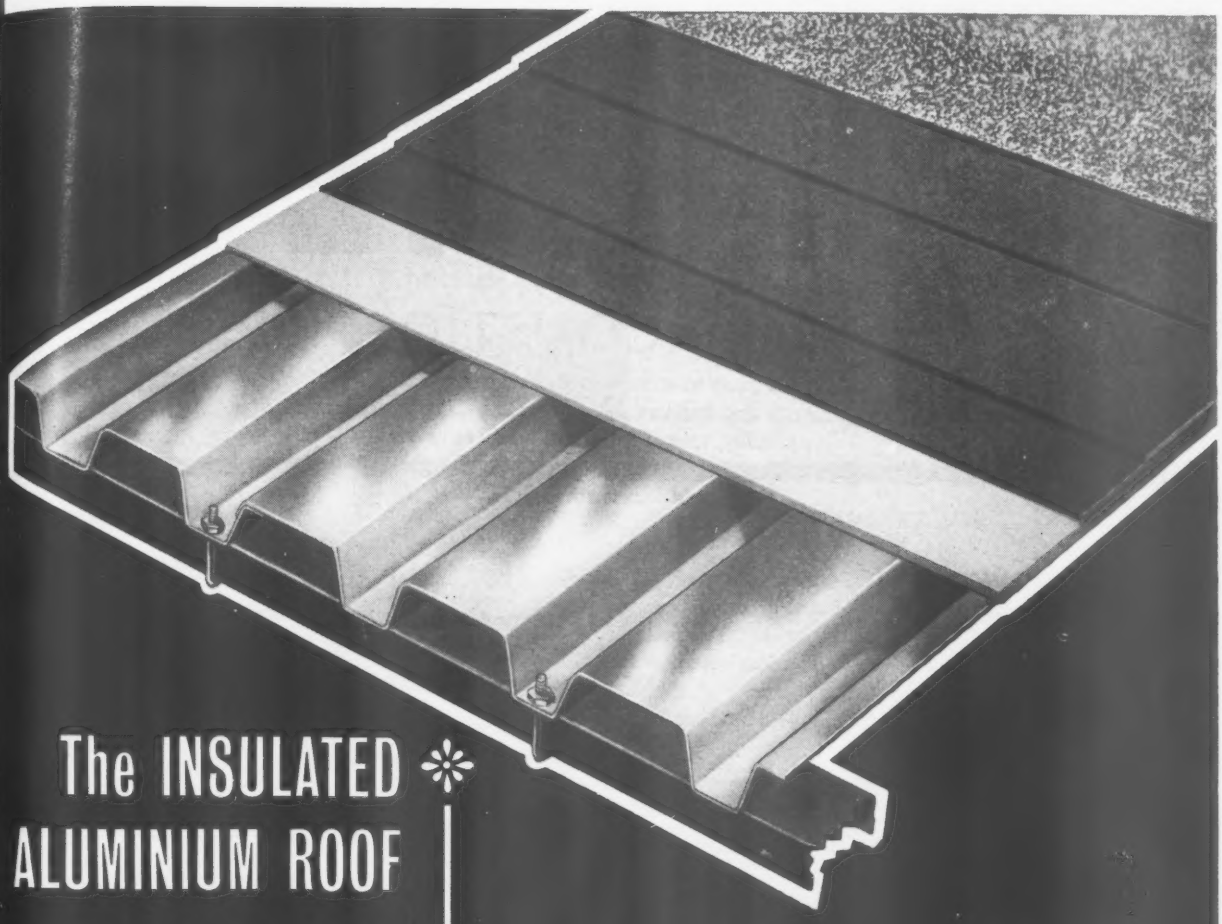

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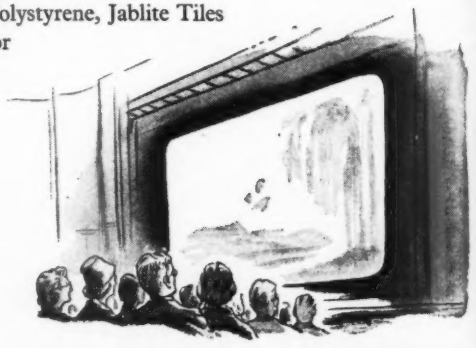

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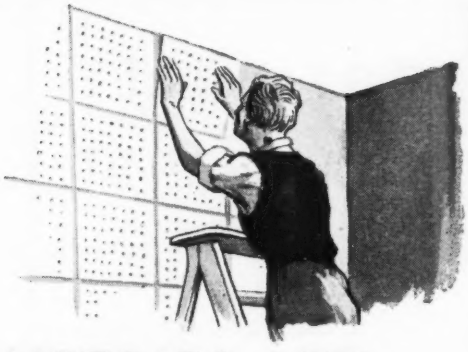

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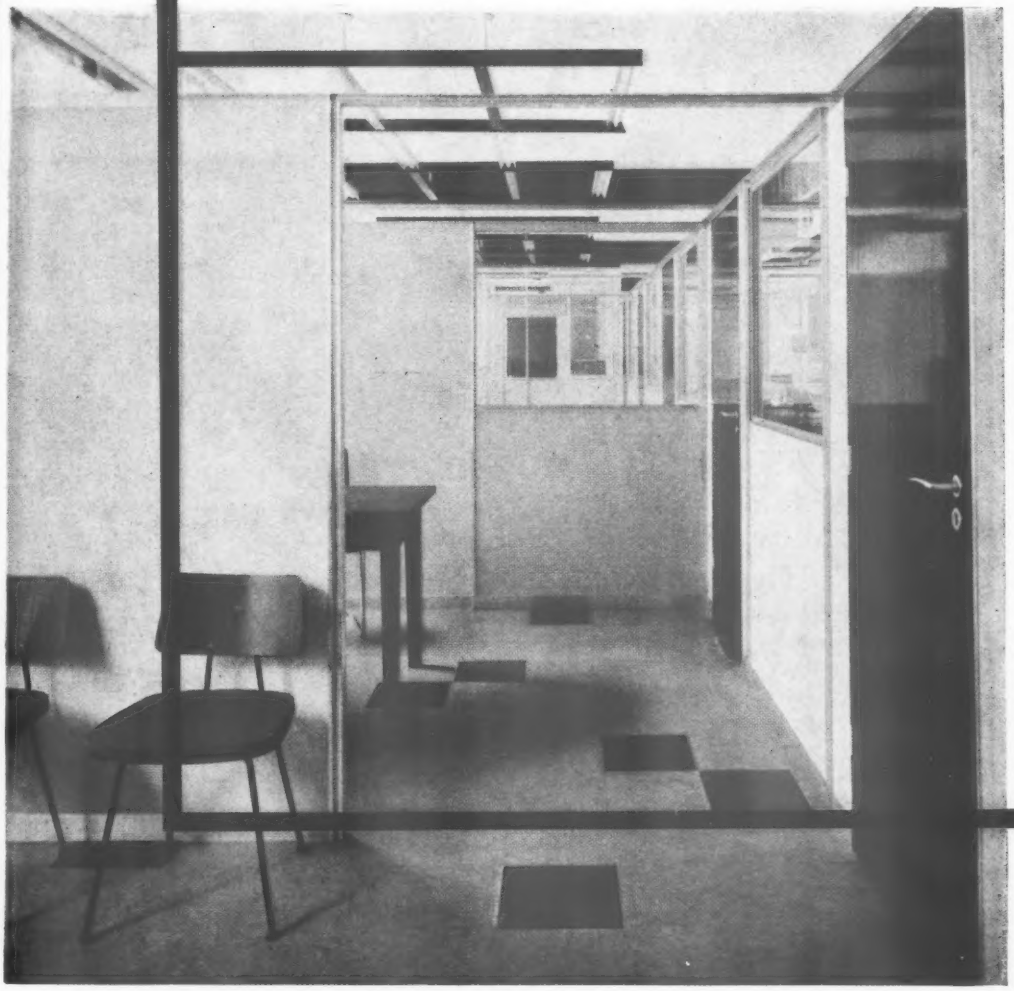

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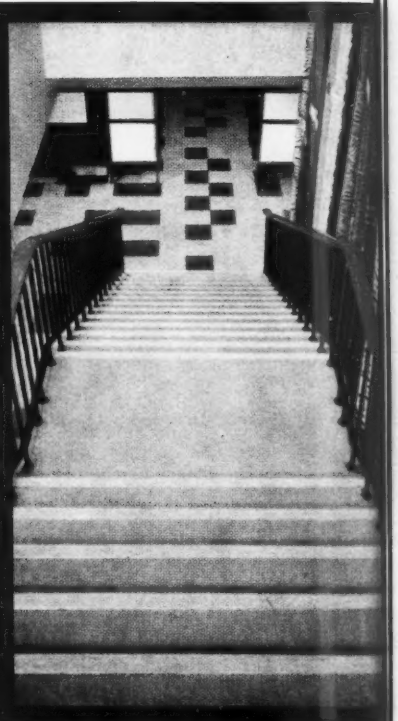

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AJ

THE ARCHITECTS' JOURNAL

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NOT QUITE ARCHITECTURE

WHAT EVERY ARCHITECT SHOULD KNOW . . .

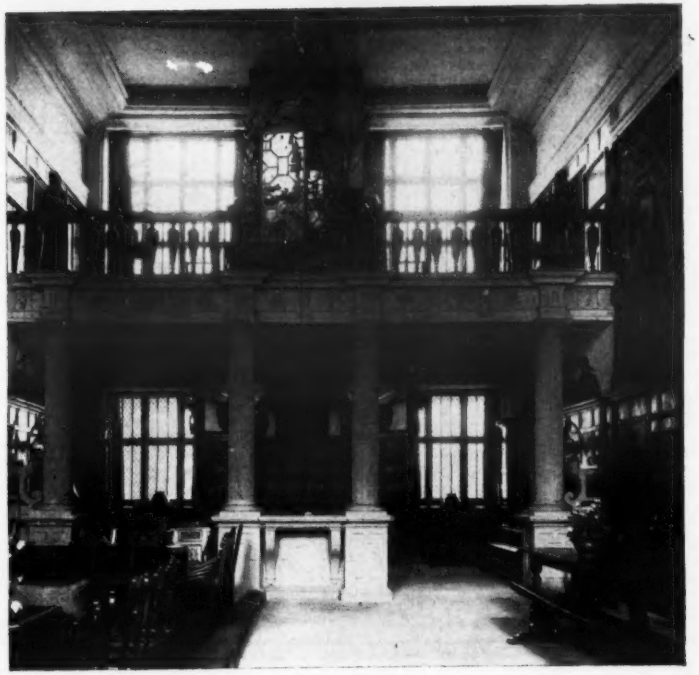
"What puts women in the buying frame of mind?" This question is of importance, no doubt, to those who design houses as well as those who sell soap, so I eagerly snatched up McGraw-Hill's latest addition to their series of books on advertising and selling, *What Makes Women Buy*,* to see what helpful tips could be gleaned for young men who would like more work coming into their offices. For even those who can't plaster the hoardings can still increase the emotional pluses on their work and create Brand Loyalty, if they will study the psychology of women, the psychology of advertising and the psychology of advertising to women.

*

The first thing the ambitious young architect should do, perhaps, is to emigrate to America where, having created the skyscraper, the population is spreading itself over the landscape in thousands of square miles of "urban-rural" ranch-house living. Interurbia, according to *What Makes Women Buy* now stretches for the full 600 miles from Boston to Washington with only two gaps, of two and 17 miles, on the way. The small, family house, with "yard" and garage is going up in such quantities as to transform some industries: *e.g.*, the garden furniture industry is rocketting, and the production of denim, as well as of the loudly checked shirts in which the urban-rural householder loves to do his chores or entertain with gay informality (and wine and "jello") the parents of his children's friends.

If he can't afford the fare to America, the next best thing our young architect can do is to try to Understand Women here, and for this, the book is of inestimable value, having reduced the female sex to *six* Major Changes of Present-day Living, *four* New Thinking Patterns, *four* Important Results of the American Heritage (skip

* By Janet L. Wolff. McGraw-Hill. 42s. 6d.



Pre-Georgian

The nineteen grants recently announced by MOW for the preservation of historic buildings put an unusual emphasis on the pioneer phase of English Classicism, the century before Georgian. Hardwick Hall, designed by the Smythsons, is commonly remembered for Bess of Hardwick, who commissioned it, and for its acres of window, but the entrance hall contains a fine Doric screen, the first so good and so far north, top right. The Vyne, near Basingstoke, above right, has the earliest Corinthian portico in the country, probably designed by John Webb, Inigo Jones's right-hand man, while the gravely magnificent pavilions at Stoke Bruerne, above left, are almost certainly the work of Jones himself, and are, in addition, all that remains of the first English example of a true Palladian plan, with a central block and flanking pavilions, while the style of their giant pilasters and round-headed windows points more directly to the English Baroque of Wren and his school.

these if you haven't the fare), *seven* Important Physical Factors (including short arms and legs, by the way), *five* Basic Mental Characteristics and *twelve* Fundamental Attitudes and Actions. Under these heads, summarized at the end of each chapter for quick assimilation by advertising agents in a hurry, the whole nature of women is spread forth to capitalize upon.

*

Women, we learn, are Loyal: get the brand name firmly into the head and they will refuse all others. They are religious—handle this with care: too many sects for mass advertising. They are mad for success for their families, though not for themselves since men don't like wives who are more than "moderately" successful.

*

They want labour-saving devices, plus a sense of achievement (a bit of butter here). They love bargains, but buy largely on impulse (70 per cent in the supermarkets), and also from boredom. But "to capitalize on boredom buying a product must have some unusual twist—be a conversation piece. It goes without saying that this must be achieved in a subtle manner for it is unlikely that many women would admit to purchasing in this fashion."

*

They love colour and associate it with all manner of pleasant things, but one investigator has discovered that only agreeable things have colour associations, rose, lilac, coffee, chocolate for example. "Now note the almost total lack of colour associations with odours which most of us dislike: lard, rubber, kerosene, fish, turpentine, vinegar, onion, garlic, perspiration." Brilliant thought. What colour *are* lard, rubber, fish, etc? Still more brilliant thought: wouldn't a design for a "perspiration-coloured kitchen" attract the boredom buyer by its unusual twist?

*

Women are becoming more cultured, but they still prefer "visualizing" to reading, hence the appeal of a picture-story edition of "War and Peace," advertised in the New York Times as follows: "No longer need you read through a thousand long pages to enjoy the full impact of this great story. . . Tolstoy's masterpiece is translated into action in a cavalcade of photographs and sequences far surpassing mere text and illustration." As women get old they get worried about failing health, beauty usefulness. Don't sentimentalize about this—capitalize. "Older women are a big market for health products."

*

And women are lonely: they love the radio for company, or even a drying machine that chants "how dry I am!" when the clothes are baked to a turn. At this point I realized the truth: women are budgerigars, loving a bell for company and fighting their own faces in the glass. But what does this make advertising experts? Which bird of prey has the most gorgeous feathers?

S. L.

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

The Editors

THE RIBA GETS UNDER WAY

LAST week, with rather odd timing, bearing in mind that this is the height of the holiday season, the RIBA made two important statements, both of which are fully reported in this issue. The RIBA deserve whole-hearted congratulations on both of them. The RIBA is now showing just the action and leadership which the profession has been waiting for. It has also announced two events concerned with education, one directly, the other indirectly. The cost research committee of the RIBA is organizing a week-end Conference on cost control in January, an ideal opportunity to get further consolidation of thought on cost control and to disseminate ideas through the profession *via* the Allied Societies (who will have a great opportunity to show their value and effectiveness to the profession). The other event is a seminar for teachers on heating which A. Douglas Jones, the progressive head of Birmingham, one of the leading architectural schools, is organizing in October and which the RIBA is sponsoring. The strength and status of the profession depends, in the long run, on the quality of the teachers. Any step to improve that quality is not only welcome but urgently necessary.

HOW LONG IT TAKES TO BUILD

It takes, we now know*, about 20 months from client's instructions to starting work on the site. Designing takes about one third of this, pre-tender working drawings, planning consents and so forth take rather more than another third; then there is a four-month gap.

The RIBA report shows from this that credit restrictions do not affect the volume of buildings for at least 12 months, that delays are mainly due to the getting of statutory consents and finance, and partly to the heavy demand (until recent months) on the industry. Factories and buildings erected by negotiated contracts are the speediest and buildings erected by competitive tendering are the slowest. Having started on the site, the average building time is 18 months. Looking at the figures, one's first question is: need it take so long?

Clearly, the procedures for planning and other consents urgently need to be overhauled but the real message of the report is to remind us that the greater part of the intricate complication of designing and getting ready to build is

* Inquiry into the building timetable: RIBA, see page 187.

commonly remembered for Bess of Hardwick, who commissioned it, and for its acres of window, but the entrance hall contains a fine Doric screen, the first so good and so far north, top right. The Vyne, near Basingstoke, above right, has the earliest Corinthian example of a true Palladian plan, with a central block and flanking pavilions, while the style of their giant pilasters and round-headed windows points more directly to the English Baroque of Wren and his school.

historically quite recent. Architects still practising remember (and sigh over) far simpler days, free of controls, forms, of endless ranges of building products, BRS Digests, sub-contractors, functional investigations and the "scientific" approach.

Yet our procedures, forms of contract, relationships between man and man remain much as they were in those days. We are trying to make an obsolete machine perform new tricks and the strain shows in the RIBA's figures and in the growth of the all-in service referred to in the leading article below. The more complex the task, the closer have to be those working together to discharge it.

ARCHITECTS AND THE ALL-IN SERVICE

The purpose of the architect is to design and supervise the construction of buildings and to safeguard the client. Does he do this best from within or without the contracting side of the industry? The private architects, particularly those who through experience have learned that contractors are either rogues or fools, or both, will be confident that the architect can only look after the client's interests if he is an independent professional.

The lesson, however, that private enterprise in the western world is having to learn, and is, in fact, slowly learning, is that roguery and foolishness don't pay, in the long run, in any way; and that the consumer must be safeguarded and protected. The better firms realise it, even in the building industry, and are very slowly adopting, in effect, professional standards. The architect who works with a building contractor could, through the specialist knowledge he acquires, be even better placed, in fact, to look after the client's interests than a private architect. Whether he can do this as well as a salaried employee of the builder (which he is allowed to be) as he could as the director of a building firm (which he is not allowed to be) is another matter. It is one of the illogicalities pointed out by the Joint Sub-Committee of the Practice and the Salaried and Official Architects' Committee in their excellent report published on page 188.

This committee is right to argue that the all-in service is a simple case of direct competition. The natural tendency is to protest, but the logical course, as the committee states, is to counter it by "greater efficiency and ingenuity."

Whether architects should, in fact, direct building firms—and the sub-committee goes to some pains not to oppose the idea—is, on the other hand, a very delicate matter. Good though the idea may be in theory, one would like to see more safeguards introduced for the client than at present exist in the unscrupulous world of open competition, and the possibility of architects advertising and touting for work of course completely contradicts the whole idea of professionalism. The subject calls for extreme caution and the closest study of the implications.

EXHIBITION OF IMPORT

The indefatigable organising committee for the Corbusier exhibition (Trevor Dannatt, Theo Crosby, Denys Lasdun, Jane Drew, Hubert Bennett, et al.) has now received promises of nearly £1,500 from industry. That is about half the sum required to import the exhibition and pay the Master's fee. Corb says he will open it if the date is convenient, and a lavish catalogue is being prepared so that the public will understand what it's all about.

*

The exhibition, which opens in Liverpool in December and at the London Building Centre in January, ought to make a lot of people more aware of architecture. The public adores personalities and is indifferent to philosophies and theories—so who is better than Corb, the author-painter-sculptor-architect, to awaken the layman's interest?

*

A tiny doubt springs to ASTRAGAL'S mind, as he prepares to bow before the Master. Couldn't the intelligent organizing committee have used the same sum of money to show not just Corb's life work, but what the architectural world owes to him, and how we could all profit in some way from his work?

FINE DAYS AHEAD

From the end of this week you can be fined up to £10 for leaving litter about.

You may agree with me that litter will only be kept down by long term education; but fines may do something *if* they are ever inflicted, and if they also get a fair amount of press publicity. Why not fines on the spot, as with motoring offences in the U.S., plus the option of going before a magistrate and probably being fined more? There is, of course, the old idea of leaving the parks and roads un-tidied for a fortnight. But half the people using them —including the peel-dropping Bentley owners—wouldn't even notice. Manufacturers don't help much with their colourful waxed paper and foil wrappings. The only answer is to make wrappings edible and to use rice paper instead of newsprint.

BOUND TO STICK

For years we have been asking for standard size catalogues, and the more sensible manufacturers have been working to B.S. 1311, which prescribed a standard size of 11 by 8½ in. as long ago as 1946. But just take a look at B.S. 2911 (Letter Plates) which "enables postmen to deliver letters and small postal packets quickly and without damage through folding, tearing, etc." You might think that the slot in the letter box ("aperture" to B.S.I.) would be large enough to take B.S. 1311 catalogues "without folding, tearing, etc.," but the operative dimension is 8 in.

*

Congratulations on a charming piece of nitwittery to MOW, MOS and the RIBA, who were represented on the drafting committees of both specifications.

SOME HAVEN!

Did you know that the Dolphin Development and Management Company had offered to be planning consultants for the development of Milford Haven? If you didn't you can stay as you were, because the company has withdrawn its generous offer. This is not bad news. It is a thoroughly bad principle that a speculative developer should take over the planning functions of the local authority, though it is true that in this case Frederick Gibberd was to have advised the company.

*

What an appalling mess the planning of Milford Haven has got into. Pembrokeshire County Council has been considering the Dolphin offer for six months. The Ministry has been thinking about Milford Haven for two years. The Minister has allowed three main industrial developments to move into the Pembrokeshire Coast National Park—and still no special measures have been taken to help the County Council to plan the area. The County Planning Officer has worked against heavy odds, but his tiny, underpaid staff cannot be expected to cope with such a problem. If the Government won't set up something like a new town corporation for the area, can't it at least lend some first-class planners to Pembrokeshire free of charge?

AERIAL VIEW

Air-travel executives are so universally tall it seems, that it took real effort to find Charlotte Perriand at the opening of Air France's new offices in Bond Street. Mme. Perriand, who is not tall, but every inch a woman of distinction, was eventually located standing in the shadow of the only person in London who is appreciably taller than air-travel executives, Theo Crosby, of *Architectural Design*. His long shadow also proved to contain a number of other architectural personalities, paying justified homage to La Perriand both as the designer of the new offices (in collaboration with Peter Braddock) and as Corb's former fellow-worker in the field of interiors and furniture design.

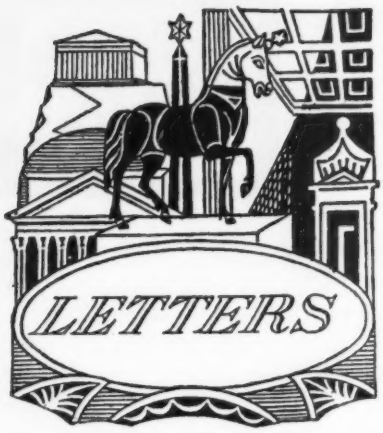
*

Because of the crush it was impossible to see any of her work below shoulder level, but one did discern some partitions of thick, rough, coloured glass, a tall room-divider of illuminated display boxes, some domes in the ceiling, and a sort of Japanese bridge displaying travel posters; also the furniture one fell over from time to time was not always Eames chairs but occasionally proved to be made of very thick wood with massively radiused corners. A second visit is clearly indicated to Air France, and also to Air India's equally new offices (by Design Research Unit) on the other side of the street.

ASTRAGAL

The special stamp issued in the USSR for the Fifth Congress of the IUA.

New offices in Bond Street for Air France by Charlotte Perriand. See "Aerial View".



Ronald Hardy, A.R.I.B.A.

"Captain Jim"

Ronald W. Robson, L.R.I.B.A.

A. D. Power, A.R.I.B.A.

RIBA Election System

SIR,—Enid Lakeman's excellent article on the RIBA election system (AJ, July 24) should be the subject of further discussion if constitutional reform and subsequent amendment of the RIBA bye-laws is to be taken seriously by its members.

To exponents of the PR System of voting Miss Lakeman's article will be perfectly clear but others may be tempted to discard the system as being too complicated. I hope that members will not hesitate to use your correspondence colums to ask Miss Lakeman questions.

I am sure that those who have already understood and approved the common sense of Miss Lakeman's reasoning will in future think again before using more than *one* of their many votes, if the system of voting is to remain as dictated by the present custom of the RIBA. I say "custom" because there is nothing in the RIBA bye-laws stating the number of votes to be cast by each voter; they provide only that the elected members must receive the most votes.

If common sense ultimately changes the custom then a single vote per member would be preferable, and from that it would be a logical transition to the single transferable vote.

Miss Lakeman mentions that the present system gives a strong inducement for members to organize on party lines, or one faction against another. There can be no objection to such organization in the interests of the profession, it is democratically healthy, and it is only such organization over a period of years that has finally precipitated the setting up of the Constitutional Sub-Committee. The danger to the individual and minority opinion arises, however, when such organizations are able to monopolize the Council through the method of voting.

A further danger arises from bye-laws 34 and 35 whereby the Council is empowered to nominate members to fill the vacancies on the Council to ensure a contested election. There is, however, NO MAXIMUM limit to the number of such nominations and from Miss Lakeman's reasoning it would be possible to restrict a class of opinion by distributing the votes over a larger number of nominations.

While we can be assured that a beneficent Council would use this power in the interests of the whole profession, it would be better for the decision to be made by the voters themselves, using a fairer system of voting.

Undoubtedly the Constitutional Sub-Committee in considering the resolution passed by the AGM will have to recommend revisions to the bye-laws and the method and system of voting. There is no reason from a practical point of view why a single transferable vote election, on a national and regional level, as advocated by Miss Lakeman, should be more complicated to administer than the present system of one full day's work by 29 scrutineers.

RONALD HARDY.

London.

Those Job Adverts

SIR,—*"Small, unremunerative practice in Black Country engaged in a variety of conversions, requires assistant. Must be bad draughtsman, unwilling to accept responsibility and incapable of supervising contracts large or small. Only absolute morons need apply as we have no intentions of paying more than a base subsistence allowance."*

If the above advertisement were published in your magazine it would at least give more useful information than some. As one who has dislocated his shoulder carrying portfolios on wild goose chases, I make a footsore plea for a little more intelligence and honesty in the wording of advertisements.

Is it too much to hope that when a "King-Pin co-ordinator and Leader of the Building Team" wants an assistant, he should pay the 2s. 6d. for each additional line to state where the office is situated? The most numerous examples of company secrecy merely state "London" or "Country Practice" (AJ, May 29). Occasionally there are mysterious compass points given like "N.E." (AJ, July 3). No map reference given, perhaps it was Sweden.

And how about another 2s. 6d. for a line to be a little more explicit than "Assistant." This term seems to cover all grades from £500 p.a. to £1,500 p.a.

Sometimes one finds out during the interview why certain relevant information has been withheld. For instance, I don't suppose that anyone would get trampled in the rush to apply for jobs where the hours were 8.30 to 5.45, or where one was expected to work in the Middle East.

That senior partners should waste hours of their time interviewing utterly unsuitable people is entirely due to their own lack of common sense.

In the name of sanity the AJ should insist upon a standard minimum of information without which an advertisement will not be published.

For instance:

Grade: Qualified with min. 5 yrs. expce.
Place: London, W.C.2.
Work: Industrial and Housing.
Hours: 9.5 Occas. Sats.
Salary: ±£1,000.

As I am still looking for a job perhaps it would be better for me to sign myself

"CAPTAIN JIM (RETD.)"

The Editors reply: it is not for us to tell people how to word their advertisements. But we imagine that the more information in the advertisement the better the replies are likely to be.

Tender Figures

SIR,—With reference to recent correspondence in the above matter it has always been my practice to furnish contractors with details of tenders received, and the vast majority, I find, appreciate the information.

The method I adopt is to write to each unsuccessful contractor, informing him of the name only of the successful contractor, followed by the amounts in sequence of the remaining tenders, but without the contractors' names. This enables each contractor to identify his own particular tender, and assess by comparison, the value of that tender.

The successful contractor is informed that his tender is to be recommended for acceptance, and he is also provided with the names of the other contractors, in sequence as before, but without the tender amounts. The successful contractor is thus able to assess the value of his tender by comparison with the other contractors with whom he had probably recently submitted other tenders, but without success.

RONALD W. ROBSON.

Bishop Auckland.

Hatfield Roofs Inquiry

SIR,—I have read with interest the result of the above inquiry but I feel that the final summary may give the impression that the architect is responsible for the faults of the Clerk of Works as well as his own assistants. The inquiry ends with "But the failure of the C. of W. cannot in my opinion excuse the major faults of the contractors (who have to bear the faults of their sub-contractors) or of the architect (who cannot excuse himself by reason of any faults of the C. of W. or of his assistants)."

I feel it should be made clear that the C. of W. is the servant of the client (*i.e.*, Hatfield Development Corporation in this case) and therefore the client is responsible for his faults, and not the architect.

A. D. POWER.

Liverpool.

DIARY

TCPA tour of Golden Lane housing site. Meet at corner of Golden Lane and Farm Street, E.C.1. 6 p.m.

AUGUST 11

Japanese Art Treasures. Exhibition at the Victoria and Albert Museum. Monday, Wednesday, Friday and Saturday, 10 a.m. to 6 p.m.; Tuesday and Thursday, 10 a.m. to 8 p.m. Sunday, 2.30 a.m. to 6 p.m.

UNTIL AUGUST 17

The Modular Assembly After its Erection. Modular Society Forum at the Building Centre, 26 Store Street, W.C.1. 6 p.m.

SEPTEMBER 24

Rural Problems of the Moment. CPRE National Conference at Cheltenham. Details from the Secretary, CPRE, 4 Hobart Place, S.W.1.

OCTOBER 16 TO 18

NEWS

The report below tells us how long it takes to design and prepare a building for work on site to begin. It was produced in response to a request from the Ministry of Works—who wanted to know how long government credit restrictions took to affect the volume of building work. But the findings have wider implications than this. See the leaaing article on page 183.

RIBA

Inquiry into the Building Timetable

1. At the request of the Ministry of Works, the Royal Institute of British Architects have carried out a small-scale inquiry into the time taken at various stages of the building programme. The object of the inquiry was to throw some light on the time likely to elapse before any change in the level of building activity, as measured by the volume of work reaching the architect, will be felt by the building contractor.

Scope of the inquiry

2. Architects were asked to provide details of the building timetable at a number of stages from the receipt of first instructions from the client through to the completion of building work, or the start of building work for buildings not completed. More than 50 architects were approached, in both large and small offices, in private practice, local authorities, nationalized boards and commercial and industrial firms with their own architects' departments, including a few of the larger building contractors. The timetable was provided for more than 300 building projects of different kinds—schools, housing, factories, offices, public buildings, etc.—and of different sizes in terms of building cost. The total cost of all the buildings amounted to over £64 millions, equivalent to nearly 5 per cent of a year's output of new buildings.

Summary of the results

3. For all the buildings covered, an average period of 20 months elapsed between the receipt of the first instructions and the start of building work on the ground. However, this arithmetical mean covered a very wide range of periods, varying at the extremes from two months to nearly 11 years, and is, therefore, of limiting significance. When the projects were ranged in order according to the number of months taken up to the start on the ground, the median or mid-point was 17 months, with an equal number of projects taking a longer and a shorter time. One half of all the projects fell within the range from 12 to 23 months, with one quarter taking less than 12 months and one quarter taking more than 23 months.

4. Table 1 above shows the proportion of the total number of projects that take a given interval of time to reach the start of buildings on the ground, with separate figures for a number of size groups (in terms of value of contract). This shows that building had started within one year for 30 per cent of all projects covered, and within two years for 79 per cent of the projects. Charts 2 and 3 attached illustrate this graphically. While there is some variation within the different size groups, the figures gave no indication of any close relationship between time taken and size of project for the range from £10,000 to £499,000. There were not sufficient examples of £500,000 or more to draw any conclusions for projects of this size. The small number of projects of under £10,000 showed a time considerably shorter than average.

Table 1: Proportion of the total number of projects started on the ground within a given interval of time from the architect's receipt of first instructions.

Time from receipt of first instructions to start of building on the ground	*All projects in the inquiry*	*Projects valued at:* £10,000-£49,000	£50,000-£99,000	£100,000-£249,000	£250,000-£499,000
	%	%	%	%	%
Up to 3 months	2	2	—	2	—
4-6 months	6	5	4	4	5
7-9 months	10	11	8	7	17
10-12 months	12	10	21	13	5
Up to 1 year	30	28	33	26	27
13-15 months	12	12	11	14	5
16-18 months	15	11	10	23	12
19-21 months	14	13	15	13	19
22-24 months	8	11	10	6	10
Up to 2 years	79	75	79	82	73
25-30 months	8	10	4	9	7
31-36 months	6	7	9	4	5
Up to 3 years	93	92	92	95	[illegible]
37-48 months	4	2	4	4	10
Over 48 months	3	6	4	1	5
Number of projects	100% 311	100% 83	100% 52	100% 91	100% 41

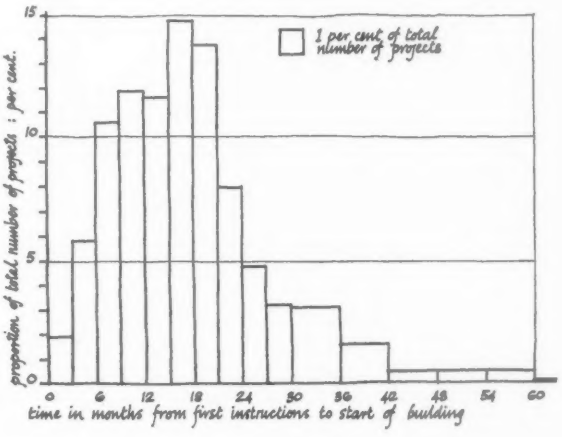


Chart 2. Proportion of the total number taking a given interval of time from the architects' receipt of first instructions up to the start of building on the ground.

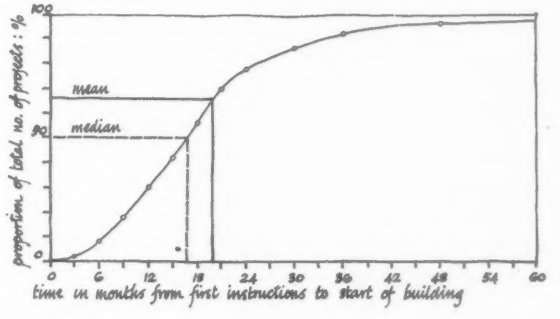


Chart 3. Proportion of the total number of projects starting on the ground within a given period from the architects' receipt of instructions.

Time taken at intermediate stages

5. The average time taken at a number of intermediate stages for all the projects included in the inquiry is given below. These figures must also be treated with caution, because not only is there a wide range of variations at each stage, but in many cases the different stages overlap. Not all the buildings included in the inquiry had actually been completed, so that the figure given for the final stage of the timetable, which represents an average of 18 months for the actual building time, is less representative than those for earlier stages.

Table 2

	Average time taken from receipt of the architect's first instructions
Sketch plans completed	7 months
Planning, bye-law and other approvals obtained	14 ,,
Tenders out	15 ,,
Tenders returned	16 ,,
Working drawings completed	16 ,,
Building work started	20 ,,
Building work completed	(38) ,,

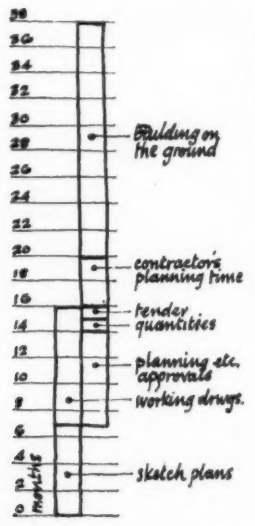
Chart 1 attached illustrates this in the form of a simplified diagram. Table 2 gives similar information by size of project.

Table 4. Analysis of the average number of months taken to reach certain stages of the building timetable, by value of project

Stage of building timetable	Avarage, all projects	Projects valued at: Less than £10,000	£10,000 to £49,000	£50,000 to £99,000	£100,000 to £249,000	£250,000 to £499,000	£500,000 to £1,000,000	Over £1,000,000
				Months				
From first instructions received by the architect to:								
Completion of sketch plan	7	2	8	6	6	9	12	8
Planning bye-law and other approvals obtained	14	6	16	13	12	15	17	17
Completion of working drawings	16	6	16	15	15	17	21	28
Tenders out	15	8	16	14	15	14	21	19
Tenders returned	16	9	18	15	16	16	23	21
Building started on ground	20	10	21	19	20	21	24	28
Building completed	38	18	34	37	42	42	44	50
Number of projects covered (*a*)	325	22	83	58	94	45	14	9

(*a*) In a few cases building work had not started or reached completion.

Chart 1. Timetable of building from architects' receipt of first instructions to completion of building.



6. Comments submitted with many of the examples suggest that there is in fact no "average" building—nearly every job has some peculiarity which can affect the time taken at any stage. Where causes of delay were given, these came under the following headings:

(i) Delay in obtaining planning and other consents from local authorities, for even small projects; licensed premises requiring the approval of the local magistrate suffered particularly in this respect.

(ii) Difficulty in obtaining the necessary finance, both for public buildings (which had to be fitted into an annual programme of expenditure) and for private buildings, which were affected by the imposition of credit restrictions.

(iii) Delay in obtaining a decision from the client to go ahead; for public buildings, such as hospitals, the need to obtain the approval of the appropriate Ministry was a delaying factor.

(iv) Licensing delays, for projects started while building licenses were still in force.

7. On the other side, the speediest examples were frequently those for which a negotiated contract was involved, where the time factor weighed more heavily than the desire for the best price that the open market would offer. In such cases the planning of the building work usually started immediately the sketch plan was completed and the working drawings were finished as the building proceeded. A number of the examples given by private architects were of this type. A similar timing pattern was shown in cases where tenders were obtained at the sketch plan stage based on approximate bills of quantities and in some of the examples provided by the building contractors, where the project was designed by the firm's own architect. (These procedures incidentally resulted in a lengthening of the average time taken for the completion of working drawings, which would otherwise be shown in the average timetable in paragraph 5 above and in table 2 as completed before the tendering stage. The effect is particularly noticeable in table 2 for projects valued at over £1 million.) Examples were also given where the obtaining of general planning approval for the development of an area had enabled a quick start on building to be made, particularly for factory work.

8. A large proportion of the projects included in the inquiry were being handled during a "boom" period for building, from late 1954 to early 1957, when there was a lot of work in the pipeline. The time taken was therefore probably longer than might be expected during a period of relative slackness of demand.

Variation by type of building

9. The average time taken for different types of buildings from the receipt of first instructions to the start of building on the ground was as follows:

Table 3

	Months	No. of buildings included
Factories and other industrial buildings	13	43
Housing, two-storey	16	32
Schools, technical colleges, universities	18	106
Housing, multi-storey	21	26
Offices and other commercial buildings	22	41
Public buildings (including hospitals, old people's homes, police stations, etc.)	26	56
Average, all buildings	20	311

10. The high average for public buildings is not unexpected as these projects are particularly subject to the delays mentioned in paragraph 6. The low average for factories is partly due to the high proportion of projects for which negotiated contracts or contracts based on rates quoted for previous buildings on the site were used. There are obviously other factors involved, such as the timing of the granting of Industrial Development Certificates, which do not emerge clearly from the limited information available, and it would be valuable to have a more detailed investigation of the difference between the average for this group and, say, the relatively high average for commercial buildings.

General conclusions

11. The results of this inquiry show that the period of time that may elapse between the initiation of a building project and the actual start of building may be a good deal longer than many people thought. Bearing in mind that the figures given do not include any allowance for the time taken by the client to decide to build before the architect was approached, it would appear that any measures to adjust the level of investment in buildings are liable to require at least a year to show even a small effect on the building industry and from 18 months to two years to reach their full impact. A similar broad conclusion could be drawn from a study of the rising trend in building output in 1955 and 1956 in relation to the encouragement given to investment in 1953 and 1954, culminating in the removal of licensing in November 1954. (At that time there was a pent up demand for building which needed little encouragement, a condition which does not prevail today.)

12. This inquiry was devised in order to give a quick answer about the average time taken at the pre-contract stage of building. It was not intended to offer any guide as to how this time might be reduced. However, the results suggest that an inquiry on a larger scale, drawing on the experience of this one, might well be worth-while, to enable a more detailed analysis to be made of the various contributory factors—the type of building, its location, the client/architect/builder relationship and so forth. This is beyond the resources of the RIBA, but it might perhaps be considered by the Building Research Station as a possible subject for further investigation.

We publish below the report of the joint sub-committee of the Practice Committee and Official Architects' Committee of the RIBA on the employment of architects on the salaried staffs of building contractors who offer an "All-in Service." The report has been approved by the Council. Paragraphs in brackets note action taken.

MORE EFFICIENT ARCHITECTS THE ANSWER

RIBA Refuses To Ban The All-In Service

The Background

1. In November 1955, the Allied Societies' Conference, accepting a proposal from the Manchester Society of Architects, put to the Council a recommendation that the employment of architects on the salaried staffs of building contractors should be the subject of investigation. Special attention should be directed to those contractors who offer "all-in" services; to any adverse effects of such services

upon the interests of the profession and of the building owner; and to any action that might seem desirable to protect those interests.

2. Similar and separate complaints about what was alleged to be a growing practice were later received from the Northern Architectural Association in the form of a memorandum, from other Allied Societies, from the City and Borough Architects' Society, and from the County Architects' Society.

3. The Council referred the matter to the Practice Committee and the Salaried and Official Architects' Committee, who set up a joint sub-committee to carry out the inquiry.

4. Briefly, the main points of complaint were: that large contracting firms are increasingly employing architects on their salaried staffs and not as independent consultants, and are thus able to offer the client, for a given building, a comprehensive service from site investigation to completion; that under this arrangement the architect is not engaged in his traditional and proper role, lacking both the standing of an impartial and independent arbiter as between contractor and client, and the freedom to select the materials or form of construction he considers most appropriate; that he is, in fact, the servant of the contractor, whose interests he is paid to promote; and that the system as a whole depreciates the architect's status and constitutes something of a menace to the future of the profession, while depriving the building owner of some important safeguards.

5. Early in their deliberations, the Sub-Committee recognized a distinction between the employment of architects on salary by contractors, on the one hand in their normal course of business (including the speculative development of land for letting or selling), and on the other for the supply of those all-in services which are the primary cause of anxiety among members.

In an Interim Report submitted to the Council in October, 1956, the Sub-Committee concluded that the former practice is unobjectionable and quoted the ARCUK and RIBA Codes of Professional Conduct in support of this view. They accordingly recommended that no new provision forbidding the normal employment of architects on the salaried staffs of building contractors be added to the RIBA Code, and the Council accepted this recommendation.

They went on to argue that, while the offer of all-in services was a complex question requiring deeper study and on which widely divergent views were held, it would not be pre-judging the issue if ARCUK were to be asked to call the attention of Registered Architects to Principle VIII of their Code, and in particular to that clause which enjoins upon the architect employed by a building contractor the duty to inform clients that he is not professionally responsible to them, but to the contractor who employs him. The Council agreed to make this request of ARCUK which has since been carried out by way of a note in the latest ARCUK annual report.

(Some doubt was expressed, especially by the Allied Societies' Conference, on the power of a salaried architect to give such a warning to a building contractor's clients. It was decided, therefore, to refer this point to the Joint Consultative Committee of Architects, Quantity Surveyors and Builders for consideration and comment.

Another point which has been referred to the JCC for consideration is the propriety of advertisements illustrating buildings erected by building contractors and showing the names of the architects responsible for the designs as if the latter were independent practitioners.)

Finally, the Council authorised the Sub-Committee to embark upon a more detailed investigation of all-in services, and it is with the results of this fuller inquiry that the following paragraphs are concerned.

Evidence Taken

6. The Sub-Committee thought it best in the first place to take evidence from building contractors offering, or having knowledge of, all-in services, and from architects employed by such contractors. A meeting was held with seven members of the National Federation of Building Trades Employers (including the President and the Director). The main points made by these NFBTE representatives were that they were not aware of complaints that buildings erected under the all-in service system were aesthetically or qualitatively inferior to those commissioned to private architects; that the speedier completion of a project was the main advantage; that many of these projects were industrial, where speed in erection was often of even greater importance to the client than capital cost; that the building owner had complete freedom of choice to decide whether to use an all-in service or commission a private architect; that many all-in services involved the use of proprietary systems of construction which, to be exploited to the fullest advantage, required the collaboration of architect and contractor from the start; that the success or failure of this service depended upon how far it found favour with the client; and that if it succeeded there was nothing the RIBA could do to stop it, nor would the NFBTE feel justified in discouraging it.

Further, most of these representatives were candid in passing on what they claimed were widespread criticisms reaching them from various parts of the country of the services provided by some architects. Of these shortcomings, which were alleged to be substantially responsible for the development of all-in services, not the least damaging were said to be the complicated procedures traditionally used for the preparation of designs and their translation into buildings, for these were a major cause of building delays.

7. The Sub-Committee next heard the views, at separate meetings, of two Chief Architects, employed by two leading building contractors. The first of these said that besides their own speculative building, the work obtained in the normal way of competition, his company also dealt in proprietary systems of housing construction which were offered to local authorities. In the case of many of the larger local authorities, the firm collaborated with the authority's own architect, who prepared a basic design. In every all-in service contract undertaken by his company, the building owner's interests were protected by his own professional adviser, who might be an architect, engineer, surveyor or building inspector. This Chief Architect believed that, while his employers engaged private architects independently, their own all-in service was usually quicker, cheaper and more efficient, because private architects were not familiar with the various aspects of the contractor's organization that influenced the design of their buildings. In the field of private house building it was widely felt among the general public that a house designed by a private architect and built under contract would be more costly than a "builder's house." From his own and his staff's point of view, the level of salaries offered by building contractors was an attraction, as was the opportunity to gain experience of contractual methods. It was a great advantage to have, immediately to hand, full information about the availability of plant and machinery as well as the advice of specialist technical staff. While ultimate policy necessarily rested with the Board of Directors, he was given every opportunity to advance views which might influence the design of a building.

The second Chief Architect explained that, in the case of his company, the idea of an all-in service had originated in approaches from landowners after the last war for the design and erection of farm buildings; but that this kind of service was now used chiefly for large industrial projects. Substantiating much that the Sub-Committee had heard already, he confirmed that the primary concern of these industrial clients was a quick start and speedy completion; that they were always encouraged to engage an independent quantity surveyor; and that in any event they always employed some professional adviser to watch over their interests. The company made no direct offer of all-in services. They were themselves approached by clients, industrialists in the main, for whom they had carried out work in the past through the normal medium of competitive tendering. There was no greater difficulty in recruiting architects into the company than were experienced by private architects generally, for they were attracted by good salaries and the chance to work in a team with quantity surveyors and engineers—an arrangement which, he felt, gave assistant architects a more realistic view of building than was possible for them in a private office.

8. Finally, the Sub-Committee had the benefit of evidence from the Honorary Secretary of the Northern Architectural Association (who was also present at the meeting with the first Chief Architect). He subscribed to all the heads of complaint listed in paragraph 4 above, and while fully appreciating the difficulties, nevertheless held to the view that both the RIBA and ARCUK should take immediate measures to prohibit—immediately so far as possible and eventually altogether—the employment of architects on the salaried staffs of building contractors.

Possible action

9. Reviewing the evidence taken, the Sub-Committee have considered what action may be open to the RIBA, to help, if possible, those members who see their livelihood directly affected by the growth of all-in services; and they have therefore aimed to exhaust first whatever remedies restrictive legislation might have to offer:

(*a*) ARCUK: The relevant section of the Architects (Registration) Act is that which provides for the removal from the Register of the name of anyone found guilty of "conduct disgraceful to him in his capacity as an architect." In the recent case of Hughes *v.* Architects Registration Council, the effect of the ruling then given seems to be that ARCUK cannot decree that an activity constitutes disgraceful conduct if the architect concerned has hitherto been allowed to pursue it unhindered over a long period. It is true that the Court's decision could be said to relate only to activities carried on before the Registration Acts, and that it does not limit ARCUK's powers in respect of new entrants. Nevertheless, it seems very unlikely that ARCUK would wish to raise the issue, especially in view of so recent a decision against them. If, however, they did legislate against employment of architects by contractors for all-in services, and even maintained the new position unchallenged, the effects are unlikely to include any significant decline in the volume of all-in services. Contractors would need to hire "architectural designers" instead of "architects" to overcome the statutory difficulty thus created; but while this change in nomenclature would be a hindrance to them, it is hardly to be supposed that it would irrevocably damage their case with hard-headed, if perhaps uninformed, clients, any more than that they would have undue difficulty in recruiting enough qualified architects willing to forgo the privilege of Registration for the sake of what are evidently satisfying appointments.

(*b*) RIBA: The RIBA Code is more widely drawn, in that a member can be reprimanded, suspended, or expelled for conduct "derogatory to his professional character" or "inconsistent with his status as a member or student" or for activities "inconsistent with the profession of architect." Ignoring the problems that occur if the RIBA and ARCUK Codes do not run reasonably in parallel, it seems to be open to the RIBA to forbid members to take up employment with all-in service people, providing saving clauses are added to exonerate those already in such employment. But it is hard to see what practical purpose this would serve, for we might then see the all-in contractors manned by non-members, and be preserving the purity of professionalism without removing the cause of anxiety.

10. The Sub-Committee are therefore led to the clear conclusion that restrictive legislation outlawing participation in all-in services would be ineffective and should be rejected.

Nevertheless, it is worth noting that the RIBA Code, as it relates to employment by contractors, is at present anomalous. By its provisions, the "leader of the building team" may be employed in the industry in a subordinate capacity but not in a controlling one, since he is forbidden to be a director.

11. Rejecting legislative action to combat the all-in service, the Sub-Committee see the problem as a simple case of direct competition to be frankly faced and, like any competition, to be effectively countered only by achieving greater efficiency and ingenuity in the same field, or by offering an even better alternative.

12. The contractors and contractors' architects interviewed left the Sub-Committee in no doubt that in their view the shortcomings of some architects in adhering strictly to a time-schedule, and in precise and efficient project management generally, is a principal cause of clients turning to contractors for an all-in service. Making liberal allowance for the opportunity the occasion may have offered for uttering generalizations argued from particular cases, the Sub-Committee are nonetheless persuaded that there is a strong case for the development of courses in management techniques, to be taken both at appropriate stages during formal training and, since nobody can safely cease learning, at intervals in a modified form throughout the architect's working life.

(Further consideration is being given through the Conference of Allied Societies' Public Relations Officers to the possibility of more active publicity in the provinces, such as the preparation by Allied Societies of Year Books which contain illustrations, analyses of cost of projects, etc., of work commissioned under the traditional procedure.

It was also left to the Ad Hoc Committee on Representation of Members in Salaried Employment and Review of Structure of the Profession to consider the possibility of producing tables of comparative costs and time schedules to see whether, in fact, buildings erected by the "all-in" services method were cheaper and more quickly constructed. The Committee will be going into this point shortly.

13. No less prominent in the discussions was the question of advances in technology, building techniques and the use of machinery for construction, with which it is so difficult for the independent architect to remain sufficiently familiar, but which are so readily available to the contractor's architect as he designs. The Sub-Committee welcome the forthcoming changes in syllabus for Intermediate, Final and Special Final Examinations, which place greater emphasis on building science; but there remains the urgent need to supplement this academic advance by bringing the young architect into the closest possible touch with the actual mechanics and conditions of construction on site, in view of the increasing relevance that this has for design.

(The need for bringing the young architect into the closest possible touch with construction on site was referred to the Board of Architectural Education for consideration.)

14. It is evident that from the client's standpoint, one of the strong attractions about an all-in service is the apparent simplicity and certainty it offers in matters of fees and costs, and the convenience to him of dealing with one agent only. The Sub-Committee are convinced that there is accordingly much to be said for the private architect, in his capacity as leader, persuading specialist consultants to join with him in offering the client one consolidated fee, thus avoiding the multiplicity of separate fees which to the client is often irritating and sometimes bewildering.

15. Arising out of the fee question, an important issue is the use made by architects of specialist sub-contractors. Architects often accept from a structural, electrical, heating or other engineer a comprehensive scheme for a given building which includes a considerable element of tailor-made design. Yet such a scheme prepared by a specialist sub-contractor is none other than an all-in service; and it is hardly consistent to complain about the building contractor's offer of all-in service in the total sense, when architects are prepared to make use of the same thing in a limited sense.

A study of the all-in service problem throws into relief and sharpens the outlines of the architect's traditional relationship with client, specialist consultant, contractor and sub-contractor, and in any reappraisal of these relationships, the specialist sub-contractor deserves close attention.

16. A consolidated fee to accommodate the client, and a substantial rise in the technological and business efficiency of the profession, would go a very long way to meet the contractor's challenge in its present form and scope. But one is bound to ask whether there is not some inherent merit in the all-in service, as practised by firms of integrity, that is both a warning of stiffer competition to come and the herald of some new relationships destined to develop between all those who go to make a successful building.

It has not been possible to gauge with precision how widespread the all-in service now is, the volume of work handled in this way and how much further it is likely to spread. One of the contractor's architects interviewed thought his own department was very unlikely to expand; that only the very large contractors had either the resources or the prestige to run all-in services; that these were in any case likely to be limited to certain kinds of circumstances and buildings; and that any widespread development among small and even medium-sized contractors was improbable. On the evidence available the Sub-Committee are inclined to share this view.

What is beyond doubt is that the all-in service is more than a smart "gimmick" thought up by a few contractors to catch extra trade. It clearly meets a need, or contractors would not have been approached by clients for the service as well as vice versa. It might be that for certain kinds of building the close collaboration of design, specialist and contracting elements right from the start, which is a feature of the system and is said to result in speedy erection, represents a natural and even essential development, pointing the way to a future pattern in the design and construction of major buildings. If so, it will not only be meeting the contractors' challenge, but also a forward-looking development if certain architects themselves arrange to provide all-in services no less efficient, quick and economical, but to which will be added these aesthetic and other advantages that may be expected to accrue when an independent and impartial consultant is employed. For this purpose, the architect could form an alliance with independent quantity surveyors, heating and electrical engineers and any other necessary consultants, who with a selected contractor would work as a team on a projected building from the start. Thereafter, for any new project, this loose consortium under the architect's leadership would probably consist of the same people so far as specialist consultants were concerned, but the contractor would normally change, on the important principle that the architect must be free to select the kind of construction, and hence the contractor, best suited to the job in hand. Such an arrangement would mean some increase in the number of negotiated contracts, but, since competitive tendering need not at all times and in all cases be sacrosanct, this is not an insuperable difficulty. The pressures of a free and highly competitive market can result in almost as much natural protection for the client as competitive tendering. The Sub-Committee believe a more likely limiting factor to be the number of architects willing, and with the time, to get down to the sheer business efficiency needed to make such a scheme a success.

This, however, is only one and not necessarily the best way of taking the initiative. There must be others that ought to be explored.

(It has been left to the Practice Committee and the Ad Hoc Committee on Representation of Members in Salaried Employment and Review of Structure of the Profession in collaboration to examine more closely the implications of the proposals concerning a consolidated fee for work undertaken in collaboration with specialist consultants.)

17. **Summarising their findings, the Sub-Committee recommend:**

(*a*) That nothing be added to the RIBA Code of Professional Conduct to prevent members being employed on the staffs of building contractors.

(*b*) That the questions affecting training, fees and possible action by architects referred to in paragraphs 12-16 above be the subject of further and detailed consideration by the appropriate committees.

Heating Seminar

The RIBA has decided to sponsor a series of advanced courses for the benefit of teachers in recognized schools of architecture at which specialists in their own field will give lectures to be followed by general discussion.

The first of such seminars will be on "Heating." A. Douglas Jones has arranged for this course to be held at the Birmingham School of Architecture, of which he is the Head, on October 22-24, 1958. The lecturers will include J. B. Dick (BRS), W. A. Allen (Chief Architect, BRS), L. J. Fowler (Head of Weatherfoil), K. Allerton (County Architect's Department, Nottingham), and J. Bickerdike.

It is thought best to keep numbers down to allow for close discussion and therefore only one staff member from each of the recognized schools is being invited to attend.

Conference on Cost Control

A weekend conference on methods of cost control for architects is being arranged by the Cost Research Committee of the RIBA. The programme for the conference was approved by the Council of the Institute at their meeting in July. The conference will take place at Missenden Abbey, Great Missenden, Bucks, from the evening of Thursday, January 15, to Sunday, January 18, 1959. The speakers will include architects, quantity surveyors and a builder. RIBA Allied Societies in broadly the south-east of England, within reach of Great Missenden, will be invited to send representatives and in addition there will be a number of places open to individual architects. Further details of the conference and advice on how applications should be made will be published early in October.

THE FIRECLAY STORY

Manufacturing Processes on Film

A new 35-mm. film-strip will shortly be available on free loan from the British Sanitary Fireclay Association. A series of photographic illustrations and diagrams in colour shows the manufacturing processes of fireclay from raw material to finished products. Lecture notes give a full technical commentary. For details write to the Secretary, the BSFA, 57, Great George Street, Leeds, 1.

SCHOLARSHIPS

Truscon Awards

The 1958 Truscon Travelling Scholarships, each worth £125, have been awarded to James B. Harris and P. E. Payne, who will study reinforced concrete work on the Continent.

TIME THE POST OFFICE GREW UP

Not Responsible for its £9 Million Programme

Notwithstanding the generalizations in the Labour Party's recently published *Plan for Progress*, control over private investment is not a simple matter in our present half-way stage between laisser faire and the dirigiste state. Control over consumption costs votes. Central planning and control therefore operate most directly, continuously and comprehensively over investment in what is called the public sector, and we must expect this to remain a permanent feature of the economy.

Two generations of under-investment have left us with colossal arrears of obsolescence in houses, schools, hospitals, roads and other things. Expansion, rebuilding and replacement cannot, obviously, be done all at once or even over a short period. Hence the need for selection and for programmes of work to be started in a given period. Curiously, the methods of selection and the procedure of drawing up investment programmes for the public services have received little examination or explanation in public.

This essay*, which received the Haldane Essay Prize for 1958, is therefore welcome as one of the few documents which are available to would-be students of this administrative problem. It describes how the Post Office settles its internal problems of relative priorities for new buildings and outlines very briefly how the resulting building programmes are carried out. One would not have supposed that in a vast commercial concern like the Post Office the problem of deciding building priorities was a new one, arising simply out of post-war economic difficulties. It is therefore a little disconcerting to find that until 1951 the compilation of their programmes depended not on any co-ordinated appreciation of what was most needed, but on the capacity of the various Ministry of Works regional headquarters to carry out the work. Thus accidentally are deficiencies in the Government machine revealed. It is also rather late in the day to admit "we are now giving increased attention to the other major problems of our building work—reducing costs." If all Government departments had tackled this problem of costs much sooner, we should have had fewer "cuts" in building programmes and more new assets in use.

The number of new major projects started for the Post Office was doubled between 1954 and 1956, and expenditure on new building work also nearly doubled in the same two years. In 1956-57 it had reached £8.5 million. Architects will perhaps be more interested in the arrangements for carrying out the work than in the compilation of the programme. Reading between the lines of Mr. Baker's essay one seems to feel great restraint being exercised in the absence of comment on the division of responsibility between the building owner and the Ministry of Works. The outsider must wonder why an organization of the size and competence of the Post Office, with a building programme larger than that of any local authority, should not be trusted by the Government with complete responsibility for the design and execution of its own work. Whatever the arrangements for interdepartmental co-ordination, it must be more costly in administration and less conducive to economy in building to perpetuate the agency system for so large and continuing a programme. Private architects who have been commissioned (by the Ministry of Works) for Post Office jobs have some curious stories to tell about the difficulty of making contact with the prospective users of the buildings, and there is little in the post-war record of the Ministry to suggest that they have made any notable contribution to the search for economy. Another curious feature reported by Mr. Baker is the internal organization of that part of the Ministry of Works Chief Architect's Branch which is detailed for work on Post Office building. The total number of architects deployed on this work has been increased by 50 per cent. and is now controlled by two Assistant Chief Architects (salary £2,700). Is this the way to get full value for some £9 million a year of the taxpayers' money?

A. B.

* *Post Office Building Programmes* by R. J. S. Baker. (Public Administration, Vol. XXXVI, Summer 1958.

DOES DISPERSAL PAY?

TCPA Statistics Examined

Does dispersal pay? The Town and Country Planning Association has always insisted that it does—that decentralization of jobs and homes to new or expanded towns is cheaper than high density redevelopment in the cities. The July number of *Town and Country Planning* contains a memorandum supporting this claim with an impressive array of figures. It compares the costs of the same number of dwellings and their associated services (schools, open spaces, etc.) built in two ways—all in high flats in the city, or half in the city and half in a new town. The saving from dispersal after allowing for closing central factories, losses on starting new towns, and providing roads and public services, schools and open spaces, is estimated at £925,000 on each 1,000 dwellings built (for 3,000 persons).

But what costs are included in the calculation? The authors of the memorandum counted only public costs on the grounds that private development "pays for itself." (What about churches?) And in estimating these they assumed that there would be no losses as a result of the city's services no longer being fully used. They say that schools in redevelopment areas will have to be rebuilt anyway, and will naturally be designed to fit the reduced population, and that expensive road works and other improvements will no longer be necessary.

Nor is this the whole story. Much of the social capital of the cities is only gradually renewed. If the existing system of open spaces, sewage disposal, etc., has to be supported by fewer people this must result in higher rates per head. If at the same time the rates in new and expanded towns are above the city level—as they bid fair to be—then dispersal will have led to an all-round increase in local taxation. It may still be cheap at the price—but this factor must be evaluated before an objective choice can be made.

Or consider the effect on public transport. Decentralization will reduce the number of journeys, but if the drop is not big enough to justify a significant cut in services, then costs and fares will rise. Of course there will come a point when congestion is reduced so much that running costs fall sharply. But nobody has tried to find out where on the dispersal curve that point lies.

Is it right to exclude private development from the reckoning? It is true that no new town factory or shop will be opened unless it is thought likely to make a profit. But this does not prove that the whole process of decentralization is economic—unless we accept the laissez-faire argument that what's good for the entrepreneur is good for society. If for example employment in city shops is not reduced by at least as much as the increase in employment in new town shops, then the total cost of distribution will go up, and the consumer will pay.

These are just a few of the factors that would have to be included in a complete balance sheet of dispersal. The making of it would be a formidable task. Many of the relevant facts would be hard to come by; it would be difficult to choose realistic assumptions about government policy, economic climate, etc. But something like this must be done if we are to have a firm basis for assessing the true social costs of alternative policies. It is a matter of regret that the research organization of the Ministry of Housing and Local Government is not geared to the task.

D. J. G.

SCHOOL MEALS

Building Programme Doubled

The Ministry of Education has issued a circular to announce the doubling of the building resources available for the "school meals" building programme for 1959-60. Since 1949 building has been concentrated in the main on putting right unhygienic conditions in kitchens and sculleries. The Minister recognises that a start ought now to be made on remedying the worst of the unsatisfactory dining facilities that exist in many schools, where this can be done as separate job without prejudice to comprehensive proposals for bringing the school premises up to standard generally.

Authorities are invited to submit proposals costing more than £2,500 each that they consider urgent and essential, by September 30, if possible, and in any event by the middle of October. If they involve the improvement of dining arrangements, they should also have regard to what was said about the dual use of space in the circular letter of November 13, 1956 (M.525(6)/20). If for some reason it is considered necessary to provide a space to be used solely for dining, the authority should give a full explanation.

This new chair by Magpie Furniture Ltd. had a mild steel rod frame enamelled black or gray, and the seat is of 1¼-in. thick carved Agba with natural polished finish. Price £5 10s.

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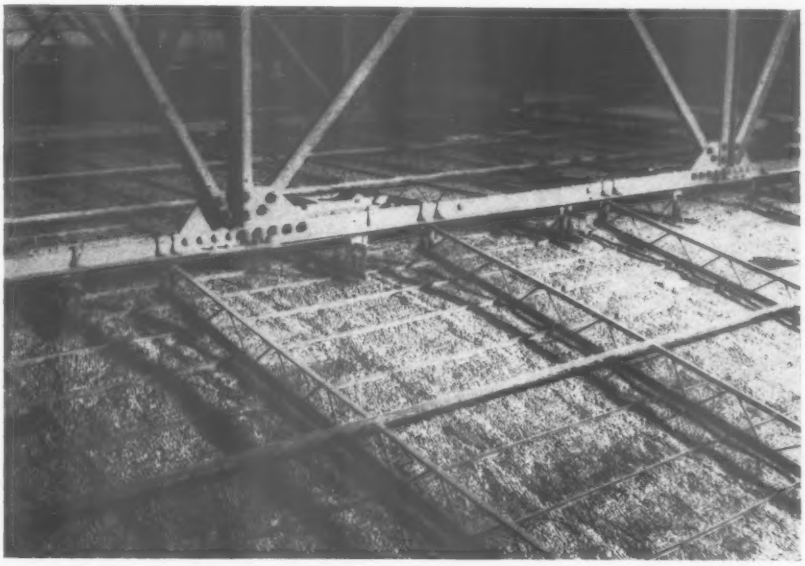
THE INDUSTRY

Brian Grant describes a new ceiling frame, steel office partitioning, roof-space wiring, a new cooker, asbestos cement building sheet and wiring accessories.

Suspended ceilings

A firm of specialists in the installation of metal lath ceilings has recently evolved a special frame to carry over large spans. The photograph shows a recent job at Heath Clark school, Waddon, Surrey, where the roof trusses were spaced at 12-ft. centres. The frames consist of light steel angles joined by shear members of steel rod: the frames are only 6 in. deep and weigh 3 lb. per foot run. They span between the trusses at 4-ft. intervals and cross furrings are clipped to them, after which the metal lath is wired on in the usual way. The saving in steel is claimed to be considerable and the whole construction remains fireproof. *(Steel Bracketing & Lathing Ltd., Thornton Heath, Surrey.)*

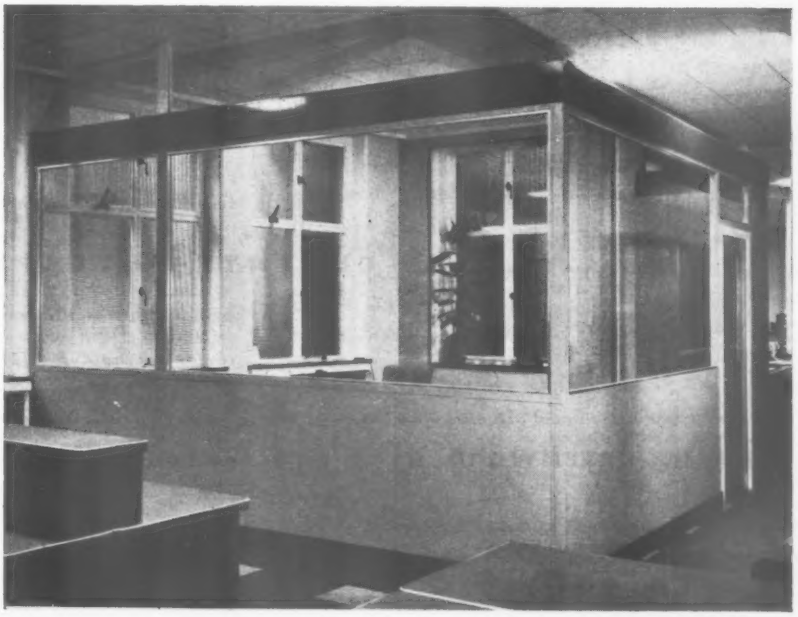


Metal lath ceiling frames in use at a school in Surrey.

Office partitioning

In most types of steel office partitioning the standard panels are 40 to 48 in. wide with an upright at each junction so that the glazing is inevitably in fairly narrow widths. With comparatively small offices holding not more than two or four people this is not a particular disadvantage, but it is apt to produce a rather cramped effect in the much larger office areas which are now so usual. Sankey Sheldon have now produced a system in which the uprights can be omitted from two or three adjoining panels, giving maximum glass widths of 9 ft. 9 in., and in the first installation carried out, which I saw recently, this certainly provides quite an air of spaciousness and also improves the daylighting in areas more remote from windows. Some of this was no doubt due to the light gray painting of the partitions, and this, fortunately, is now becoming quite a common habit with a number of manufacturers, and is a considerable improvement on the very uninteresting olive green which was virtually standard in pre-war years. This new partitioning is otherwise much as usual and can take telephone and electric wiring in separate ducts. So far as cost is concerned the actual steelwork is slightly cheaper than with the narrowed panels, but plate glass is necessary for the glazing so that the total cost works out at slightly more, though the

Sankey-Sheldon office partitioning, showing the wide areas of glazing.



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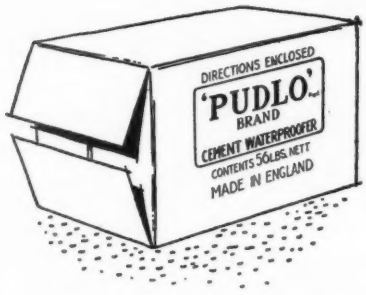

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manufacturers say that the increase should not be more than 10 per cent. Delivery is immediate. *(Sankey-Sheldon Ltd., 46, Cannon Street, London, E.C.4.)*

Wiring in the roof space

Robertson Thain have evolved a wiring system for use with their Q Deck roof. The roof decks are cellular, and can be used, in conjunction with a special range of components and fittings, as a housing for the cables. Access to the hollow deck is obtained from a cross over header duct, which is the only part of the system visible from below and which is connected to the distribution board. The cells in the roof are at 6-in. centres, and every one acts as a large capacity conduit, so that the position of the lighting points is very flexible and schemes can be extended merely by drilling extra holes. The header ducts have hinged covers for access to the wiring and are supplied in 4-ft. units joined by welded butt straps. The ducts are fixed to the decking with self-tapping screws. *(Robertson Thain Ltd., Ellesmere Port, Wirral, Cheshire.)*

New Radiation cooker

The latest addition to Radiation's range of cookers is the 41, which is a low price family job with four boiling rings all having push-in safety taps. The oven has a forward facing vent in the middle of the splash back so that the cooker can be fitted close to the wall. Overall dimensions are 55½ in. high by 22¾ in. wide, with a depth of 23 in. *(Radiation Group Sales Ltd., 7, Stratford Place, London, W.1.)*

Flat asbestos cement building sheet

A new leaflet describes Poilite flat asbestos cement textured sheet, which is suitable for external or internal use. It is produced in seven patterns, small and large diamond, ribbed, fluted, embossed, and also a square mesh and a woven texture. The sheets are all produced in one standard size of 8 by 4 ft., with a thickness of ¼ in., except for the 1½-in. fluted, which is ⅜ in. thick. The natural finish of the sheets is grey, and the surface can be decorated in the usual way. Alternatively, the sheets can be provided with any of the standard range of Turnall colourglaze finishes, which are especially suitable for the bolder patterns. *(Turners Asbestos Cement Co. Ltd., Trafford Park, Manchester 17.)*

Wiring accessories

Crabtree's catalogue No. 1194 contains a number of new products, including quite a series of miniature circuit breakers and earth leakage trips, the latter to BS 842, and especially suitable for installations in the country where there may be some difficulty in obtaining an earth connection with a suitable low resistance. The close-gang range which this firm showed for the first time at the ASEE exhibition is included in a separate publication. *(J. A. Crabtree & Co. Ltd., Lincoln Works, Walsall, Staffs.)*

26 SERVICES AND EQUIPMENT
electric signs, 2

In this second and concluding article,* the author, Gordon Ford, describes the technical factors which bear on the design of "neon" signs and describes the chief varieties of sign now in use in this country.

The true neon sign is a clear sealed glass tube, at either end of which is an electrode, and within this tube is a quantity of neon gas. The electrodes are generally small metal cylinders, and when connected to a high voltage supply an electric discharge passes through the tube from one to the other, causing the column of gas to glow the familiar orange-red colour. This tube has given its name to all so-called "neon signs," which are of the same general construction, although some are filled with gases other than neon, and the internal surface of the glass is often coated with a fluorescent powder.

A blue discharge can be produced by filling the tube with a mixture of neon and argon, with a little mercury vapour. This blue and the orange-red obtained with pure neon are the cheapest colours, as they are produced by straightforward discharge in a clear glass tube. Other tints can be obtained by colouring the glass, but the commonest method of obtaining a wider range of colours is to coat the internal surface of the tube with fluorescent powders. Such fluorescent tubes are filled with neon gas and mercury vapour, sometimes with other gases to give an improved performance, and the resulting colour depends on the composition of the powder and the rate at which the tube is run.

Examples of colour produced in this way are deep blue, ice blue, amber and cerise, while other colours still, such as jasmine, yellow and gold, are obtained by using a fluorescent powder in conjunction with a coloured glass. It should be noted that all fluorescent tubes, unless enclosed within a coloured glass, will look white when the current has been switched off.

The electric circuit

The electric circuit used with the neon sign is shown in figure 1. The components are—the lock switchfuse which can be turned off and the handle removed to protect anyone working on the sign, the condenser (whose function is difficult to explain simply), a time switch to provide for automatic switching of the sign, a fireman's switch which must be outside the building to enable the sign to be turned off in an emergency, and the transformer, which converts the 240 volt mains supply to the higher voltage required for operation of the sign.

Letters are normally connected together in series, as

* The first article was published in last week's AJ.

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technical section

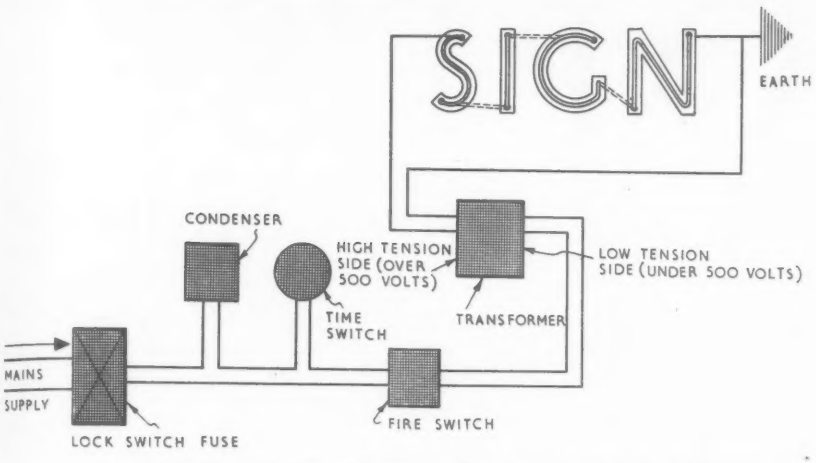
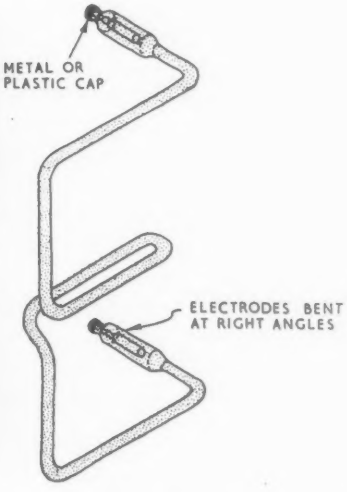


Fig. 1 (left). Circuit diagram of typical neon sign. Fig. 2 (below left). Script neon sign. Fig. 3 (below). Diagram showing arrangement of tubing to form a letter E.



shown in figure 1, although in a very lengthy sign the letters would be split into groups, each group with its own transformer.

The rating of the transformer will vary with the length and diameter of the tubes and the current required. A common rating is 10,000 volts, which will supply about 30 feet of 15 mm. diameter red tubing taking a current of 30 milliamps (one thousand milliamps equal one ampere). The transformer should be placed as close as possible to the sign, and manufacturers usually insist that it is not more than six feet away, so that the total run of high voltage cable is not more than twenty feet. The transformer must also be easily accessible for maintenance: it does not normally take up much space, one cubic foot being ample, but will probably require good ventilation.

Technical factors in design

The length of each tube should be as great as possible, since the life is largely determined by the time taken for the gas to become saturated with metal particles thrown off the electrodes. When this occurs the walls of the tube near the electrodes become discoloured by metallic deposits, the glass becomes brittle and an air leak or fracture occurs, preceded sometimes by a discoloration of the gas.

In practice, no tube should be less than 12 in. in length —a 24-in. tube will last half as long again. This factor—the need to use tubes of the maximum possible length—together with the necessity to provide accommodation for the electrodes, form the two principal limitations of neon lettering. The first of them has favoured script lettering, which is the ideal form for neon (figure 2). Separate capital letters are formed by a single tube, as shown in figure 3, in which the shape is achieved by doubling the tube back on itself. This "doubling back" is normally concealed within the depth of a built-up letter. Where two or more such letters are required they are often joined by means of a capillary tube of smaller diameter, which is concealed behind a false back between the lettering and the wall. An alternative, which architects do not usually like, is to run what is called an "underline" beneath the letters, and to conceal joints and electrodes behind that.

Electrodes: Some manufacturers house the electrodes in porcelain pots about 4½ in. long which are fixed at right angles to the plane of the lettering. The electrode is connected to a metal cap at the end of the tube and this cap makes contact with a spring in the base of the pot.

Other firms make use of cylindrical glass pots with outlets into small tubes through which the connecting

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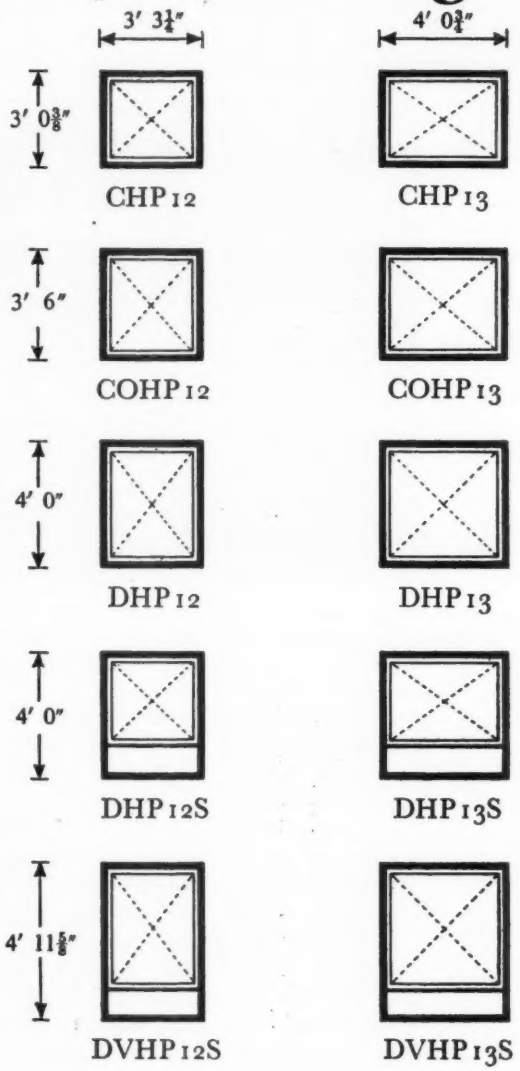

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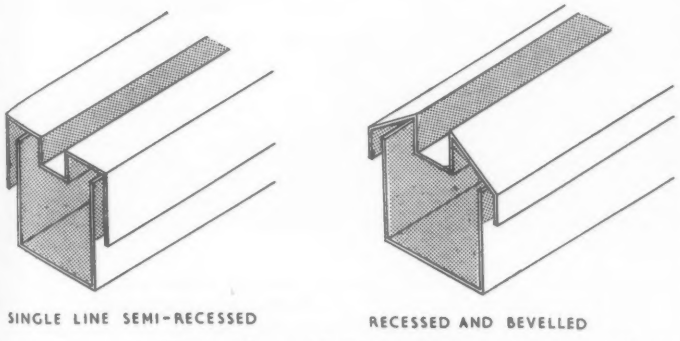
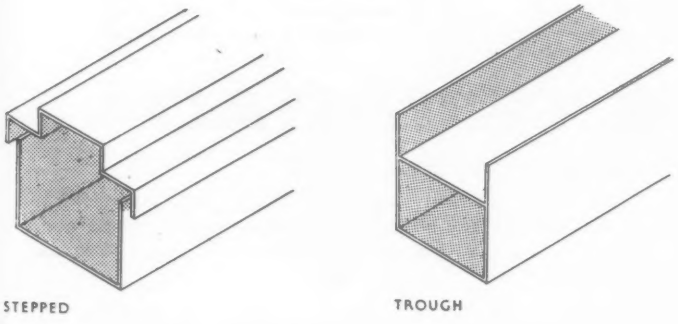
technical section

Fig. 4. Double outline tubing superimposed on built-up letters.

or series wire is joined to the electrodes. Both types of housing are intended to prevent current leaking to earth. If more than a small amount of water enters either type a breakdown usually occurs. For this reason some firms dispense with electrode housings altogether, and there are advantages and disadvantages with all methods.



Figs. 5, 6, 7 and 8. Sections through typical built-up letters showing the different kinds of recess for the tube.



Bell glasses used to be employed to shield the connections between the heavily insulated high tension cable leading from the transformer and the lighter cable used for connection to the tubes, but these are now being superseded by porcelain cable ends used with porcelain caps. All these parts are made of glass or porcelain and need not be earthed, but the cable must be prepared with great care, otherwise breakages will occur.

Glass for tubing: Three kinds of glass are used for neon tubing. The cheapest and commonest kind is *soda glass*, and is the base of all the coloured glasses. The next is *lead glass* which is heavier, and about three times as expensive, but will last longer. It cannot easily be obtained in colours but is particularly useful for blue lettering, as it has a high transmission for blue light. The third type of glass which can be used is *boro-silicate glass*, which is marketed under the trade names Pyrex and Phoenix. This glass has the great advantage that when the gas in the tube has become saturated it can be re-pumped and re-used several times. Further, where this kind of glass has been used, trouble due to radio interference is reduced.

Types of sign

Signs form two main classes: those in which the light source is clearly visible and itself forms the letter at night, and those in which the light source is concealed and produces a letter visible at night either by throwing a halo round a black silhouette, or by shining through a translucent screen.

Signs with visible light sources: The simplest sign of this kind is the pure script, shown in figure 2. This gives the characteristic "halo" effect as the tube, being proud of the surface, casts a great deal of light around it. It is not essential to fix a built-up letter behind the tube (as in figure 4) since this form is best with a dark background and a white tube and will usually show up sufficiently against this background during the day. A light background, it should be noticed, gives an effect of glare which makes the sign difficult to read at night. In any case, neon signs are so cheap to run that many shopkeepers leave their signs on continually, and the question of visibility when the sign is switched off does not arise.

Figure 4 illustrates the difficulty of making a sign of this type look equally well by day as by night, since by day the tube is bound to appear as something added to the lettering, and therefore partly obscuring it. For this reason the variations which we shall now consider have been developed.

They are shown in figures 5, 6, 7 and 8, and in all of them the tube is sunk below, or partly below, the face of the letter. The effect of this is twofold: by night it tends to confine the lighted area, giving a relatively sharp outline instead of a halo, and by day it gives greater prominence to the letter as distinct from the tube. The first type shown in figure 5 is the semi-recessed letter. The example shown is called "single line" as there is only one tube. Part of the tube still

This is a bit steep

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technical section

Fig. 9. Example of a recessed and bevelled letter.

stands proud of the surface which is consequently illuminated by night.

Figure 6 shows a variant known as the " recessed and bevelled " letter. The letter face is splayed, so that the upward facing portions catch the daylight. The surface of letters of this type is commonly of stainless steel, or chromium plate. The visual effect of this letter may be seen in figure 9. The next variant is the " stepped letter," figure 7, in which the tubes form an edging to the letter.

The open trough, shown in figure 8, is an important variant of the fully recessed letter, often used for very large letters mounted at a considerable height. The trough will normally contain three or four lines of tubes, which themselves form the daytime letter. The only function of the trough is to give a sharp cut-off at night.

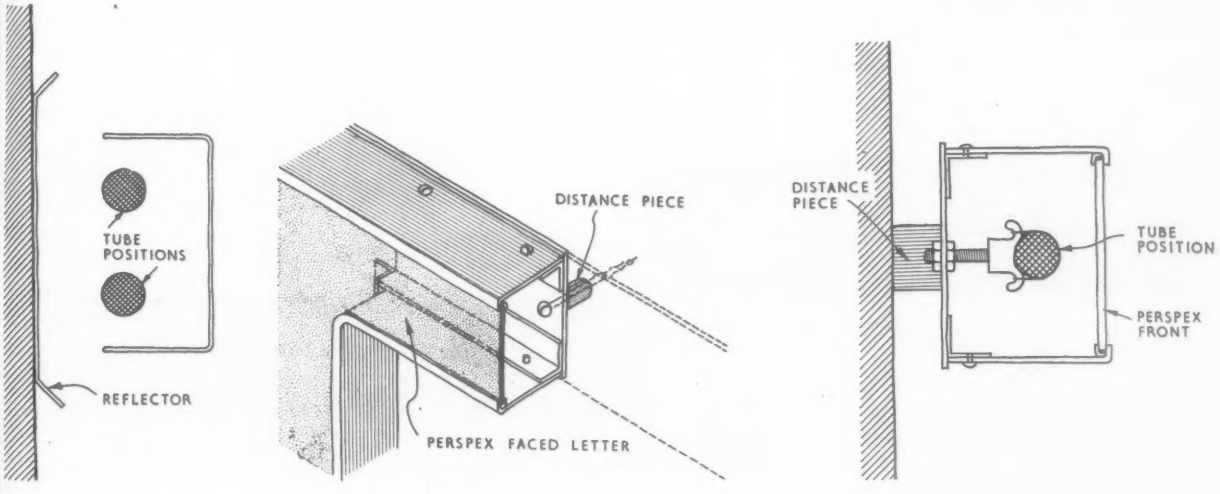
Signs with concealed light sources: The main type of sign with a concealed source not employing plastic consists of an inverted trough with the light source mounted behind it, figure 10. The whole assembly is mounted at some distance from the fascia which must be light in colour. By night the fascia is brightly lit, and the letters in front appear in silhouette.

Most other types of concealed source sign employ translucent plastic panels, normally of Perspex. This is not the first plastic which has been used for sign work, but is the first to become generally popular. Its growing use has started a new phase in outdoor lighting, since although the ordinary " neon sign " is brighter and more efficient than any concealed source sign of the same power, it can never produce a sign which looks equally well by day and by night, except perhaps in the very largest sizes. Another serious shortcoming of the exposed tube is that it cannot be used to produce subtle effects.

Concealed source signs employing plastic do not suffer from these disadvantages and are easier to clean and protect from the weather. Protection is, of course, most effective when the whole sign is contained within the fabric of the building and can be serviced from inside, but when enclosed signs are fixed to the outside of the building it is still most important that access to the light source should be easy. In the early days of plastic signs it was common practice first to fix the tubes inside the letters and then to fix the letter in position: as a result, access to the source could be obtained only by first taking down the letter. It is now accepted that the bracket holding the source shall be fixed first and that the enclosing letter should be fixed over it.

Signs employing plastic: The simplest form of plastic letter is an inverted trough in which the sides of the trough which follow the outline of the letter are made of enamelled lead-coated sheet steel and in which the bottom of the trough, which is also the letter face, is formed of Perspex, held in place by a bead. Figures 11 and 12 show, respectively, the method of fixing the letter and the tube, while figure 13 is a photograph of a sign of this type.

Fig. 10 (left). Section through inverted trough silhouette letter. Fig. 11 (centre). Diagram of built-up letter with Perspex face. Fig. 12 (right). Section through letter illustrated in Fig. 11 showing position of tube.



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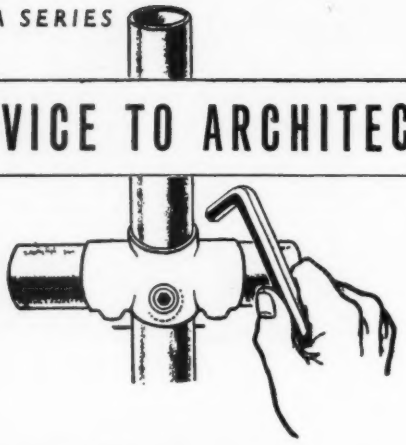

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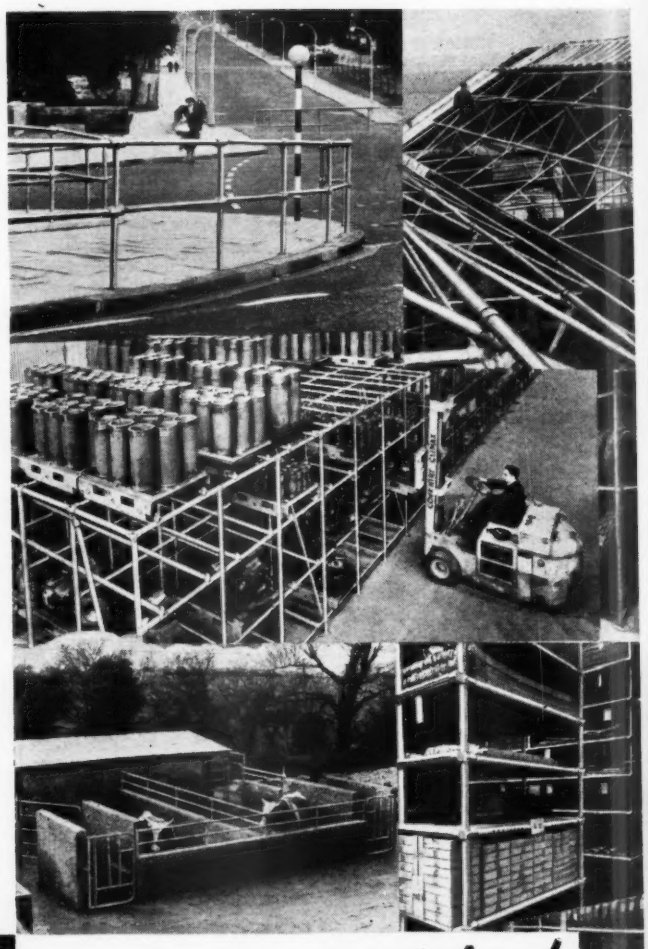

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technical section

Fig. 13. Night view of built-up letter with Perspex face.

Fig. 14. All-Perspex letter.

The next type is of the same form, but is made entirely of Perspex. Figure 14 shows one sign of this kind, in which both the sides and front are translucent, with an opaque edging round the joint. There are many other possible variants, of which the most important has a translucent front and opaque sides. This can look extremely neat and clean, since the edges are butt jointed and no fixing beads need be used (figure 15).

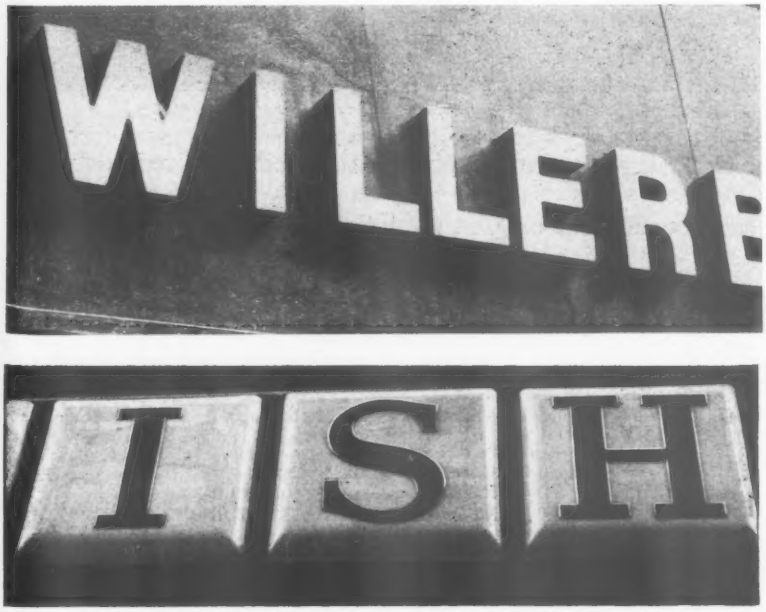
In the third type of sign the letter is contained within a rectangular box, the sides of which are made of enamelled lead-coated sheet steel. The face of the box is made of a coloured Perspex from which the profile of the letter has been cut out, and over the cutout has been welded a raised translucent Perspex letter of the same profile (figure 16). Each letter can be placed on a separate panel, or the one box can contain the whole sign, depending on circumstances.

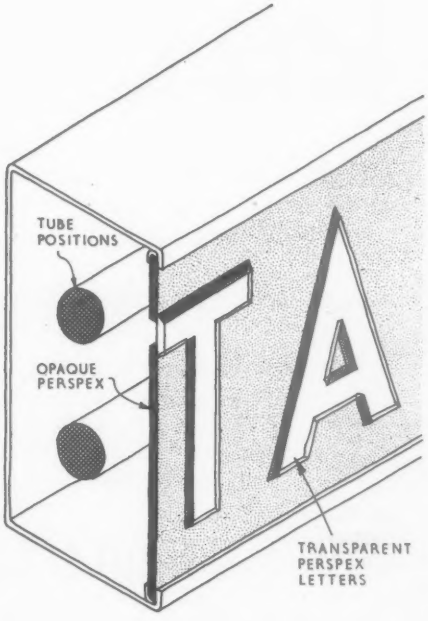
A variant of this method is to transpose the opaque and translucent Perspex, so that the letter is silhouetted against a light background. Figure 17 shows an example of a sign of this kind, which is probably more common than the type with the bright letter against a dark surround.

The above are the chief types of concealed source sign, but the variations are limitless. This type of sign has already outstripped the traditional neon sign in popularity, and some planning authorities now insist that all signs shall be of this kind, whether they are wise to attempt to force development in this way is open to doubt.

Fig. 15 (below left). All-Perspex letter which exploits to the full the neat joint which can be made in this material.
Fig. 16 (below right). Box type sign with Perspex face.

Fig. 17 (bottom left). Perspex box type letter with dark lettering on a light ground.





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CRITICISM

by J. M. Richards

BELGRADE THEATRE, COVENTRY
designed by A. G. LING (city architect)
group architect, KENNETH G. KING

I shan't try to describe this, on the whole, very successful building because it is fully illustrated on other pages (201-214) of this issue. I shall content myself with making some comments on such aspects of the design as seem to invite discussion. The building is important not only as one of the very few new theatres built in England since the war, but as Coventry's first civic building (as distinct from the commercial buildings that provide the architectural elements in Coventry's civic planning). But it does not visibly play the significant part in the build-up of the central area that this description might suggest, being partly concealed behind a four-storey block of shops and flats along the Corporation Street frontage of its site, from which street the theatre is entered.

In due course, however, it will have a more spacious and prominent setting because a new square is being created alongside it, on a site now still largely occupied by obsolete buildings, and one side of the square will be formed by the foyers of the theatre. Temporarily they face on to a narrow paved terrace and a lawn, but already something can be seen of the lively effect that will be produced when the colour and movement inside the two-level foyer can be seen through the long glass facade, especially when the foyers are lit up at night—see photograph on page 203.

In this sense the design resembles that of the Royal Festival Hall, where the restaurants similarly form a transparent rectilinear frame across the front of the building, with the solid shape of the auditorium descernible through it and rising above it. At Coventry, however, the auxiliary space does not flow beneath the auditorium, which is at ground level—or, rather, the *stage* is approximately at ground level. The slope of the auditorium floor brings it up to the level of the lower foyer, which is reached by a broad flight of steps from the entrance vestibule. The back of the balcony rises over the ceiling of the upper foyer (see section on page 209, from which it is reached by staircases at either end. The upper foyer, which contains the bar, as well as a restaurant at one end overlooking the street, serves as a promenade for the whole audience, those in the balcony descending one flight of stairs and those in the stalls (who can also, of course promenade in the lower foyer) ascending one flight.

Having the stage at ground level has the advantage of simplifying the escape routes and staircases. These, which usually confuse the planning of any public auditorium, seem to have been very straightforwardly and satisfactorily handled. The placing of the auditorium parallel to the street frontage of the site, besides allowing direct access into it from the foyers along the future square, has the advantage that the shops and flats along Corporation Street act as a buffer and prevent traffic-noises reaching the auditorium. The flats themselves are therefore somewhat noisy, and there would perhaps have been advantages in using the space for offices instead, which are not so vulnerable to evening and early morning traffic. On the other hand to have a number of flats assigned, as these are, for the use of members of the company playing in the theatre solves several of the problems that normally complicate the lives of repertory actors.

The planning is in every way straightforward and workmanlike and the spatial effects are good, though to my mind some of the public spaces are very slightly too small in scale when filled with people. There are just a few criticisms of the planning that I would tentatively put forward. One is that the location of the entrances to the actual auditorium are not clearly enough evident to someone unfamiliar with the building—instead of the plan leading him there instinctively he has to seek them out. But perhaps this is too much to expect of any plan in which the entrance axis is (in this case for good reasons) at right-angles to the auditorium axis.

Another point of criticism is that the double-height foyers, where the spaces and staircases have on the whole been very well handled, are sub-divided longitudinally by a row of circular columns supporting the back wall of the auditorium (the back wall of the foyers being a separate, subsidiary frame), but these columns (see page 205) divide the foyers too nearly into half, a rather unhappy proportion. The outer wall continues above the ceiling of the upper foyer, providing a space between it and the back wall of the auditorium balcony, which is used for storage. It is important to have plenty of storage space in a theatre, but this is inconveniently placed in relation to the back-stage area—it can only be reached by means of the public foyers and staircases. Another, lesser, point about it is that the construction of the side of the building containing the foyers is well expressed externally, especially in the evening when the lights are on, but the effect is partly lost if the slit windows lighting this storage space are not illuminated too (see night view on page 203), as they seldom are at this time.

Another somewhat illogical piece of planning is that the theatre offices on the first floor are reached only by passing through the restaurant, though this is not important in practice as there is not much traffic to and from the offices and least of all when the restaurant is in use.

The detailing, furnishing and decorative character generally of the entrance, foyers and restaurant are of a very good standard, one particularly successful detail is the ceiling treatment of the entrance vestibule (page 205), which has corrugated plastic panels illuminated from above, making a very effective link between the comparatively low entrance set back beneath the street frontage of the building and the double-height foyers. Others are the colour-scheme in the restaurant portion—fairly dark compared with

Interior of the auditorium.

the lighter tones in the foyers—and the suspended light-fittings in the foyer stair-wells, designed by Bernard Schottlander.

I wish I could write as favourably of the mosaic mural decoration in the foyers, because they were specially commissioned and paid for by the Arts Council and their policy in sponsoring the employment of artists in building projects like this is one that should be encouraged. But the result is disappointing. They are the work of Martin Froy, and apart from being insipid in colour and rather characterless in design, they look more like a painter's design carried out in the medium of mosaic than a design conceived for execution in this medium.

The inside of the auditorium shows the same thoughtful detailing and sympathetic use of materials as the foyers and restaurant. There are boxes at two levels, and although the provision of boxes takes up a lot of space (not only the area they themselves occupy but also the complicated series of passages and staircases needed to give access to them), this theatre shows how useful they are in tying the whole interior together and avoiding the isolation of the proscenium opening from the wall treatment of the auditorium generally. The way the front edge of the stage flows round and continues beneath the boxes is particularly successful. On the other hand the boxes themselves, projecting at a sharp angle, catch the eye rather uncomfortably. It is odd that both here and in the Royal Festival Hall this was a problem the architects seem to have had special difficulty in handling.

Along the back of the auditorium, beneath the balcony (which space, incidentally, is not very deep and has an upward sloping soffit, avoiding the cavernous effect sometimes created in this part of a theatre) is another row of boxes, with those in the centre replaced by the lighting and sound control room. This is an excellent position for it, far better than in most theatres since it enables the electrician and sound operator to follow what is happening on the stage by eye instead of being dependent on indirect cues. It does not seem to worry the audience that they and their instrument panels, dimly illuminated behind glass panels, are visible throughout the performance behind the back row of seats.

I have not the space here (nor the technical qualifications) to discuss the stage and back-stage equipment, but I believe it to be well planned and organized. Having attended a performance I can say that the acoustics are excellent, at least for speech. They were worked out in consultation with the Building Research Station, and the architects have made good decorative use of the various materials and shapes determined on for acoustics reasons, especially the undulating timber reflector which forms a sort of floating ceiling above the front part of the auditorium. This is agreeable in contour and pattern without attracting the eye too much.

I will finish by drawing attention to one small point of design elsewhere in the building which I have not seen dealt with in this way before, and so is worth comment. There is a projecting canopy over the side doors to the entrance vestibule (where people arriving by car will draw up when the completion of the square allows a service road to be laid down in it), and the flat roof of the canopy is, of course, visible looking down from the staircase and upper foyer. Such horizontal surfaces are often unsightly and too few architects take into account the views down on to the flat roofs of lower parts of their buildings from the upper windows. Here, however, the architects have taken the trouble to give the granite-chip surface an interesting pattern by subdividing it into diagonal compartments by means of aluminium window-sections and filling these alternately with black and white chippings—the pattern is just visible in the photograph on the opposite page. The boring effect of large flat areas obviously not meant to be looked at is avoided.

building illustrated

Theatre in Corporation Street, Coventry

THEATRE

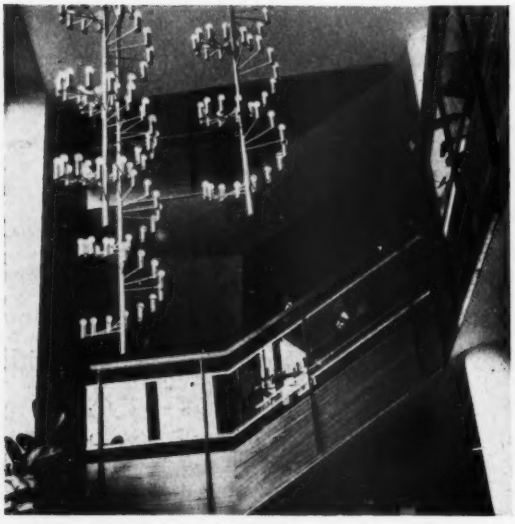
in CORPORATION STREET, COVENTRY; designed by ARTHUR LING (city architect); principal architect DOUGLAS BEATON; group architect KENNETH KING; assistant architects H. W. PEARSON, K. EDGAR, M. McCLELLAN, G. BRYSON; assistants J. FARN, D. MASON; quantity surveyors BELLAMY and WAREHAM

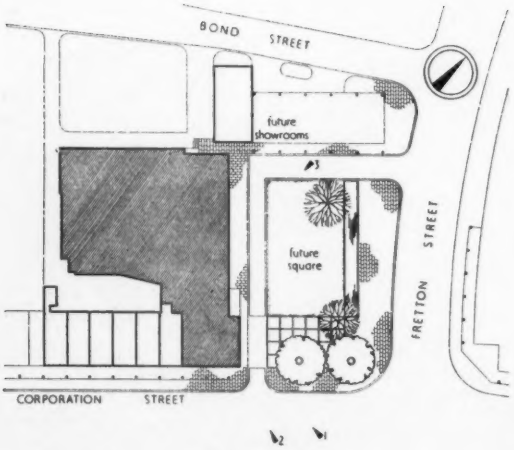
The City of Coventry, the only one in these islands to have seized and made good use of the opportunity presented by its fearful destruction in the war, has built a new theatre, the Belgrade. Undeterred by the sad stories of theatres closing and being demolished all over the country, it has persevered with this ambitious scheme, and has made a positive statement of confidence in the future.

Viewpoint 1: the theatre from Corporation Street, with the block of flats and shops on the left.

building illustrated

First one must praise the adventurous spirit of the Coventry City Council and its advisers in carrying this scheme through. But the vision has its limitations. It could have been a little more daring in many respects, first in the formulation of the programme. People in the theatre are like most other clients: they want what they have seen already, what is familiar to them, done a little bit better and if possible a little cheaper and quicker. In the case of the theatre they want the conventional picture-frame stage with perhaps a little more forestage than before as a concession to modern ideas of actor-audience relationship. Any fundamental rethinking of the playhouse and the method of presenting plays is out of the question. Any mention of the space stage or the arena stage is dismissed as cranky. People in the theatre are dedicated to it with a prodigious zeal and if the suggestion for a new approach comes from an architect, a mere layman, their crushing scorn at such presumption is marvellous to see. Again, this theatre could have been formally and structurally daring. That it is not so may easily be explained by economic excuses, but this is not the complete answer, for what of Utzon's Sydney Opera House, which was not only a brilliant design but probably cheaper than many of the other entries in the competition? These points must not be laboured, but we still await the unusual and unlikely combination of a theatrical producer client with vision, an architect with vision and a backer with vision. These limitations leave us with what is basically a Victorian or Edwardian theatre and the Belgrade is in the best traditions of these ancestors. The foyers and auditorium have been decorated with today's equivalent of the glitter and splendour of the turn of the century—mosaics, marbles and mirrors, polished woods, exotic fabrics and gilded plaster work are all there (photographs below). The busts and plaster putti have their counterpart in the tastefully deployed work of local sculptors. Little is missing from the picture, not even the tropical plants and curiously wrought chandeliers. Different species of plant are popular now, the vocabulary of shapes has changed, but the spirit has not.





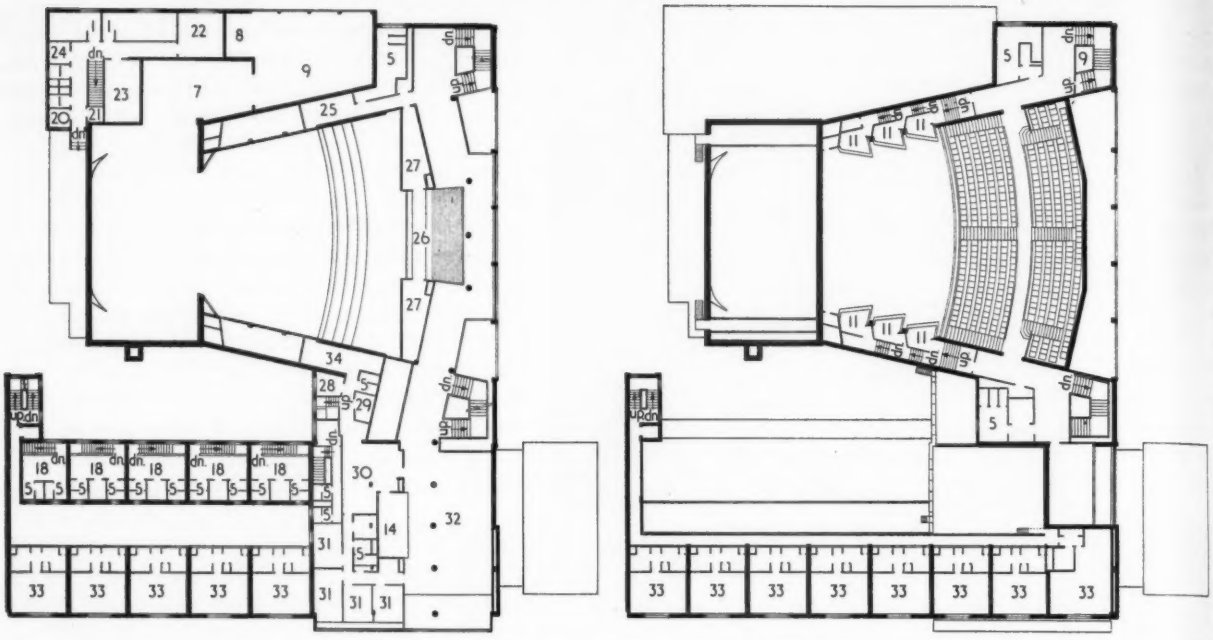
Site plan with photographic viewpoints

The site is in a busy part of the town near the shopping centre, cinemas and another theatre. The scheme includes six shops under an arcade with 21 single-room flats above them along Corporation Street. The rents from the shops and flats will help to make the theatre economically more stable. It is intended that some of the flats should be furnished and let to actors and actresses to save them from the usual nuisance of finding temporary digs. The theatre, which seats an audience of 910, is situated behind this block of shops and flats, with its glazed foyers overlooking what is at present a small grassed area. This is to become in the complete scheme a new square, laid out with paving, grass, trees and a pool. It will also provide a way in for taxis and cars whose passengers will alight under the porte cochere. The buildings at present on this part of the site are due for demolition before long and the scheme will be much improved by the completion of the square. The sense of occasion which is an essential part of the magic of a visit to the theatre will begin at the first approach to the building.

building illustrated

Shown on this page are the two main facades, above to the busy Corporation Street (viewpoint 2), and below to what will eventually be the new Theatre Square (viewpoint 3). The shops and flats overlooking the street are of course very different in function from the theatre foyers and it is not an easy problem to integrate these separate elements in one scheme though the structure, a steel frame, is similar. The treatment chosen, however, is very different. On the foyer side the frame is expressed and faced with a skin of Portland stone. This seems a perfectly straightforward and satisfactory procedure. But when it reaches the end wall of the flats this becomes a frame round a panel of brickwork which is pierced by holes, each with its own little frame. In the bottom right-hand corner another frame containing windows to offices and the coffee room, and a decorative panel, projects, leaving a little bit of brickwork all round it. It seems a pity that this rather hackneyed treatment of frame round panel has been superimposed upon this elevation. It suggests that the stone facing at the ends continues over the top and down the other side when we all know that the roof is really covered with asphalt. In any case the coping gives the game away. Again, what advantage is gained by projecting windows out of the main facade in this way, except to gain a little extra floor space? The currently unpopular bay window at least gave interesting sidelong views along the surface of the building. The other facade is much more effective with its more clearly expressed structure. The centre bays are glazed except for the spandril panels of brickwork faced with glass mosaic. The end bays are faced with roach stone which has loose fossils in it, an effect not unlike concrete though probably with better weathering properties. The large area of glazing is most effective at night when the foyers are illuminated and thronged with people. The walls of the auditorium project cleanly above the foyers in a simple polygonal shape. The finish is spar dash and it wears the Coventry arms like a cap badge in the front. This and the concrete panel over the entrance, which is based on a 17th century engraving of the old City of Belgrade, were designed by J. C. Brown of the City Architect's Department.

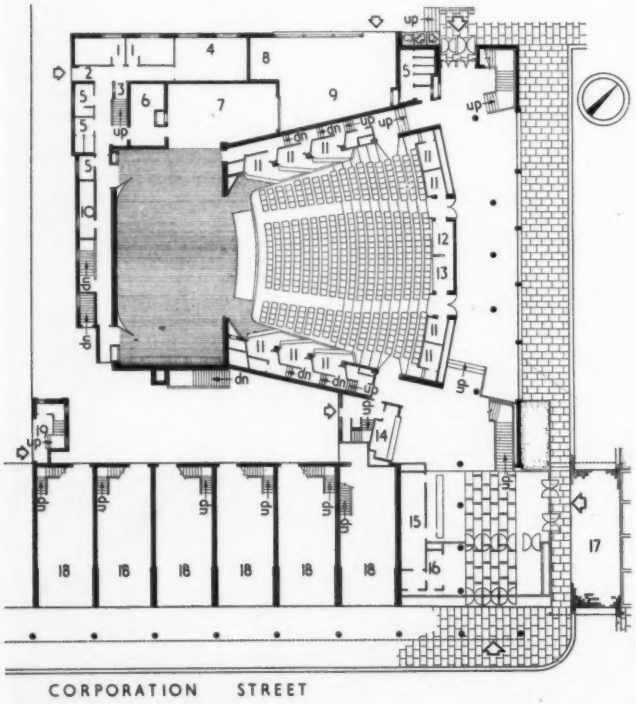
building illustrated



First and second floor plans

KEY:

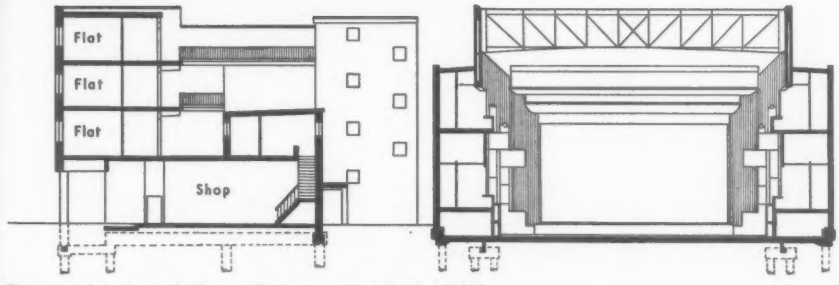
1 Dressing room
2 Stage door
3 Doorman
4 Dimmer room
5 Lavatories
6 Properties
7 Paint room
8 Flat store
9 Workshop
10 Electrician
11 Boxes
12 Producer/stage director
13 Lighting control
14 Coffee bar
15 Cloaks
16 Box office
17 Porte cochere
18 Shops
19 Flats' entrance
20 Bathroom
21 Telephone
22 Wardrobe repairs
23 Chorus room
24 Stage manager
25 Staff wardrobe
26 Bar
27 Bar stores
28 Larder
29 Deep freeze
30 Kitchen
31 Offices
32 Coffee room
33 Single flats
34 Batterias and switches



Ground floor plan [Scale: $\frac{1}{32}$" = 1' 0"]

The siting of the theatre is very successful, but it has been done at the expense of the back-stage areas. The workshop and paint room are wrapped round the side of the auditorium for the sake of compactness, but this limits the use of the area. The demands of the back-stage area are practically boundless and it is essential that the space available should be as flexible as possible. Would it not have been better to have arranged it so that the workshop and paint rooms were continuous and in a straight line from the stage itself so that a whole set could be built on a truck and wheeled straight on to the stage? The stage itself is equipped with a fly system (25 sets of single purchase lines) which is still the most effective of all the various kinds of stage machinery. It is good to see that money was not wasted on permanent revolves or other expensive contraptions with very limited use. Another useful item of stage equipment is the cyclorama and here there is a permanent plaster type. There are six removable traps in the stage, but unfortunately not all the understage area has been excavated and only part of it is accessible. There is an orchestra pit reached from below and this can be covered if it is desired to make a forestage. The stage lighting, consisting of spot bars, floods and magazines on stage and FOH spots and perches, is controlled from a soundproof room at the back of the stalls where the stage director and electrician have a full view of the stage and operate the dual lighting boards, panatrope and tape deck. The dimmers themselves are housed in a room back stage. The control room and all the dressing rooms have loudspeakers which relay the sound picked up from microphones round the stage. This keeps everyone in touch with the progress of the play and eliminates the call-boy. There is also an internal telephone link between control room and back-stage. There are dressing rooms for a cast of about 34 and these are small but adequate. Bathroom and lavatories, a green room, a wardrobe for current productions, a stage manager's office, a prop room and an electricians' workshop complete the back-stage accommodation. The boiler room is below the south-east end of the stage and the plenum ventilating system is housed beside it.

From Corporation Street the entrance is through toughened plate double doors (three sets) into a lobby where the box office is situated. From there another parallel set of similar doors leads to cloakrooms and foyers. Practically all this corner is glazed and this gives attractive views through to the foyers beyond. However, all this glass can make it rather difficult to find where to go in, and even dangerous for those with poor eyesight. The precaution has been taken of applying the theatre symbol to the glass at about eye level. The corrugated white plastic ceiling over the entrance foyer (above) glows pleasantly with an overall low intensity. It is effective both by night and day. The round columns are covered in vitreous ceramic mosaic and the floor is in ceramic tiles. The box office wall is faced in polished white marble and the ticket window (below) incorporates an illuminated seating diagram. At present some posters are stuck rather untidily on the glass wall of the entrance. More free-standing boards are to be provided inside for these. Advertising is an indispensable feature of the working of a theatre and it would have been better to have made more convincing provision for it.



Cross section through flats and stage [Scale: $\frac{1}{16}$" = 1' 0"]

analysis

CLIENT'S REQUIREMENTS

A theatre to seat approximately 900 mainly for a resident company presenting fortnightly repertory, a limited number of touring shows, and occasional amateur performances. Twenty-one single person flats to Housing Manual standards for letting to members of the company. Six shops maximum 40 ft. deep by 15 ft. frontage, for letting to local traders.

PLANNING

The shops and flats fronting Corporation Street, were planned to provide a lucrative investment, the revenue from which helps to some extent to offset the financial loss anticipated from the theatre.

Within the theatre the auditorium was planned to create an atmosphere of intimacy and comfort. The proportions were kept wide and shallow so that the distance from stage to rear seats is the minimum. The boxes have been used to help create a visual link between actors and audience. The stalls are particularly shallow so that they are overhung to the minimum by the balcony soffit to improve hearing conditions in this normally bad position. Entrance to the circle was kept at crossgangway level to save patrons unnecessary climbing of stairs.

In the foyers and bars the intention was to create the feeling of maximum space both in plan and section for which reason openings were left between floors.

Backstage the dressing rooms were kept as near as possible to the prompt side of the stage to save unnecessary walking to and fro. The paint room was planned between the stage and workshop, to act as a sound buffer when the stage was being used for rehearsals.

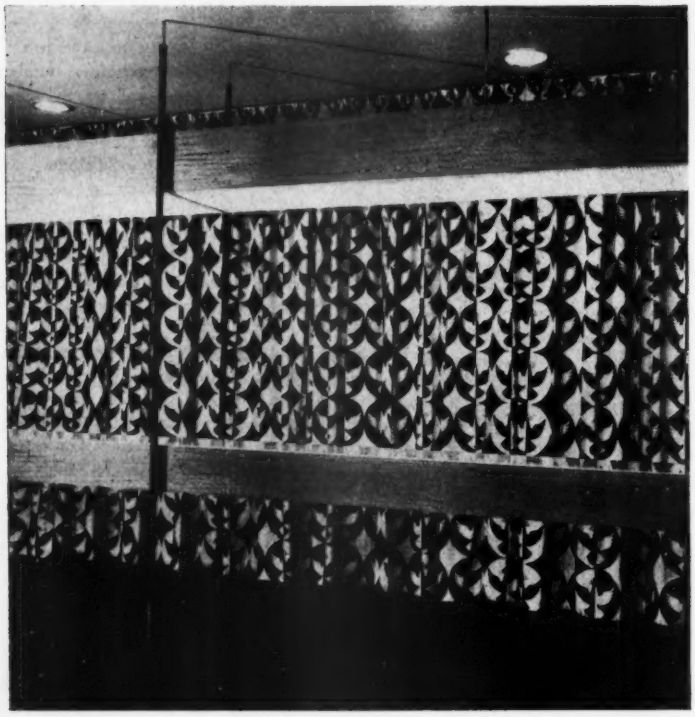
SITE

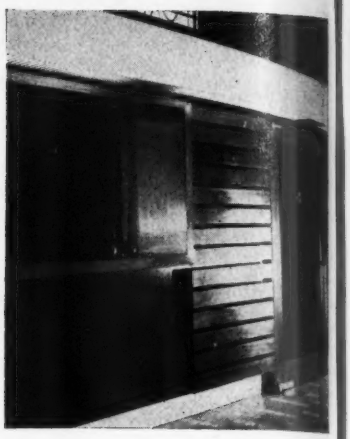
Corporation Street, Coventry, at the junction with Fretton Street, where a square will eventually be formed, overlooked by the theatre. There are entrances on to Corporation Street, the car park at the rear and the square, with a *porte cochere* over the latter entrance. A large professional theatre and a cinema are already concentrated in this section of the central area and another cinema is planned.

SUMMARY

Ground floor area (theatre only): 15,650 sq. ft.
Total floor area (theatre only): 30,273 sq. ft.
Type of contract: RIBA (as amended for City of Coventry), with quantities.
Total tender price for 21 flats, 6 shops and theatre: £233,068 12s. 8d.
Proportion of tender price attributable to theatre: £192,601 13s. 11d.
Tender date: April 25, 1955.
Work began: July 15, 1956.
Work finished: March 27, 1958.
Note: The cost of the car park at rear, pavings and access road at side were not included in the contract.

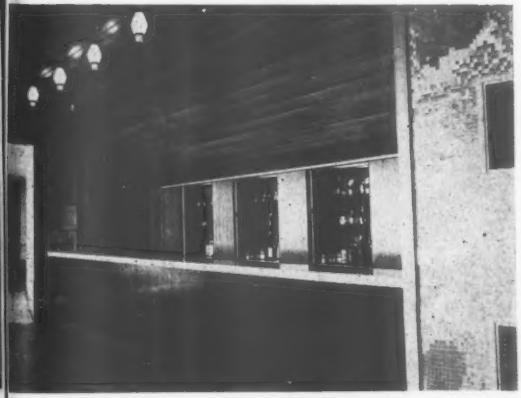
building illustrated





From the box office one passes through the glass doors to the inner lobby. On the left is the cloakroom counter (left), effectively and crisply designed. A marble counter top and a lighting trough with perforated metal soffit above both with polished wood sides, are both supported on slender bright-drawn steel supports. Behind the curtain are the racks for coats, as usual a bit cramped. From the inner lobby the wide main staircase leads to the balcony foyer. The wedge-shaped space between the entrance lobby and the foyers forms the well for the main staircase and also contains a pleasantly detailed coffee bar (above right) on the ground floor. Above this is a large mirror which helps to give the feeling of space. In

the stairwell hang helical chandeliers designed by Bernard Schottlander; the staircase treads are carpeted and the balustrade is in ⅜-in. plate glass in silver bronze channels supported on bright-drawn steel balusters and with a handrail in polished mahogany. The staircase has been carefully worked out so that soffits and handrails are continuous. This area is very successfully treated and gives the appropriate feeling of luxury. The detailing is similar to that of the Festival Hall. There is another staircase at the other end of the foyer similarly detailed (above). Incidentally, the architects have been very lucky to have had the fire regulations regarding means of escape so leniently interpreted. The conditions would have been much stricter in the LCC area. The back wall of the auditorium is decorated with a large mosaic mural by Martin Froy (opposite). The design, which is alleged to be based on the four seasons, is indeterminate. The situation calls for something more definite (not necessarily figurative) and more clearly conceived in terms of the mosaic in which it is executed. It is used rather like a wallpaper but it is difficult to see how the large area covered, broken up as it is by bars, doors, ventilators, etc., could have been given a satisfactory unity and coherence. The other side of the foyer is all glazed, overlooking the future square. This large area of glass and the openings in the first floor through which glimpses of people at different levels can be caught, successfully give a feeling of spaciousness. The floor is close carpeted except round the bar (below) which has woodblocks. There is no doubt that these exciting foyers tempt a large proportion of the audience out into them in the intervals of the performance. They help to make theatre-going a social activity which is one of its great advantages over the more anti-social cinema and the completely anti-social television set.



analysis

	cost per sq. ft.	s	d
Preliminaries and insurances		14	3½
Contingencies			8

Work below ground floor level 10 9

In-situ concrete piles average 20 ft. long through made-up ground on to sandstone strata. *In-situ* r.c. ground beams and pile caps forming stanchion bases. *In-situ* r.c. ground slabs suspended between ground beams. Auditorium and workshop slabs independent " floating " on hardcore filling. Stage basement and heating chamber *in-situ* vibrated r.c. with integral waterproofer. P.v.c. water bar at working joints.

STRUCTURAL ELEMENTS

Frame and external walls 23 5

With the exception of the dressing rooms and the outer box corridor walls which are load bearing the building is steel framed throughout, design conforming to British Standard 449 and codes of practice.

External walls are of double 4½-in. brick skins and various cavity widths:

(*a*) Dressing rooms: 2½-in. sand-faced facings externally.

(*b*) Fly tower: 2⅝-in. sand-faced facings externally.

(*c*) Auditorium: spar dash on commons externally.

External walls to the theatre square facade are 6-in. and 10-in. *in-situ* concrete faced with 5-in. thick Portland stone. Outer box corridor walls are 13½-in. solid brickwork 2½-in. sand-faced facings externally. 11-in. brick spandril panels above main foyer windows faced with glass mosaic. Circular columns to arcaded footway faced with vitreous ceramic mosaics.

$$\text{Ratio: } \frac{\text{solid wall}}{\text{floor area}} = \frac{0{\cdot}677}{1}$$

Windows 2 0

Generally: standard softwood EJMA. Purpose-made steel to workshop. Varnished afromosia to boardroom. Varnished mahogany to coffee room and offices. 3½d.

Windows to Theatre Sq. (Price including glazing 1s. 8½d.) varnished afromosia frames. ⅜-in. polished plate glass. Maple fixing boards. No opening lights. Ventilation via slotted aluminium grille with hopper type flap internally.

$$\text{Ratio: } \frac{\text{windows}}{\text{floor area}} = \frac{0{\cdot}107}{1}$$

External doors 3 7

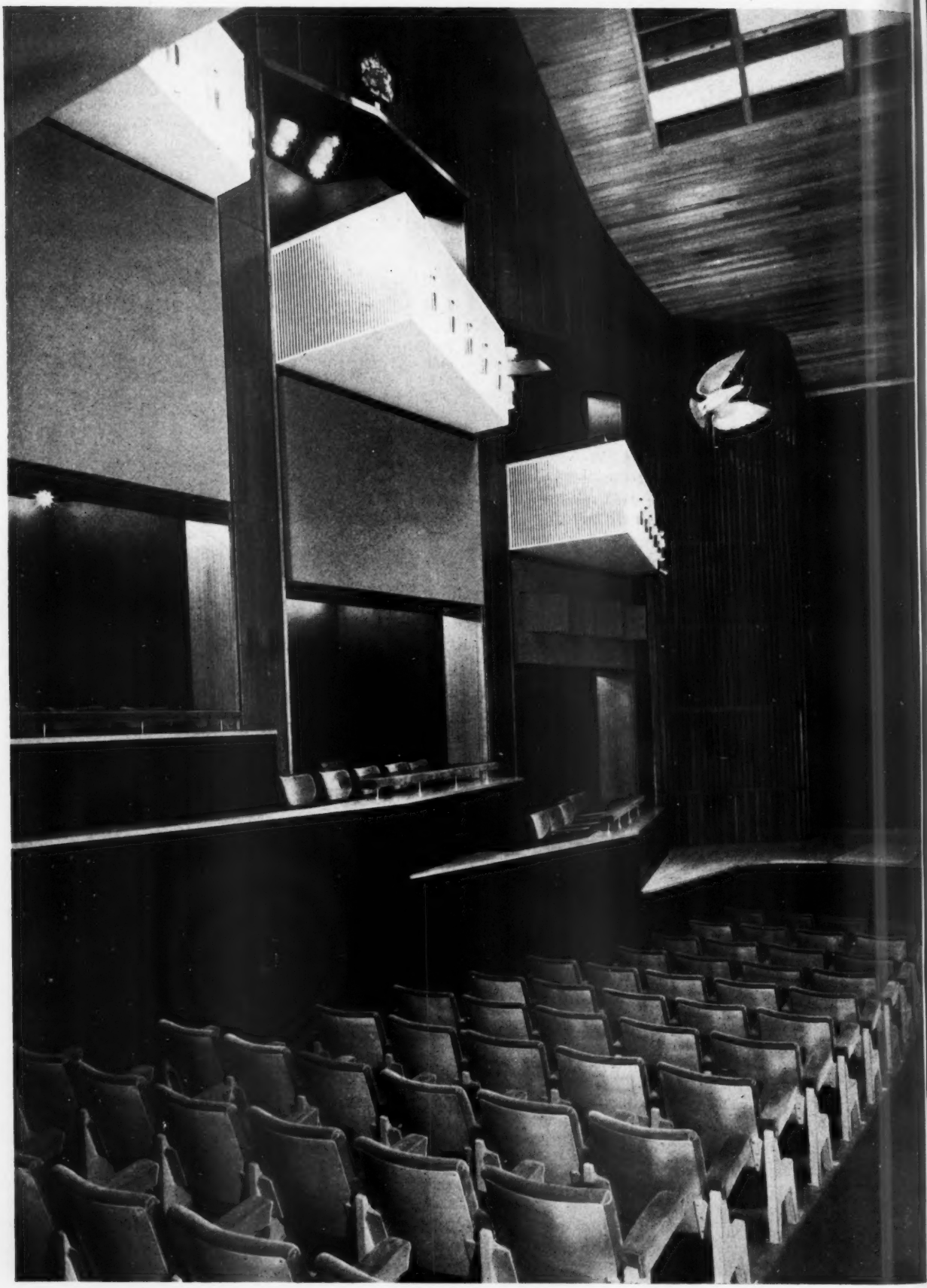
Generally: flush resin bonded, ply faced, solid laminated core. 1½d.

Glazed entrance doors, vestibule doors and screens to main entrance: nine pairs of toughened plate doors. Screens framed in iroko, infilling panels of ½-in. polished plate and Macassar ebony veneered plywood. 3s. 1¾d.

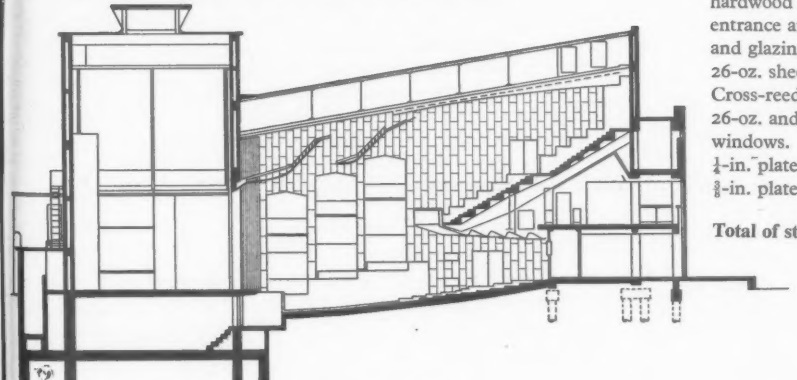
Hardwood entrance doors, vestibule doors and screens to secondary staircase. Entrance to car park glazed complete: all in afromosia glazed with ½-in. polished plate. 4d.

$$\text{Ratio: } \frac{\text{doors}}{\text{floor area}} = \frac{0{\cdot}018}{1}$$

building illustrated



The auditorium (above, below and opposite) is slightly fan-shaped and has a balcony and boxes projecting from the side walls in the same "drawers pulled out" manner as at the Festival Hall. The opening over each box has a sort of pitched roof motif which is not repeated anywhere else and seems out of keeping with the rest of the design. The box fronts and balcony front are in fibrous plaster and the boxes are decorated with gold leaf and have marble tops. The walls are panelled in makore veneered ply and absorbent panels beneath the boxes and at the back of the auditorium are covered with a woollen-faced Swiss fabric. The foam rubber upholstered seating is covered with a rich scarlet mohair plush. The tiered floors below the seats of circle and stalls are in cork tiles and the gangways are covered with dark blue carpet. The ventilation is neatly concealed behind wooden slatted grills on each side of the proscenium.

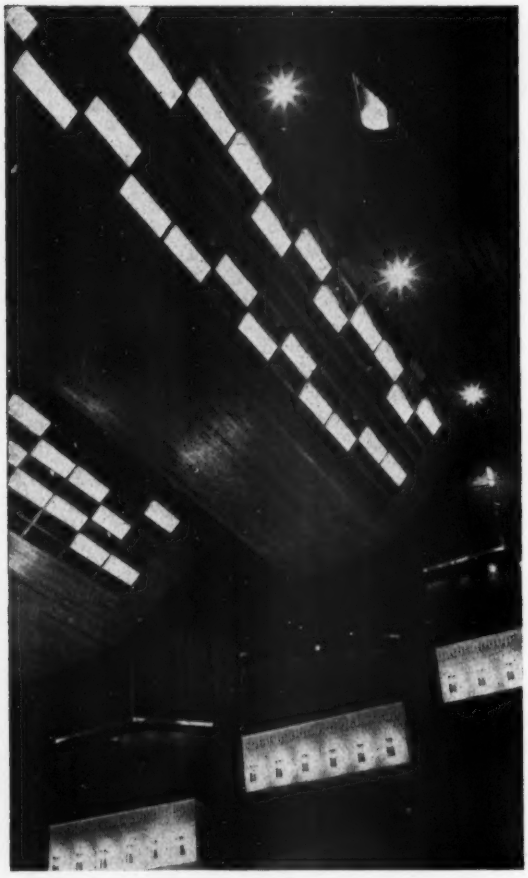


Section through stage and auditorium [Scale: $\frac{1}{16}$" = 1' 0"]

analysis

	s	d
Upper floors and roof construction	7	7½
Generally: *in-situ* reinforced concrete hollow tile, 7 in. and 5 in. thick overall screeded to receive floor finish. 5s. 1½d.		
Wood-wool slabs laid between steel angle framing to flytower, workshop, dressing rooms and auditorium. ½-in. cement/sand screed to receive built up roofing. 1s. 6¾d.		
Auditorium balcony: *in-situ* reinforced concrete 3½ in. thick on verticals and horizontals of steppings. These span horizontally between welded steel rakers which run from stanchions in the back wall, through the web of the main supporting plate girder, to the front edge of the balcony. (The steel is included in frame cost.) 11¼d.		
Staircases		5¼
Finishings to staircases are not included in this cost. See separate section staircase finishings.		
No. 4 staircases all *in-situ* reinforced concrete.		
5 ft. 6 in. wide × 22 ft. 0 in. total rise.		
5 ft. 6 in. wide × 20 ft. 6 in. total rise.		
3 ft. 0 in. wide × 11 ft. 9 in. total rise.		
3 ft. 9 in. wide × 9 ft. 10 in. total rise.		
64 ft. 1 in. total rise.		
Roof lights		4¾
No. of lights: 4.		
Total area: 188 sq. ft.		
No. 2 over kitchen. Metal, single pitch, obscured wired glazing, centre pivoted opening lights on one long side all set on concrete upstand.		
No. 1 over dressing room ditto without opening light on pressed metal upstand with fixed louvres in gable ends.		
Haystack lantern		5¼
Roof included in roof costs as main flytower roof. Windows and frames to 4 sides in standard galvanized metal sections set at an angle with the vertical. Those on the two long sides to open outwards under gravity and held to by a fusible link. Can be opened by hand from winding gear at stage level via flexible wire and pullies. Glazing with 24-oz. clear sheet painted black inside.		
Glazing		2
(Excluding glazed entrance doors, glazing to hardwood windows to Theatre Square, glazing to entrance and vestibule doors to secondary entrance and glazing to haystack lantern.)		
26-oz. sheet in EJMA windows.		
Cross-reeded obscured EJMA windows.		
26-oz. and cross-reeded obscured in workshop windows.		
¼-in. plate in boardroom window.		
⅜-in. plate in coffee room window.		
Total of structural elements:	**38s**	**0¾d**

building illustrated



There is a large sound reflector of Yugoslavian beech which covers a considerable proportion of the ceiling of the auditorium. It also contains stage spotlights and auditorium lighting. No doubt the necessity for this reflector was insisted on by the BRS, which advised on the acoustic treatment of the auditorium; however, it would seem possible to have incorporated this in the ceiling itself. One feels the pressure of the aesthetic dogma of articulating every part from every other part, ceiling floating apart from walls, walls from floors, boxes not joined to walls, etc. The balcony soffit has been given a zigzag shape to improve acoustics at the rear of the stalls which is often a bad spot owing to the shadowing effect of the balcony. The acoustics are apparently very satisfactory, although for a theatre of this size the problem is not a very difficult one.

analysis

s d

PARTITIONING AND FITTINGS

Internal partitions 1 1
4½-in. brick walls, 2-in. breeze and 4-in. hollow clay block. 11½d
Patent lavatory partitions to public space. 1½d
5 ft. × 6 ft. 6 in. high, 6 in. × 6 in. white glazed tiles both sides on reinforced cement core 1½ in. thick. Door frames and transoms in precast terrazzo.

Internal doors 1 6½
Generally: 166 single, 2 sliding, 1 double. 1s 1½d
17 single, flush, hollow core, hardboard faced.
16 single, flush, hollow core, plywood faced.
33 single, flush, solid core, selected veneer.
7 single, flush, solid BS 459 pt. 2, selected veneer.
43 single, flush, hollow core, selected veneer.
1 sliding 2 in. solid hardwood, 251 sq. ft.
1 sliding 2 in. solid softwood, 160 sq. ft.
1 pair double, framed braced and boarded in softwood.
Upholstered doors to auditorium: 6 pairs, double, 3 in. thick, solid, flush one side in selected veneer. Upholstered leather panels other side. 5½d

Ironmongery 1 3½
In the boardroom, offices and all areas used by the general public, door furniture, kicking plates and finger plates, etc., are in silver bronze. All fixing screws are concealed by screwed-on roses and locks have separate escutcheons. Where springs are required they are of floor pattern.
Backstage and in non-public areas similar fittings in silver anodised aluminium, overhead springs and checks are used where required. Locks are in three suites; backstage, FOH, and catering.
Toughened plate double doors have bright-bronze rails and handles. To satisfy safety regulations that all locks on doors used as exits must have either panic bolts or removable locks, each pair of external glass doors is secured from inside by two padlocks on the rails. External hardwood doors to secondary entrance have special bronze bolts with removable shoots also secured by padlocks.

Fittings 3 6
Generally: make-up tables and wardrobe spaces in dressing rooms. Shelving in offices, larder, bar stores, wardrobe rooms FOH and backstage, props, paint room, electricians store. Cloaks storage units. 4¾d
First floor coffee bar: Counter and surrounding panelling, back fitting, cupboards, wall finishes and display shelving. 1s 0½d
Ground floor coffee bar: as above. 6d
Hard drinks bars: as above. 10¾d
Cloak counter and lighting trough, including supporting steel frame units. 3¾d
Box office: including marble front to lobby, window surrounds and benching, cupboards, pigeon holes, etc. 4¼d.

Total partitions and fittings: **7s 5½d**

analysis

FINISHINGS

Floor finishes (excluding auditorium and carpeted areas) — 2 1

Prices include screeds where applicable.

Type of finish	*Area in sq. ft.*
Wood blocks	234
Thermoplastic tiles	2,475
Terrazzo	666
Concrete tiles	477
Ceramic tiles	2,205
Cork tiles	108
Granolithic	4,081
Stage floor (including 8 removable traps and removable sections over orchestra pier)	1,963
Softwood flooring and bearers to office	459
Hardwood flooring and bearers to coffee room	255

Wall finishes (excluding auditorium) — 3 0½

Generally 2 coats vermiculite retarded hemihydrate plaster.
1,350 sq. ft. of mosaic to design of consultant artist on foyer walls.
Mosaic to circular columns in entrance foyer and bronze skirtings.
Stage and backstage area fair-faced brickwork except dressing rooms, wardrobe, chorus room and lavatories.
Areas of glazed wall tiling in kitchen and public lavatories.

Finishings to auditorium boxes — 12 7¼

Panelling: ⅜-in plywood makore veneered on face, edges chamfered, laminations exposed, fixed to mahogany grounds with glued-on buttons. 2s. 2¼d.
Boxes: fibrous plaster fronts decorated with gold leaf. White Sicilian marble trim to top edges. Separate upholstered resters on silver bronze supports. Plaster and emulsion paint internally. 1s. 3½d.
Balcony front: perforated fibrous plaster as boxes backed with 2-in. mineral wool for sound absorption on timber framing. Top surface finished with splayed rester upholstered with foam rubber and mohair plush. 1½d.
Front to orchestra pit: polished ⅜-in. Macassar ebony veneered plywood on timber framing braced with welded steel supports bolted to concrete floor. Includes two short flights of stairs to stage level and removable sections of front to cover stairs. Top finished with beech edging. 2¼d.
Guard rail to circle room gangway: bright drawn steel balusters stoved matt black bolted to face of concrete risers. Polished mahogany handrail and polished mahogany veneered continuous horizontal panel. 4¾d.
False ceiling to auditorium and balcony: ⅞-in. gypsum plaster on expanded metal on galvanized firring suspended from roof steel. Plaster undecorated except at recessed edges. 1s. 0d.
Sound reflectors: 1¼-in. t & g beech strip secret nailed to timber framing made up in separate 6 ft. sections bolted together in position; louvres in 1-in. beech also made up in 6 ft. sections, slatted walkways to FOH spots on top surface. Both reflectors hung from roof steel by rows of 2-in. m.s. bars at 6 ft. centres. Beech finished with cold hardening matt lacquer sprayed on. 7½d.
Stalls, balcony seating (designed in County Architect's Dept.): cast-iron standards, seats and backs hardwood framed, foam rubber squabs and arms. Scarlet mohair plush covering, polished plywood on seat bottoms and backs. Balcony seat standards modified to cantilever off vertical stepping. End standards filled with upholstered panels. 4s. 3½d.
Floor finish: $\frac{5}{16}$-in. cork on screed under seats. Gangways and boxes: carpet and felt underlay on screed. Risers to stalls and balcony steppings in beech white rubber nosings on gangway steps. 1s. 2d. (price excludes cost of carpet and underlay.)

Finishings to staircases — 4 6¼

(price includes carpets)
Dressing rooms and kitchen staircases: *in-situ* grano on treads and risers, soffits smooth concrete painted, galvanised m.s. balusters and handrail painted. ¾d.
Main and secondary staircases: 1-in. continuous softwood treads screwed to grounds set in concrete. Carpet and underfelt carried over treads and risers secured by polished mahogany strips on risers. ½-in. plywood strings veneered on outside, faced where exposed on the inside with ¼-in. bronze-faced plywood. Silver bronze capping top and bottom. Bright drawn steel balusters and core rail stoved matt black bracketed off concrete through strings. ⅜-in. polished plate glass balustrade panels carried top and bottom in silver bronze channels screwed to balusters. Polished mahogany handrail, soffit of stairs plastered and painted. 4s. 5¼d.

Ceiling finishes — 1 10¼

(excluding auditorium)
Generally: FOH vermiculite plaster on suspended expanded metal lathing except kitchen and ancillary accommodation and FOH wardrobe. Backstage vermiculite plaster on ground floor only. Plaster skim on wood wool on first floor. 1s. 2¼d.
Coffee bar first floor: secret nailed matt lacquered beech strip on undulated softwood framing. 5d.
Illuminated ceiling to entrance foyer: suspended anodised aluminium framing, corrugated translucent plastic panels. Illumination by 40W warm white cathode. 3d. (cost included in electrical installation.)

Roof finishes — 10

(Cost of screeds included in roof construction.)
3-layer mastic asphalt on cement sand and vermiculite screeds to falls. 1,152 sq. ft.
3-layer bituminous felt on ½-in. cement sand on vermiculite laid to falls on flat areas. Finished ⅜-in. granite chipping on tack coat. 12,816 sq. ft.

Decorations — 1 5

Gloss oil paint on softwood joinery and hardboard doors. Emulsion paint on walls and ceilings, semi-gloss oil paint on circular columns in foyers, bars and coffee room. Hardwood externally varnished, internally cold hardening matt lacquer, brush applied.

Total of finishings — **26s 4d**

building illustrated

There is a coffee room (left and below) which seats 60 on the first floor, approached by the main staircase. This serves refreshments and light meals after the performances and is open to the public at other times. It is an attractive room and has already established its popularity. Here again, the ceiling is of Yugoslavian beech, part of the gift of timber from the City of Belgrade which has given the theatre its name.

analysis

SERVICES

s d

External plumbing 2½

(Excluding aluminium flashings to roofing included in roofing costs.)
6-in. and 4-in. c.i. rainwater pipes in ducts internally connected direct to s.w. drains. Roof outlets consist of lead slates sandwiched between layers of roofing felt connected to r.w.p.'s by lead sleeves and brass ferrules for caulking. 3-in. aluminium external rainwater pipes to dressing room block from concealed channel formed in roof.

Hot and cold water installation 1 0½

(Including supply to hose reels and dry risers.)
Cold water enters in 4-in. c.i. main via pit containing meter and bypass valve, thence in copper with capillary joints to sinks, basins, w.w.p.s. Cold water feed tanks to indirect cylinders and heating system, hose reels and curtain drencher. One dry riser in plumbing duct near secondary staircase.
Hot water to sinks in kitchen and bars, and basins in all lavs. FOH is supplied from two 80-gallon indirect cylinders locally situated. These are fitted with immersion heaters for summer use (cost included in electrical installation). The dressing rooms are supplied by balanced flue multi-point instantaneous gas water heaters.

Sanitary fittings 4

Type of fitting	*No. of each type*
Sink Belfast glazed fireclay, 24 in. × 18 in.	1
Sink Belfast glazed fireclay, 18 in. × 15 in.	3
Sink shelf fireclay, 24 in. × 21 in.	5
Sink double stainless steel, 7 ft. 0 in. × 21 in.	1
W.c.'s vit. china high level	6
W.c.'s glazed fireclay high level	8
Basins vit. china, 22 in. × 16 in.	9
Basins glazed fireclay with pad. 22 in. × 16 in.	3
Urinals glazed fireclay wall pattern.	13
Bath 5 ft. 6 in. cast iron	1

Heating and ventilation 5 8½

One cast iron sectional boiler fired by automatic oil burner coupled by low pressure hot water service to fan-driven heater units in fabric of building, cast iron radiators, two hot water service cylinders (see hot water installation) and main auditorium ventilation heater battery. Radiators heat offices, kitchen, lavs., dressing rooms, etc. Heater units situated in FOH public areas (7), auditorium (2), stage (2), workshop and paint room (2), individually thermostatically controlled and also grouped in three zones separately controlled by low set thermostat and tune switch, overall control of boiler water temperature to suit weather by compensator.
Auditorium ventilation by warmed fresh air drawn through throw-away type cotton wool filter and heater battery of gilled tube type by a centrifugal fan in basement. Discharge via duct below orchestra pit through louvred splays on either side of proscenium opening at rate of 700 cubic feet per person per hour. Vitiated air extracted from high level in fly tower, and rear of main auditorium and balcony ceilings via acoustically lined and split ducts by propellor type fans. Auditorium unit heaters controlled by time switch to cut out at commencement of performances. All ducting of large cross sectional area to ensure low velocities and elimination of low frequency rumble.

Electrical installation 12 9

General installation: mains supply 3 phase A.C. to main switch panel in dimmer room. Secondary switch panel for all front of house except auditorium. All cables v.i.r. 250 and 660 volt grade in heavy gauge screwed conduit and pressed steel trunking. Main and secondary panels connected by p.i.l.c.s.w.a. cable. A.C. pattern switches in cast iron boxes. Special safety pattern in public areas, flush aluminium plates. Specially designed light fittings in auditorium and public spaces. 6s 6d (cost includes neon sign and flood lighting of coat of arms).
Internal telephone system, 21 stations, press-button calling.
Lighting points: 880, power points: 70 (excluding stage).
Stage lighting and sound: Lighting remotely controlled from 60-way remote control panel with duplicate controls and change-over for pre-setting via electric magnetically-actuated wire-wound dimmers. Stage sound controlled from control room with twin amplifiers, microphone, inner panel and 4 position loud speaker attenuator panel, twin turntable gramophone reproducer with cue bars and a tape recorder. Microphone and speaker positions on stage, one fixed speaker over proscenium opening. Intercomm. with control room, public address and continuous closed circuit broadcast from stage to all backstage areas and control room, from twin amplifiers in prompt corner. 6s 3d

Total of services 20s 0½d

OTHER ELEMENTS

Stage equipment 3 0½

25 sets of single purchase counterweights, 4 main suspension points, 42 ft. battens. Counterweighted paint platform manually operated.

Safety curtain 1 1½

Rigid type single piece safety curtain 39 ft. wide × 20 ft. 9 in. high, counterweighted and covered on auditorium side with metallic asbestos cloth and on stage side with 16 g. c.r.c.a. steel sheets. 2 in. i.d. drencher pipe fitted across top.

Sprinkler installation 1 4½

Wet and dry type over stage, paintroom, workshop and basement.

Mirrors 8

⅜-in. lead backed polished silver plate 12 ft. 6 in. × 24 ft. in four pieces over ground floor coffee bar. ¼-in. polished silver plate in dressing rooms and lavatories.

Lightning conductor ½

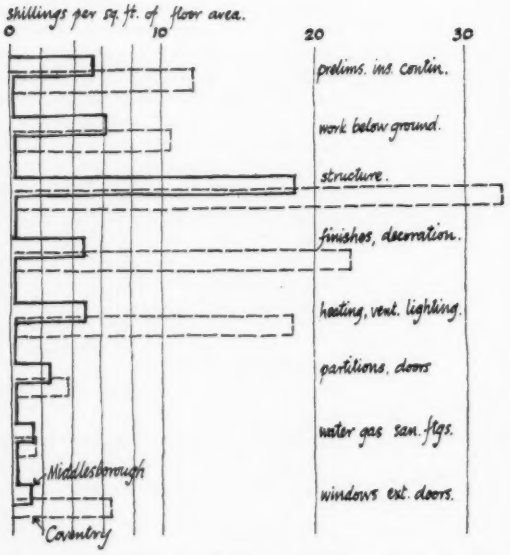
Total of other elements 6s 3½d

analysis

	s	d
Drainage	1	10¾
Separate f.w. and s.w. systems in 4-in. and 6-in. salt-glazed stoneware. Porous concrete relieving drain to basement. Brick manholes, medium and heavy covers.		
Porte cochere	1	6¼
Steel frame and softwood boarded flat, covered with 3-layer bituminous felt and grit finish. Varnished strip beech soffit, V-jointed t. & g. Varnished resin bonded plywood fascia, aluminium edge drip and flashings.		
Total per sq. ft. of floor area for theatre only: £192,601 13s. 11d.		
30,273 sq. ft.	= 127	3

COST COMMENTS

This is the second theatre to be published in the JOURNAL—and it contrasts sharply with the first one at Middlesbrough (AJ, February 13). The latter seated 500, had no shops or flats and was designed to be built very economically, from private funds. The Belgrade seats 910 and it is clear that the architects have not been at all hard pressed for money to spend. The graph below, besides illustrating two buildings of different size and contract circumstances, suggests the difference in cost distribution between two extremes of the economy scale.



Prelims, etc.: For Coventry some of these have been apportioned to the flats and shops. *Foundations:* concrete strip at Middlesbrough, piles at Coventry. *Structure:* load-bearing brick at Middlesbrough, steel frame at Coventry. *Finishes:* this is where the difference between the two buildings tells most. At Middlesbrough there was mainly distempered brickwork and plaster; at Coventry lavish use of expensive materials, hardwood, mosaic, etc. In the next group of elements the difference is mainly accounted for by much greater expenditure on lighting at Coventry, 950 points as opposed to 205 points (the prices exclude stage lighting), and a ducted ventilation system. *Partitions, etc.:* toughened glass and upholstered doors at Coventry seem to make the difference here. *Sanitary fittings* at Middlesbrough number 37, at Coventry there are 50. The last group, *Windows and external doors,* also includes rooflights—but the major cost is in glass and hardwood external doors. As a footnote to the costs, one must add that at Middlesbrough there are, 28 square feet per seat, at Coventry, 88.

CONTRACTORS

General contractor: George Wimpey & Co. Ltd. *Sub-contractors—Structural steelwork:* Boulton & Paul Ltd. *Reinforced concrete:* British Reinforced Concrete Co. Ltd. *Piling:* Simplex Concrete Piles Ltd. *Safety curtain:* Hall Stage Equipment Ltd. *Hot and cold water services:* H. Clarke & Son. *Roller shutter:* G. Brady & Co. Ltd. *Wood-wool roofing:* Halcrete Precision Panels Ltd. *Counterweights, paint bridge and TV platform:* Gimson & Co. (Leicester) Ltd. *Suspended ceilings:* Steel Bracketing & Lathing Ltd. *Sliding windows:* P. G. Allday & Co. Ltd. *Metal windows and haystack lantern:* Crittall Manufacturing Co. Ltd. *Refuse chute:* Broads Manufacturing Co. Ltd. *Heating and ventilating:* Weatherfoil Heating Systems Ltd. *Stage lighting and control:* Strand Electric & Engineering Co. Ltd. *Electric installation:* Lee Beesley & Co. Ltd. *Facing bricks and common bricks:* London Brick Co. Ltd. *Facing bricks:* Himley Brick Co. Ltd. *Marble facings:* W. H. Fraley & Sons Ltd. *Roof lights:* Guildford Glass & Metal Works Ltd. *Portland stone facings:* The Bath & Portland Stone Firms Ltd. *Flats and dressing rooms balustrading:* Dixon Poner & Sons. *Sanitary fittings:* A. J. Thomas & Co. Ltd. *Sliding door gear:* The British Trolley Track Co. *Mirrors and sign:* Glass (Coventry) Ltd. *Granite sills:* The Empire Stone Co. Ltd. *S. and v.p. connections:* J. Whitehouse & Son Ltd. *Sprinkler system:* Mather & Platt Ltd. *Ironmongery (flats):* Matterson Huxley & Watson Ltd. (*theatre*): Parker, Winder & Achurch Ltd. *First floor coffee bar, drinks bar, cloaks counter, staircase and foyer balustrades, cross gangway, balustrade and guard rails:* Harris & Sheldon Ltd. *Thermoplastic tiles:* Marley Tile Co. Ltd. *Lightning conductor:* W. J. Furse & Co. Ltd. *Terrazzo flooring:* Marbello & Durus Ltd. *Stage sound reproduction:* The Standard Telephone & Cable Co. Ltd. *Public address system:* A gift from General Electric Co. Ltd. *Gas installation:* West Midlands Gas Board. *Ground coffee bar, panelling to lower boxes and forestage:* Bath Cabinet Makers Ltd. *Auditorium doors:* Armstrongs (Hull) Ltd. *Auditorium seating, house curtain (make up):* Beck & Windibank Ltd. *House curtain fabric:* Lister & Sons Ltd. *Mosaic mural, mosaic panels over foyer windows:* Dennis M. Williams Ltd. *Flush doors:* Saro Laminated Wood Products Ltd. *Wood block flooring:* A Vigers & Son & Co. Ltd. *Column mosaics:* A. Quiligotti & Co. Ltd. *Entrance doors and screens, box office and box resters column skirtings:* A. Edmonds & Co. Ltd. *Cork floor tiling:* E. J. Elgood & Co. Ltd. *Rear box columns and fascias, fibrous plaster box and balcony fronts:* H. H. Martyn & Co. Ltd. *Linoleum flooring:* Holbrooks (Coventry) Ltd. *Neon sign:* Ward & Co. *Foyer floor tiling and w.c. partitions:* Carter & Co. (London) Ltd. *Auditorium fabric panels and upholstery fabrics:* Primavera (London) Ltd. *Auditorium panels and Yugoslav beech:* Bootle & Norman Ltd. *Carpets:* The Wilton Carpet Co. Ltd. (fitted by Holbrooks (Coventry) Ltd.). *Special light fittings and signs:* Bernard Schottlander. *Special light fittings and electrical switchgear:* General Electric Co. Ltd. *Site investigation:* Ground Explorations Ltd. *Furniture and curtains:* Hills of London (Midlands) Ltd. *Tables and easy chairs:* Conran Furniture Ltd. *Coffee machines:* Cona Coffee Machine Co. *Coffee bar water boiler:* Jackson Boilers Ltd. *Silver bronze strip:* Meta-phront Co. Ltd. *Coat of arms:* George Lister & Sons Ltd. *Cat ladders:* Bigwood Bros. (Birmingham) Ltd. *Concrete floor tiling:* Coventry Tile Co. Ltd. *Built-up felt roofing:* Permanite Ltd. *Paints, varnishes, lacquer, etc.:* Docker Bros. *Plumbing:* Daly & Son. *Joinery:* Joinery Products Ltd. *Glazing:* Merrick & Heath Ltd.

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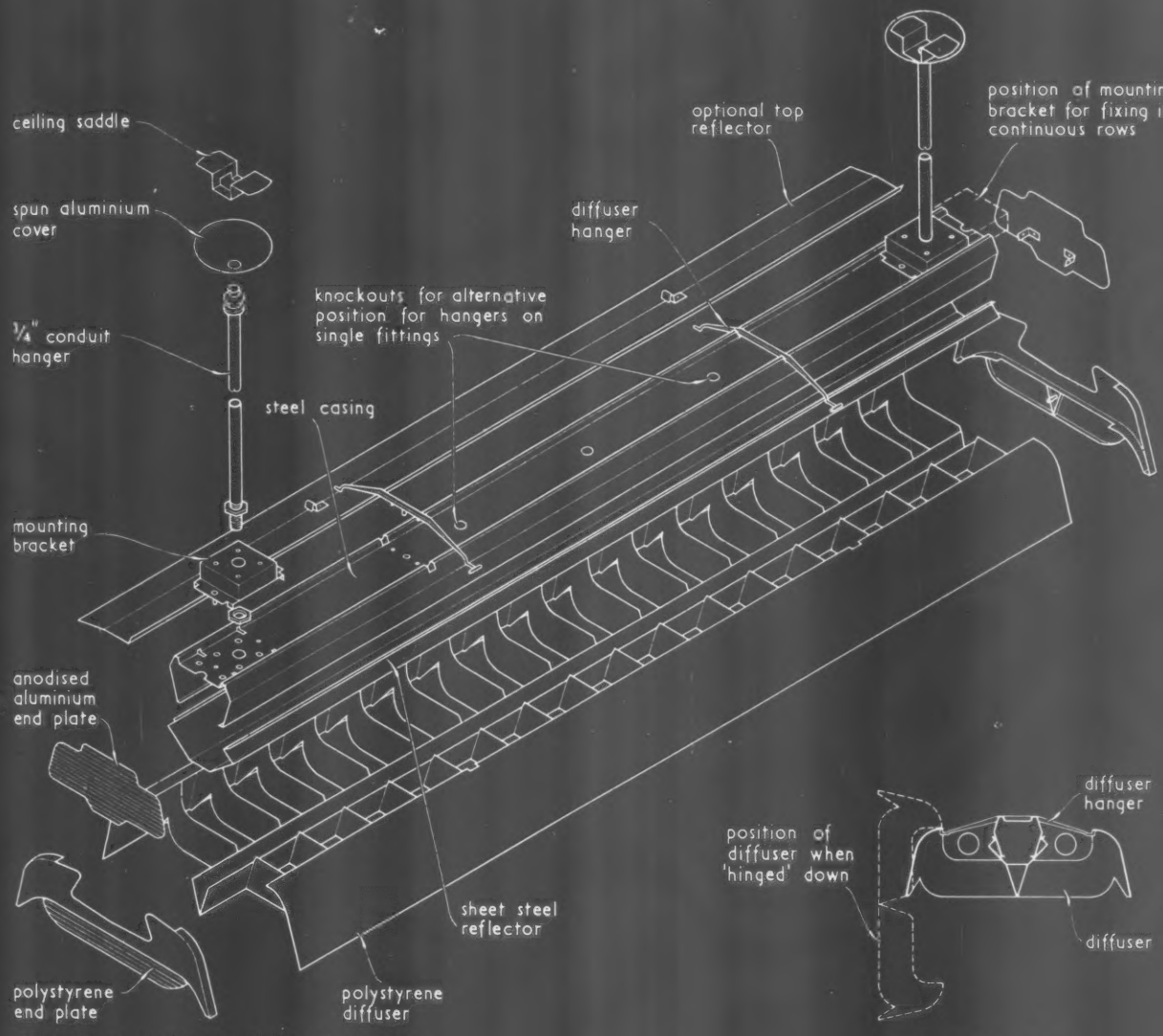
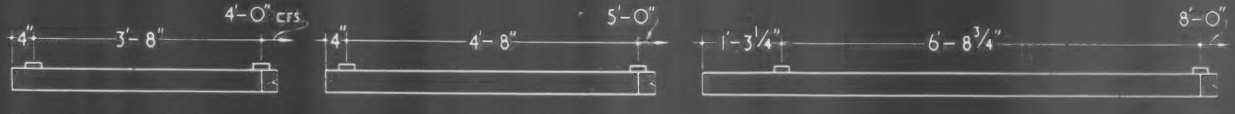


ISOMETRIC VIEW OF TYPICAL FITTING.

TYPICAL SECTION.

for single stem hangers and fixing direct to ceiling



for continuous rows

FIXING CENTRES.

·LUVELINE· FLUORESCENT LIGHT FITTINGS. Manufacturer : Harris and Sheldon (Electrical) Ltd.

34.K2 ·LUVELINE· FLUORESCENT LIGHT FITTINGS

This Sheet describes Luveline fluorescent light fittings which may be used individually or in continuous rows, the design being such that in the latter case the line of illumination is unbroken by the junctions between units. The louvred diffuser can be unhooked from either side and hinged down for access to the lamps, or completely removed for cleaning.

Material and construction

The fitting consists of three basic components. The control gear and lamp holders are housed in a one-piece casing of heavy-gauge steel, die-formed for accuracy. A sheet steel cover-plate, beneath the casing and removable for access, forms the reflector. The diffuser consists of a single piece of injection-moulded polystyrene and is supported on two die-cast brackets, as shown in the isometric sketch on the face of the Sheet. The louvre fins give a 35° cut-off, laterally and longitudinally. Inconspicuous lap joints between lengths of diffuser give an appearance of continuity. The method of hinging the diffuser is shown in the section on the face of the Sheet. Access to any lamp can be effected without disturbing the rest of a row. The end-plate assembly is of polystyrene and aluminium as shown.

An additional top reflector is available if required for use where the ceiling is dark in colour or otherwise undesirable as a reflector.

The mounting brackets may be fixed direct to the ceiling or suspended on the hangers shown. Mounting brackets are constructed of heavy-gauge sheet steel and have provision for small lateral and longitudinal adjustments when screwed to the ceiling. Hangers are made in three lengths; the stem is made of standard $\frac{3}{4}$-in. diameter steel conduit, threaded at the bottom and flared at the top to engage in the steel ceiling saddle, which has similar adjustments to the bracket. The cupped covers are spun aluminium.

Sizes

The fittings are 1 ft. $3\frac{3}{8}$ in. wide and $5\frac{1}{4}$ in. deep overall and are available in lengths of 4 ft. 0 in., 5 ft. 0 in. and 8 ft. 0 in. 4-ft. and 5-ft. diffusers are available for the appropriate fittings, but each 8-ft. fitting requires two diffusers. The diagrams on the face of the Sheet give centres of fixing for mounting individually or in continuous rows, the centres being the same for hangers as for fixing direct to the ceiling. All dimensions given exclude the end-plate assemblies which add $\frac{5}{8}$ in. to each end in all cases. Three lengths of hanger are available, 12 in., 24 in. and 36 in.

Fixing

On hangers: Hangers for individual fittings or continuous rows are fitted as follows. The ceiling saddle is fixed to the ceiling or to the conduit box. The $\frac{3}{4}$-in. conduit hanger is screwed into the threaded hole in the mounting bracket and secured with a cotter-pin underneath and a locknut on top. The mounting bracket is fitted to the steel casing and secured with the wing-nuts provided. The flared top end of the hanger is pushed into the appropriate slot in the ceiling saddle and secured with collar and set-screw. The fixing saddle can then be accurately aligned. Finally, the cupped cover is raised tight to the ceiling and secured with the knurled nut. The stem of the hanger can be adjusted as required for levelling.

Direct to ceiling: Although the fittings may be fixed direct to the ceiling, the use of mounting brackets is recommended as installation time is reduced, better alignment ensured where ceilings are uneven, and more efficient ventilation of the control gear provided. The brackets are as illustrated on the face of the Sheet where they are shown in use with hangers.

In both the above cases the mounting of continuous rows of fittings is effected by joining the steel casings with the link strips available and locating the mounting bracket to straddle the junction to give rigidity to the assembly.

Finishes and colours

The casing, reflectors, mounting brackets and hangers are rust-proofed and stove-enamelled white. The diffuser is white as standard, but coral or green may be obtained. The aluminium end-plates are anodised gold or black. Diffusers are supplied destaticised in special cartons.

Maintenance

Metal surfaces should be wiped with a cloth moistened with water containing detergent. The diffuser should be swished round in a mild solution of warm water and a non-ionic detergent in a suitable receptacle, allowed to drain and rehung on the light fitting to air dry. It should not be wiped, as this may disturb the anti-static film. A suitable concentrated solution for cleaning and destaticising is available from the manufacturer.

Compiled from information supplied by:
Harris & Sheldon (Electrical) Ltd.
Address: Ryder Street, Birmingham 4.
Telephone: Birmingham Central 6272.
London Office: 46, Great Marlborough Street, W 1.
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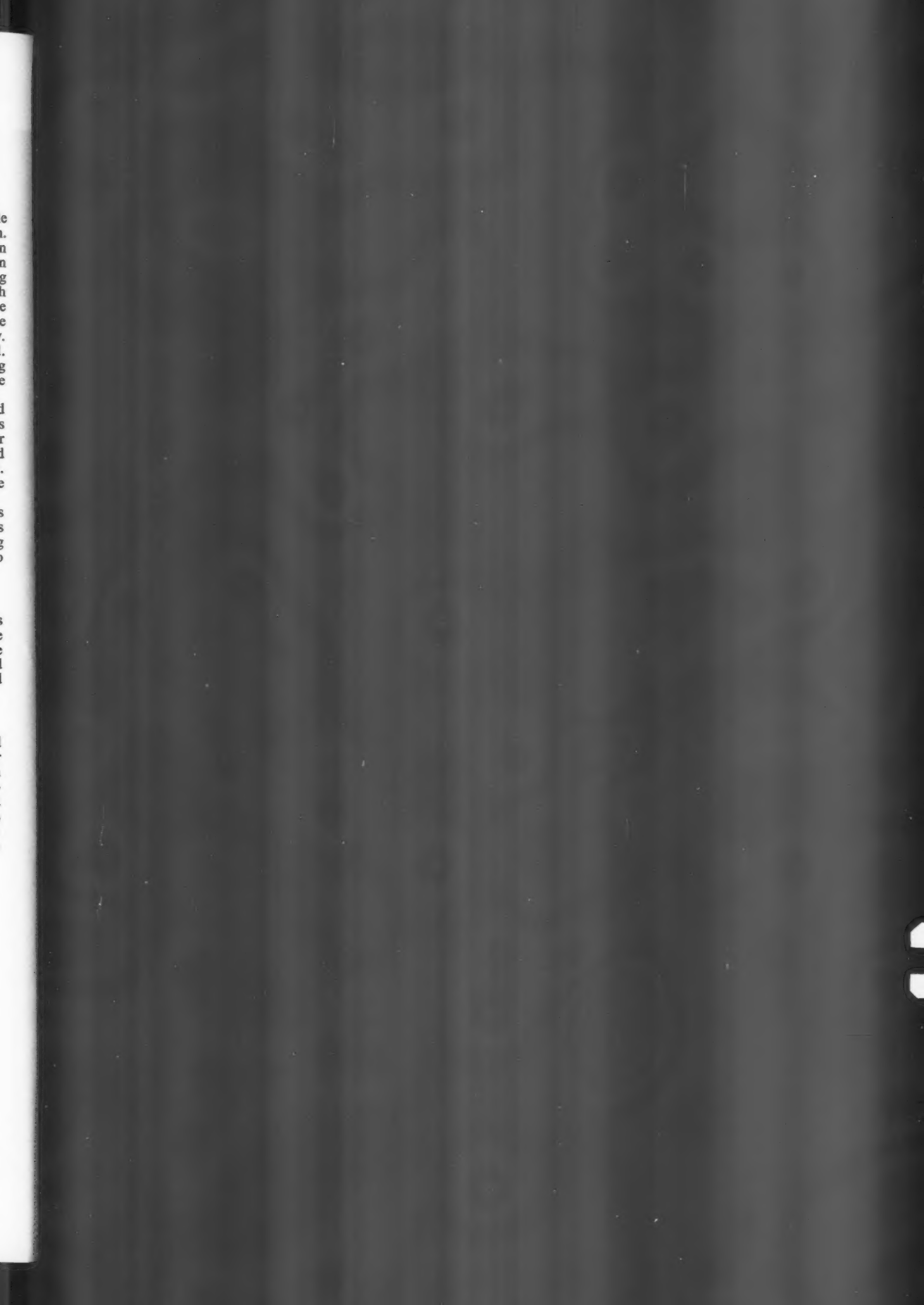

PARTITIONS | STEEL

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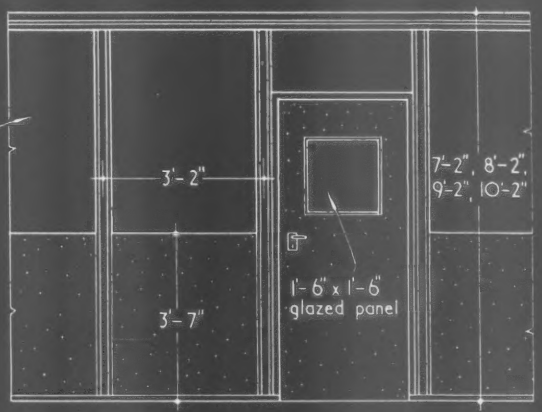
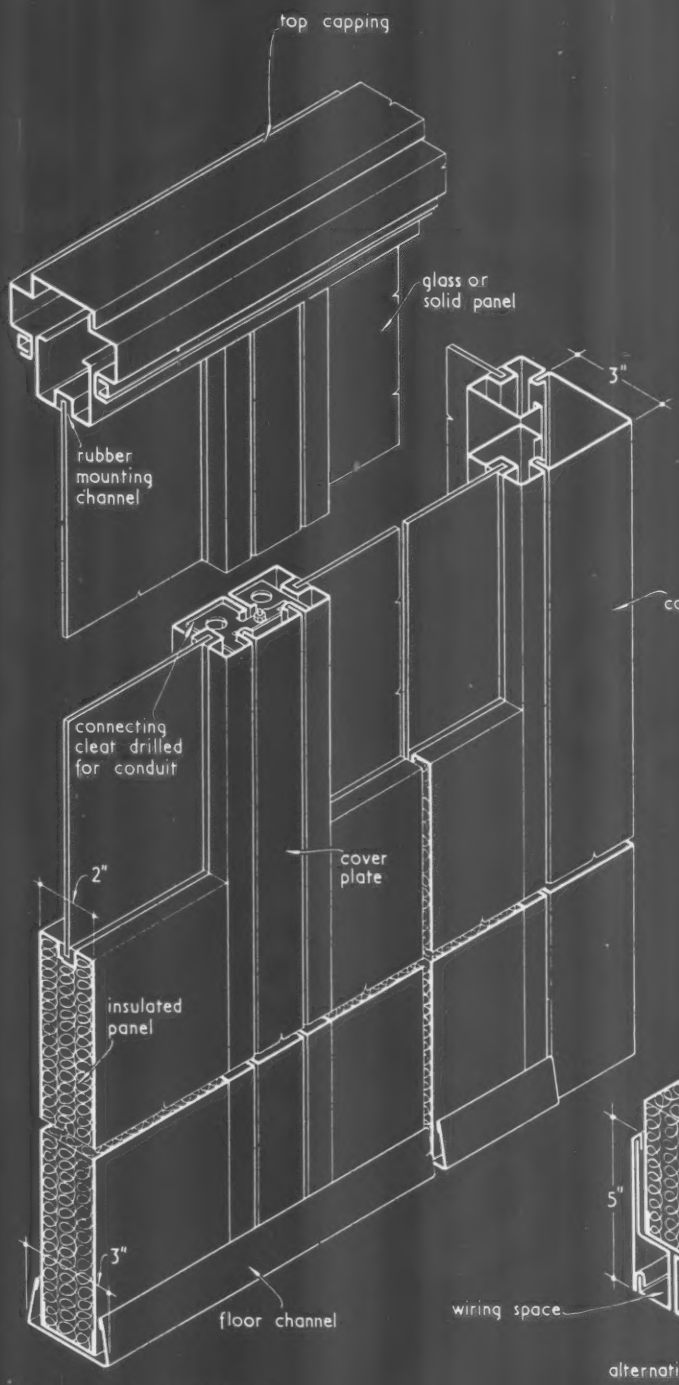
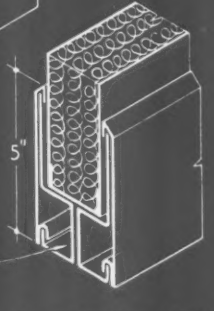


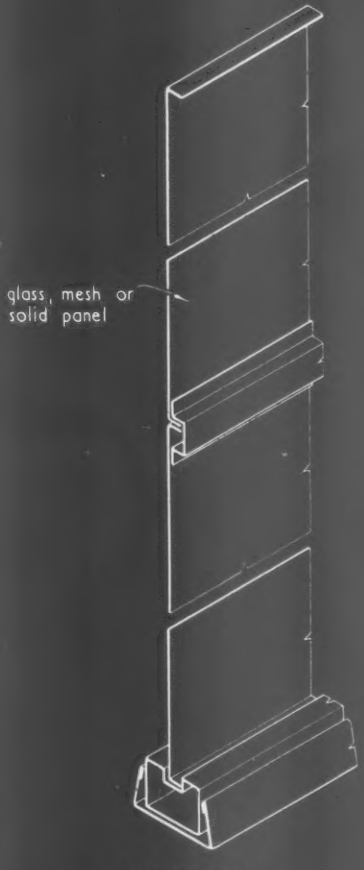
ELEVATION OF TYPICAL PARTITION.



DOUBLE - SKIN PARTITION.



alternative floor detail



SINGLE - SKIN INDUSTRIAL PARTITION.

·NSE· STEEL PARTITIONING.

Manufacturer: Norwood Steel Equipment Ltd.

21.C3 ·NSE· STEEL OFFICE AND INDUSTRIAL PARTITIONING

This Sheet describes NSE steel partitioning, which is built up from standard components and is fully demountable. There are only four main components and a small number of fixings to the structure is required (plugs and screws at 6 ft. 0 in. centres only). Partitions may be single- or double-skin and can be solid-panelled, glazed or fitted with wire mesh above dado height if required.

Construction

Partitions are available in three types: type A, which are glazed above dado height (3 ft. 7 in.), type B, solid with glazing above height of 6 ft. 6 in., and type C solid to full height. Wire mesh can be substituted for glazing (industrial type) Doors are supplied, hinged or sliding, and opening fanlights, service windows, etc., can be incorporated where required.

Framing: The partitions are constructed from rolled steel sections varying in gauge from 16 to 20, according to function. Expanding wall fixings are used to take up any variations in dimensions.

Panels: The panels are rolled steel sheet, the double-skin type being filled with mineral-wool insulation in sheet form.

Glazing: Glazed panels are mounted in rubber channelling to prevent vibration and double glazing can be provided if required.

Doors: Doors are of double-skin insulated construction with a glazed panel, 1 ft. 6 in. square, at eye level. They are fitted with lever door furniture, unless otherwise specified. Master key systems are available if required.

Sizes

Partitions are produced to standard heights of 7 ft. 2 in., 8 ft. 2 in., 9 ft. 2 in. and 10 ft. 2 in., but special heights can be made to order. In view of the flexibility of the partitioning system, the manufacturer recommends the installation of partitions of uniform height to permit subsequent rearrangement if desired.

The standard panel width is 3 ft. 2 in. but the following panel widths are available: 2 ft. 8 in., 2 ft. 2 in., 1 ft. 8 in., and 1 ft. 2 in. Doors are 2 ft. 9 in. wide (single leaf) or 5 ft. 6 in. (double leaf) but are mounted within a standard panel and are therefore interchangeable. Special modules are available to order.

Installation

The manufacturer carries out complete installation of the partitioning, including glazing, from working drawings submitted for the architect's approval. Provision is made in the framing members for electrical conduit and a removable capping gives access. Removable skirting can be fitted if required. Where infilling above the partition is required, this can be of building board, supported in metal sections, sheet metal panels to match the partitions, or glass.

Finish

All components are degreased, bonderised and passivated before stove-enamelling to the colour agreed with the architect.

Further Information

The manufacturer maintains a technical advisory department available to answer questions and prepare schemes for the installation of the partitioning.

In addition to that dealt with on this Sheet, the manufacturer can supply barrier and banker height partitioning and toilet partitioning for w.c. cubicles, showers, etc.

Compiled from information supplied by:

Norwood Steel Equipment Ltd.

Address: 149, Borough High Street, London, S.E.1.
Telephone: Hop 5033 (15 lines).

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working detail

ROOF: FACTORY AT HACKENTHORPE, YORKSHIRE

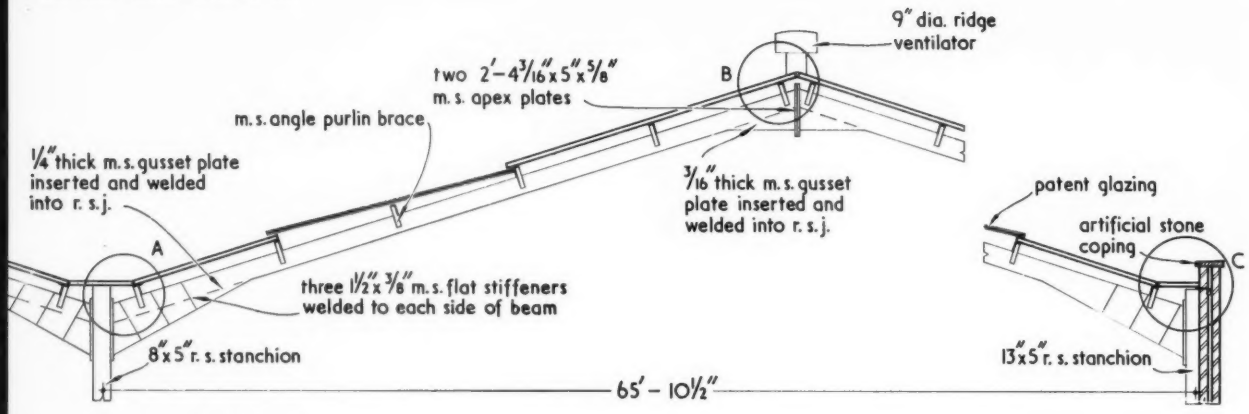
Moir and Bateman, architects

This steel portal roof, which was designed on the plastic theory, is interesting for its lightness (bays are 66 ft. by 25 ft.) but also for the fact that it was the subject of careful cost comparisons against alternative designs and showed a saving of 3s. 4d. per sq. ft. (i.e. *a total saving of* £7,000) *over its nearest rival.*

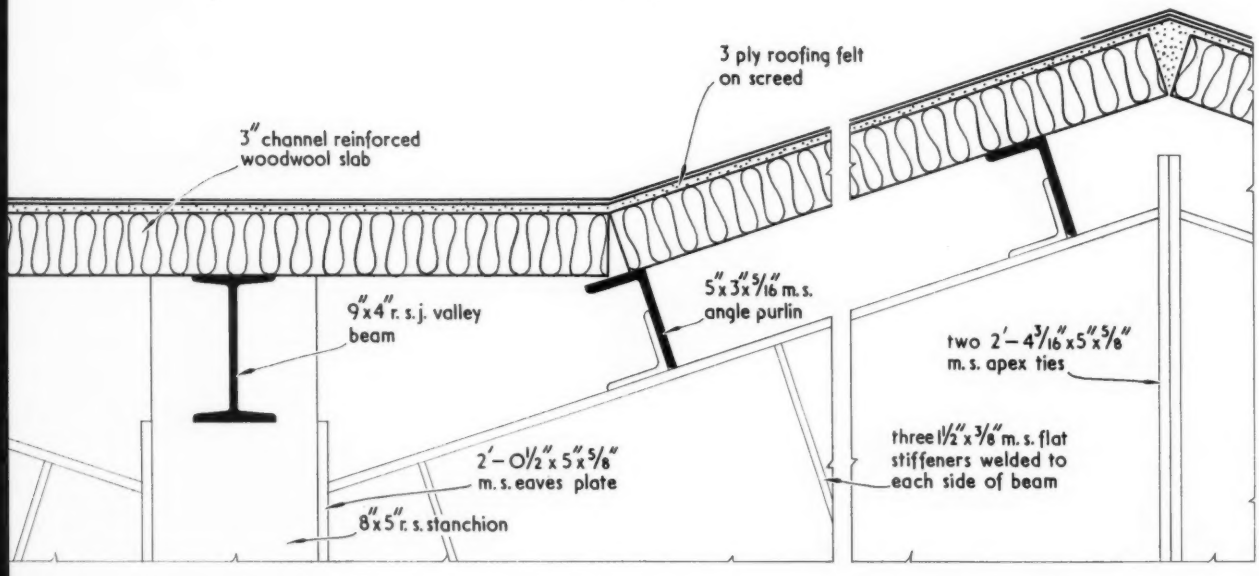
working detail

ROOF: FACTORY AT HACKENTHORPE, YORKSHIRE

Moir and Bateman, architects

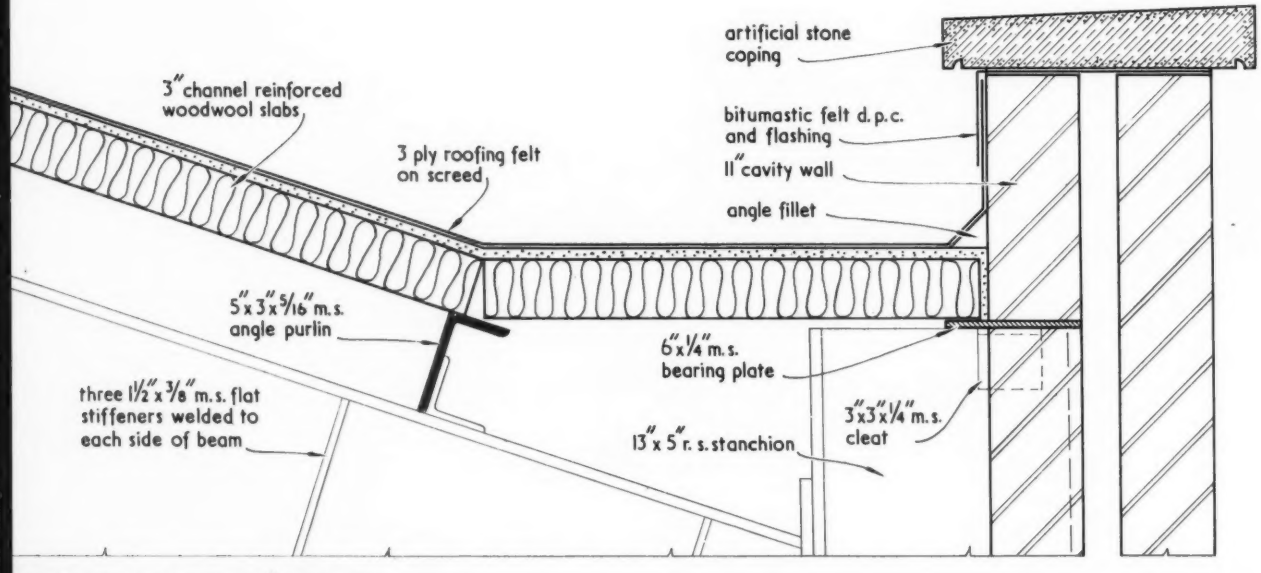


SECTION. scale 1/8" = 1'–0"



DETAIL AT A. scale 1/8 full size

DETAIL AT B. scale 1/8 full size



DETAIL AT C. scale 1/8 full size

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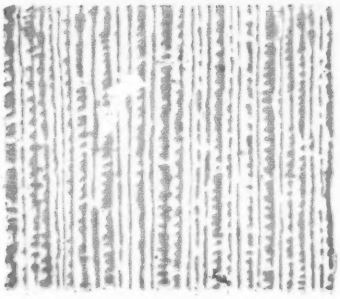

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SECONDARY MODERN SCHOOL AT YEOVIL, SOMERSET

Buckler's Mead Secondary Modern School, Yeovil, designed by Musman and Cousens for the Somerset County Council, was officially opened last month. In addition to the main block, shown above, there are separate laboratories and a handicraft room. The 12-acre site provides playing fields and tennis courts; the architects have made a special feature of the landscaping, and have retained an old pond for biology studies. The general contractors were D. Singleton & Son.

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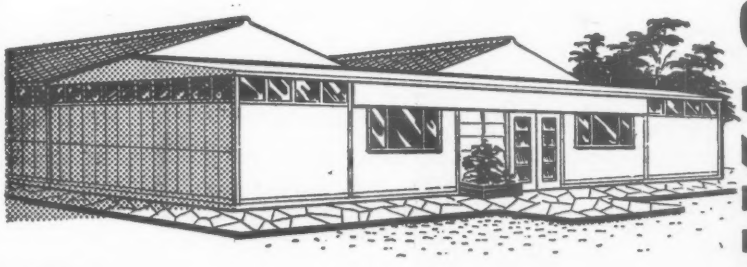

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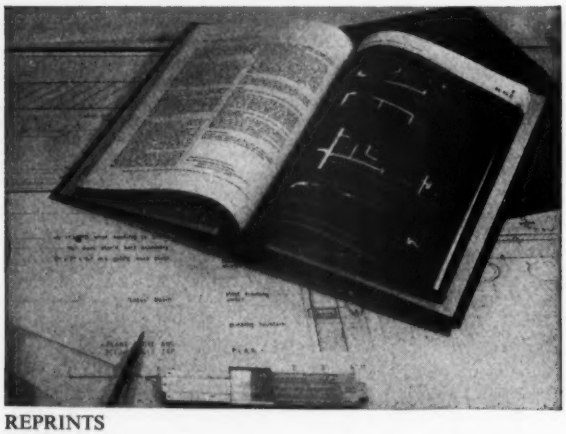

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Announcements

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Siemens Edison Swan Ltd. have made the following appointments in their Cable Division: R. G. Holland, A.M.I.E.E.—Assistant Cable Sales Manager, Special Contracts. R. B. Tucker—Assistant Sales Manager, Rubber and Plastic Cable Division.

Geoffrey Butler has now formed his own Company—Geoffrey Butler Ltd., with Head Office and Warehouses in Wolverhampton.

R. D. Bensley has taken up an appointment as General Manager with The Bushboard Co. Ltd., Highgate.

On August 1 Purimachos Ltd., Bristol 2, introduced a new Plastic Fire Cement to be known as KOS, the improved Purimachos Fire Cement.

R. Munro, 14, Highgate Drive, Leicester, has been appointed technical representative for the East Midlands for Sealocrete Products Ltd.

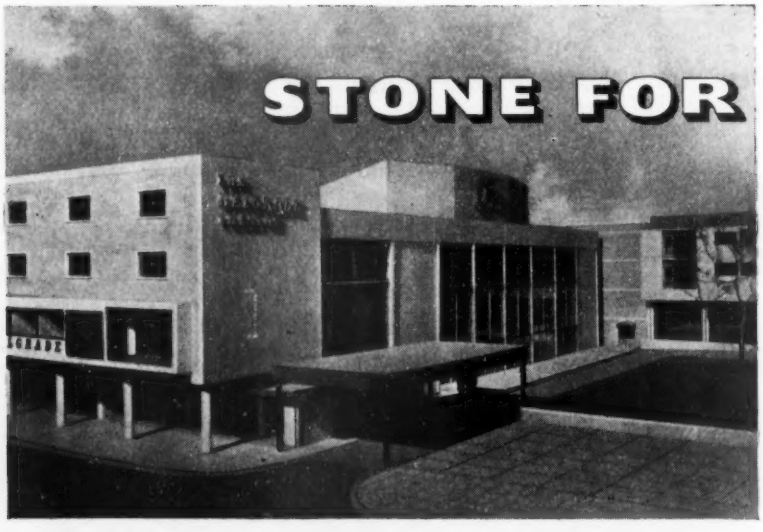
PROFESSIONAL

The new telephone number of F. J. Guy, B.A. (ARCH.), A.R.I.B.A., is Portsmouth 22929.

Derrick Rigby Childs, B.A. (ARCH.), A.M.T.P.I., A.R.I.B.A., has now moved to 17, Montagu Square, London, W.1 (telephone: Welbeck 1753).

Correction

In the article on the Aspro Nicholas factory and offices published in the JOURNAL of July 17 the architectural responsibilities were wrongly attributed. A. M. Cutler, who was described as an assistant, was, in fact, one of the senior assistant architects on this factory.



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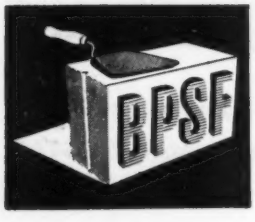

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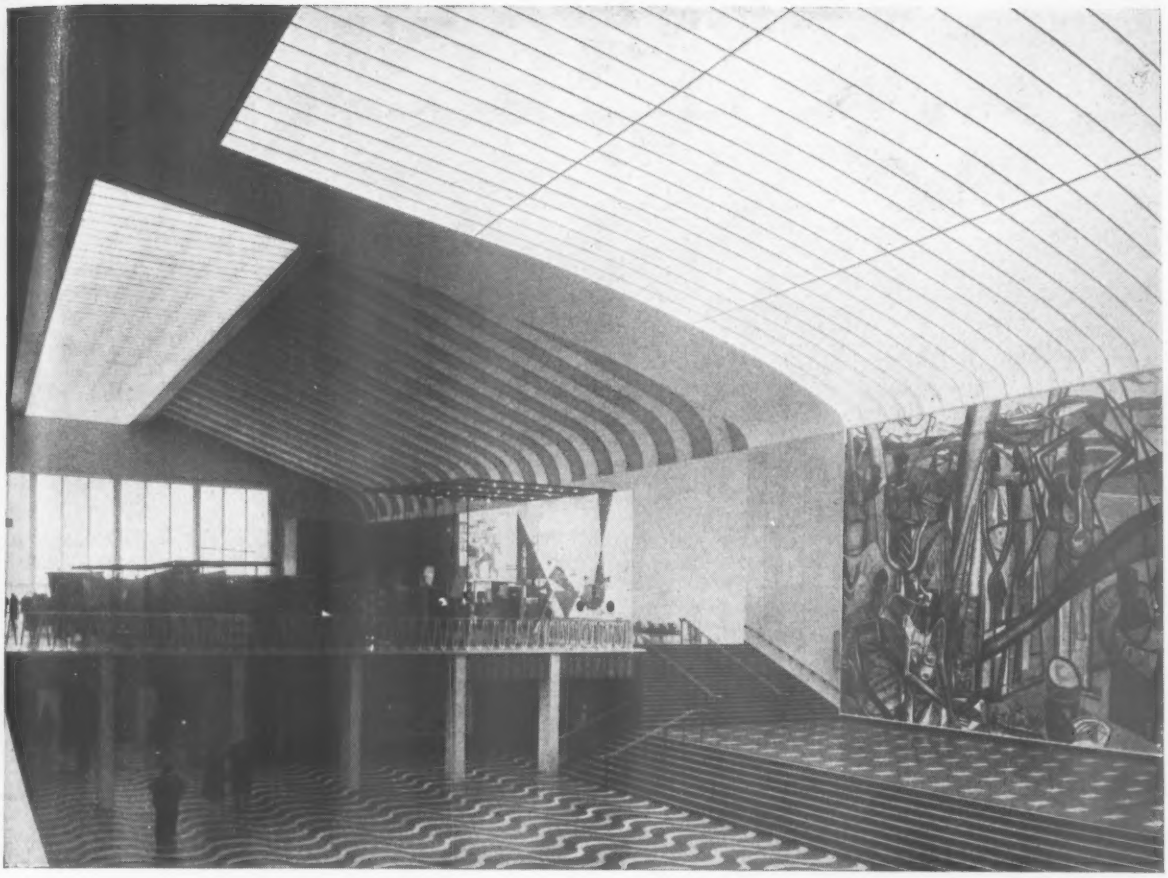

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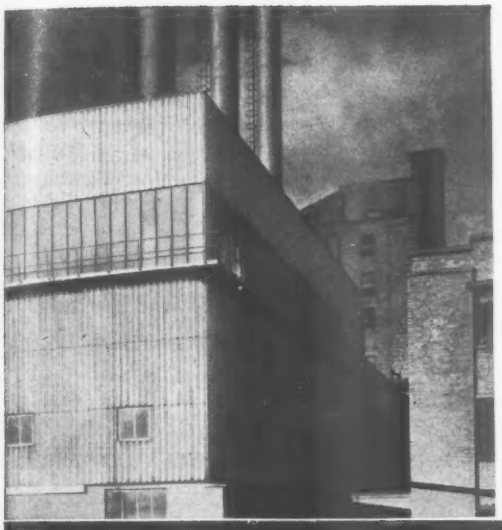

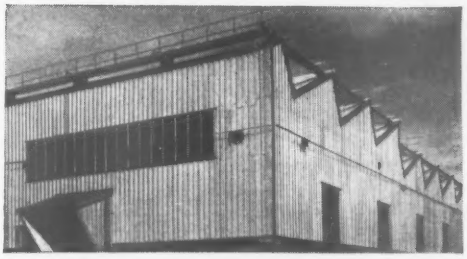

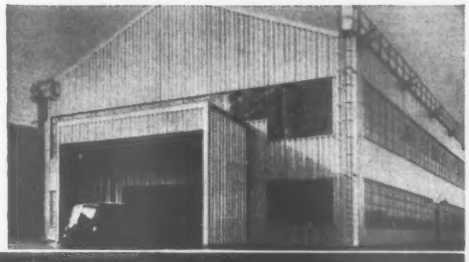

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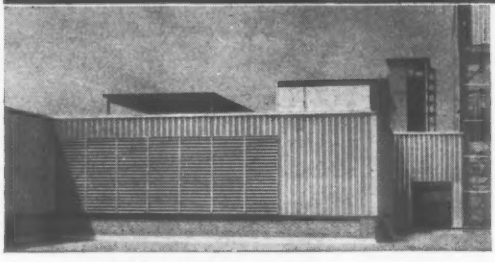

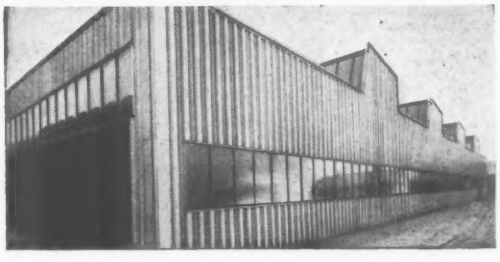

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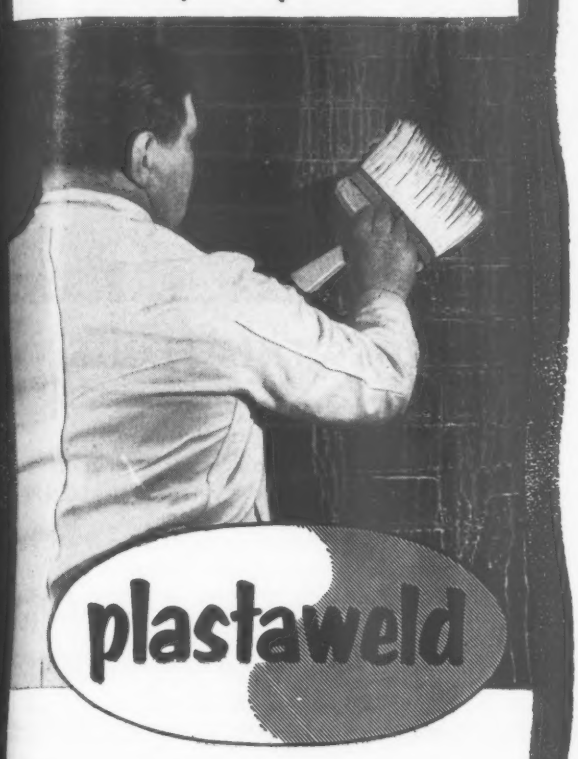

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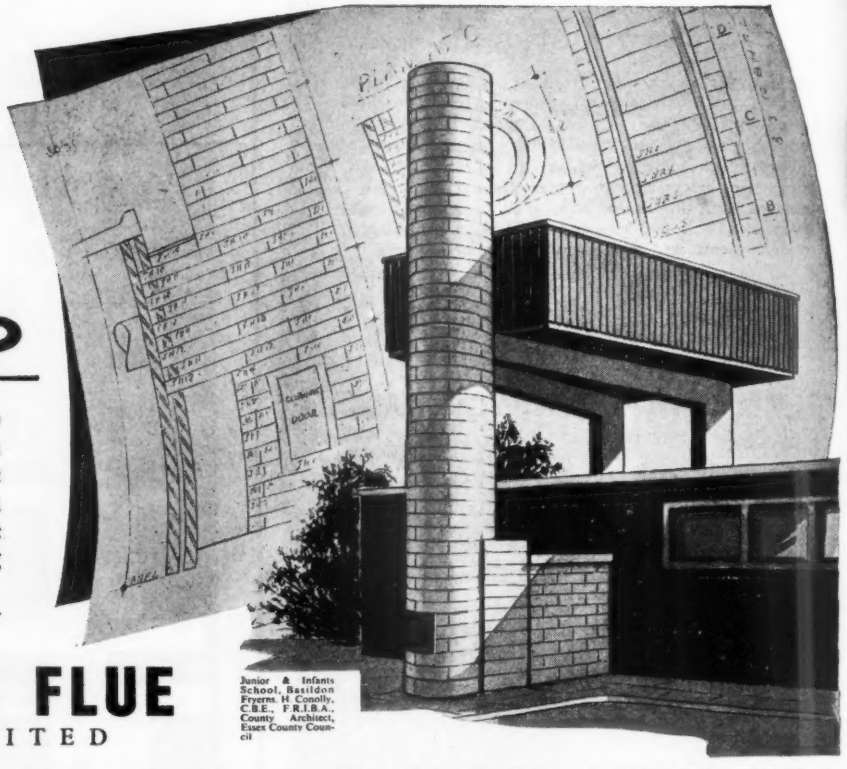

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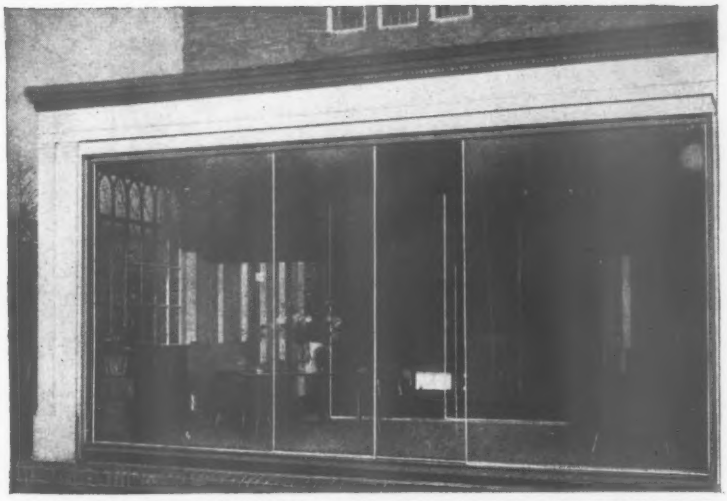

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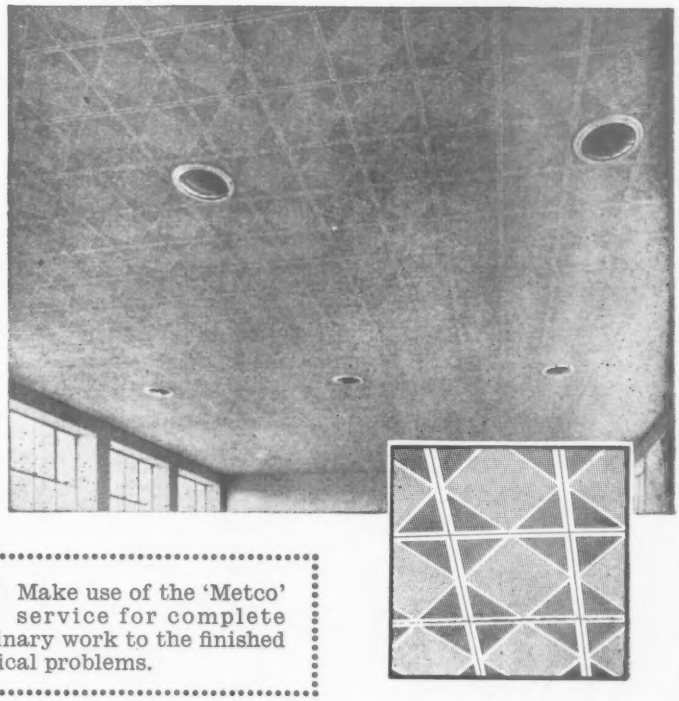

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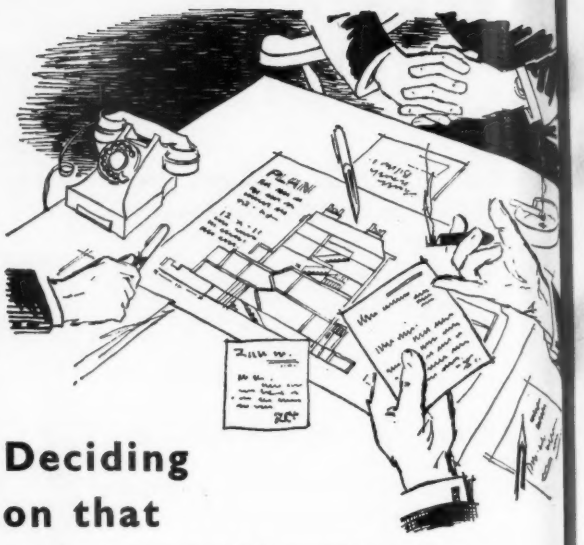

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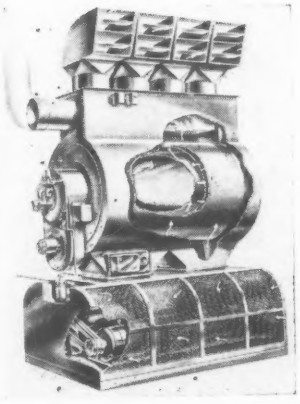

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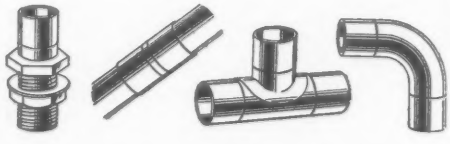

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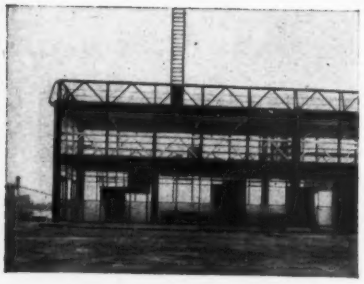
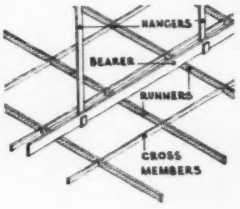
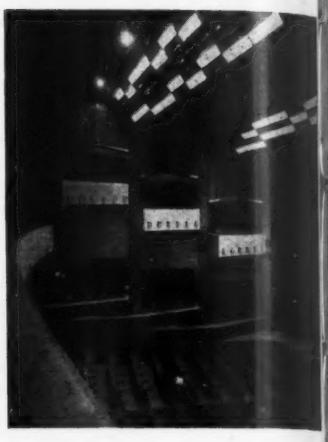


Glass Cages at Gatwick: Some of the new buildings at Gatwick airport are almost brutalistically solid, others are transparent glass and steel structures, all are fully described in a special feature.

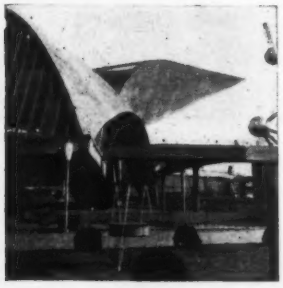
Right: overhead nomenclature: the designations of the parts of suspended ceilings, from the first of a number of articles on this new entrant in the field of prefabricated building elements.



Right: Theatre in Coventry; a view across the auditorium of the newly-opened Belgrade Theatre. The interior of the National Film Theatre is also given the full treatment in this issue.



AUGUST Special Issue
The Brussels Exhibition

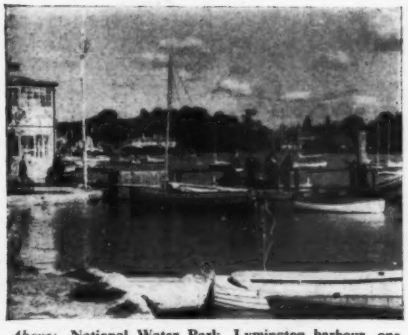


Neotechnic dinosaur; the gigantic equilibrated structure designed by van Dooselaere and Paduart to celebrate the triumphs of civil engineering.

Japanese Garden; trees, water, sculptured objects and symbolic rocks in the traditional modern garden adjoining Mayekawa's Japanese pavilion.

Turkish Delight; structure, space, light, air and traditional crafts combined in the pavilion by Izgi, Sensoy and Turega

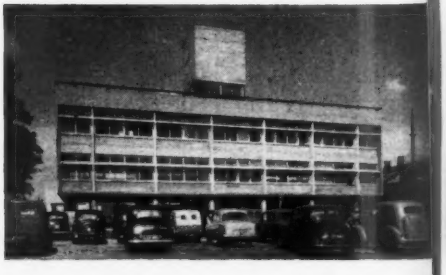
SEPTEMBER



Above: National Water Park, Lymington harbour, one of the small multi-purpose boating centres serving the Solent, whose future is discussed as a matter of urgency by Geoffrey Robson.

Suspended Ceilings, the conference room of an office block in Rome by Aldo della Rocca, from Michael Brawne's article on the aesthetics of suspended ceilings. (See also A. R. July and September Skill articles.)

Below: Bold Front in Birmingham, a new prestige office block added to an existing factory, by Erno Goldfinger, one of the buildings illustrated and described in this issue.



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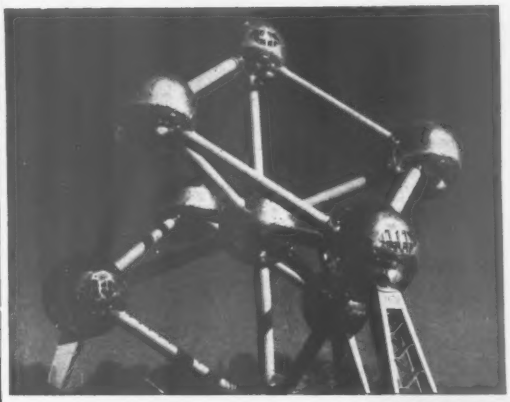

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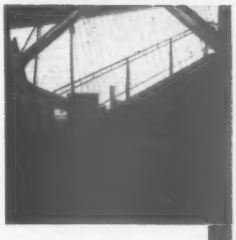

Interior views of The Atomium showing Bulgomme-Silence in the restaurant and on the stairways.

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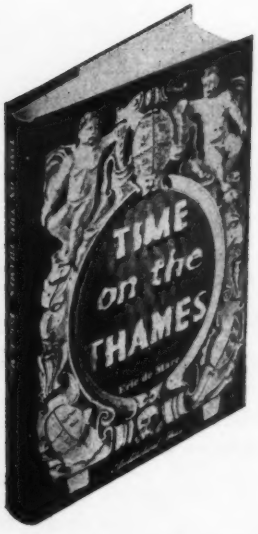
by ERIC DE MARÉ



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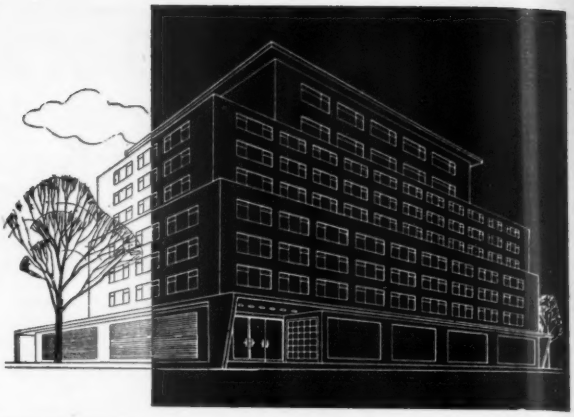

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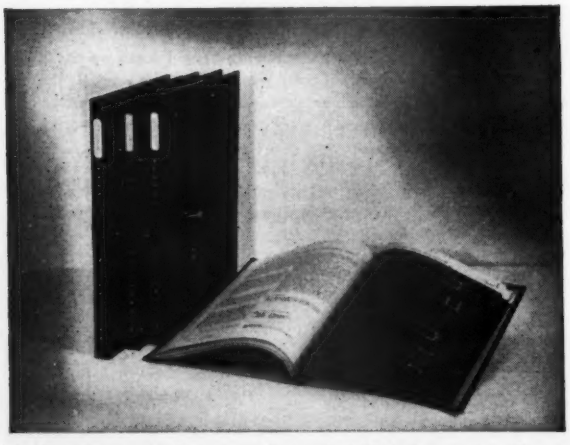

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Candidates not yet fully qualified will be appointed on the appropriate grade and subject to satisfactory service will progress to the Special Scale on obtaining the final qualification.

Applications giving age, qualifications, present appointment and two referees to the County Planning Officer, East Cliff County Offices, Preston, by 13th August, 1958. 1103

CORPORATION OF THE CITY OF ABERDEEN
TOWN PLANNING DEPARTMENT

Applications are invited for the post of ASSISTANT (Development Control) in the Salary Grade £880 to £955 per annum. The post is superannuable and appointment thereto is subject to the passing of a medical examination. Further particulars of the post are obtainable from the Director of Town Planning, 5, Bon-Accord Crescent, Aberdeen, with whom applications should be lodged on or before 16th August, 1958.

J. C. RENNIE,
Town Clerk.

Town House,
Aberdeen.
22nd July, 1958. 1059

QUANTITY SURVEYING ASSISTANTS required by AIR MINISTRY in LONDON and PROVINCES. Duties include abstracting and billing, site measurement and preparation of estimates. Commencing salary and grading according to age, qualifications and experience. Salary ranges in London: (a) £545 at age 25 rising to £745 for candidates with minimum three years' good experience under Quantity Surveyor or Building Contractor; (b) £695 at age 26 rising to £870 for candidates with O.N.C. (Building) or (Builders Quantities) or equivalent and good experience under Quantity Surveyor or Building Contractor. Approved full time study will count towards period of experience. Salaries somewhat lower in Provinces. Promotion and pensionable prospects. Five-day week, three weeks' leave a year. Appointments carry liability for service anywhere U.K. or overseas. Applicants normally should be natural born British subjects. Write stating age, qualifications and previous appointments including type of work done, to Manager Professional and Executive Register, Ministry of Labour and National Service, Atlantic House, Farringdon Street, E.C.4, quoting reference PE 105/745. No original testimonials should be sent. Only applicants selected for interview will be advised. 1102

STAFFORDSHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following Superannuable Posts:—

(1) ARCHITECTS. Special Grade (£750 × £40—£1,030).

Applicants must be qualified in accordance with para. 21(8)ix(c) of the National Scheme of Conditions.

(2) QUANTITY SURVEYORS. 1 on A.P.T. V (£1,175 × £50—£1,325). 2 on A.P.T. IV (£1,025 × £50—£1,175). 2 on A.P.T. III (£845 × £35—£1,025). 5 on A.P.T. II (£725 × £30—£845).

Applicants for posts on Grade IV and V must be Chartered Surveyors and those for Grades II and III should have passed the Intermediate Examination of the Royal Institute of Chartered Surveyors, or equivalent.

(3) HEATING ENGINEERS. Special Grade (£750 × £40—£1,030). A.P.T. III (£845 × £35—£1,025). A.P.T. II (£725 × £30—£845), or A.P.T. I (£575 × £30—£725). According to qualifications and experience.

Preference will be given to Members of the Institution of Heating and Ventilating Engineers.

The Department is at present carrying out an extensive programme of building work embracing all Committees of the County Council and the work is varied and interesting.

The Council are prepared to grant a lodging allowance of 35s. per week to married applicants maintaining a home outside the Geographical County for a period of six months, and will give consideration to the granting of financial assistance towards removal expenses in appropriate cases.

Applications should be made on forms to be obtained from:—A. C. H. Stillman, F.R.I.B.A., County Architect, Green Hall, Lichfield Road, Stafford, returnable by the 25th August, 1958.

T. H. EVANS,
Clerk of the County Council. 1108

COUNTY COUNCIL OF ESSEX

Required on the established staff:—

SENIOR ASSISTANT ARCHITECT, Grade IV, A.P.T.D., salary not exceeding £1,175, in a small liaison group dealing with work of private architects. Duties largely administrative—to interview and discuss proposals with leading private architects and to have consultations with officers of Ministries and other departments of County Council. Candidates must be members of R.I.B.A.

Commencing salary according to experience and qualifications.

Application forms from H. Conolly, C.B.E., F.R.I.B.A., County Architect, County Hall, Chelmsford, to be returned with copies of three testimonials by 21st August, 1958.

Canvassing disqualifies. 1106

COUNTY OF ARMAGH EDUCATION COMMITTEE
ARCHITECTURAL ASSISTANT

Applications are invited for the above post from persons with at least three years' experience. Salary will be within the range £300 to £875, the point of entry being determined according to the age, experience and qualifications of the person appointed.

Forms of application and further particulars may be obtained from the Chief Architect, 9, Beresford Row, The Mall, Armagh, with whom completed forms should be lodged not later than 31st August, 1958.

W. H. DAWSON,
Director of Education.

Courthouse,
Armagh.
29th July, 1958. 1114

CWMBRAN DEVELOPMENT CORPORATION

Applications are invited for the post of ASSISTANT ARCHITECT in the Salary Grade A.P.T. V (£844 × £37—£1,029) with a commencing salary according to qualifications and experience.

Candidates should be Associates of the R.I.B.A. with suitable office experience and should have had good experience in House Design, Construction and Layout.

The post is superannuable and housing accommodation will be provided in suitable cases, or otherwise lodging allowance will be paid to married men for a limited period.

Applications stating age, qualifications, experience, present and former employment (together with applicable salaries) and the names and addresses of two referees, should reach the undersigned by first post on Monday, 1st September, 1958.

J. C. P. WEST, A.R.I.B.A., M.T.P.I.,
Chief Architect.

Victoria Street,
Cwmbran,
Mon. 1107

GHANA PUBLIC SERVICE COMMISSION
PUBLIC WORKS DEPARTMENT

Applications are invited for the following vacancies:—

SUPERINTENDENT ARCHITECT. To design, prepare working drawings and supervise the construction of Government buildings, *e.g.*, quarters, offices, hospitals, schools, law courts, etc.; to perform administrative duties, and to supervise team of Architects. Candidates must be A.R.I.B.A or hold a recognised equivalent qualification and must have had at least eight years' post-qualification professional experience and must have had substantial experience in the design of school buildings and modern hospitals. Previous experience of Government or Local Authority work is desirable. Salary in range £2,160—£2,560 a year.

ARCHITECTS (DEVELOPMENT). To design and supervise construction of public buildings. Must be A.R.I.B.A. Experience of Government or Local Government work desirable. Salary in range £1,080—£2,080 a year.

Appointments are on contract for three tours each of 18-24 months duration. Gratuity at rate of £12 10s. for each completed month of residential service payable on completion of contract. Outfit allowance £30—£60 on first appointment. Free first class passages for officer, wife and up to three children under 18 years and in addition an education allowance for children when not resident in Ghana of £100 a child for up to three children under 18 years. Generous home leave on full pay. Income tax at low local rates. Preservation of superannuation or pension rights, where applicable, can be arranged.

For further particulars and application form write, stating age, qualifications and experience to The Director of Recruitment, Ghana High Commissioner's Office, 13, Belgrave Square, London, S.W.1. 1115

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies for: (1) ARCHITECTS, Grade III, starting salary up to £1,090 a year. (2) ARCHITECTURAL ASSISTANTS, starting salary up to £860.

Full and interesting programme of houses, flats, schools and general buildings.

Application form and full particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council, the County Hall, S.E.1, quoting ref. AR/EK/36/58. (1428) 1074

DERBYSHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

SENIOR QUANTITY SURVEYOR required as Deputy to Chief Quantity Surveyor. Salary on J.N.C. grade "A," £1,205 to £1,380 per annum. Must be fully qualified. National Joint Council conditions of service. Pensionable post. Canvassing disqualifies. Application forms from The County Architect, County Offices, Matlock. 1105

Architectural Appointments Vacant

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra

CO-OPERATIVE WHOLESALE SOCIETY LTD. ARCHITECT'S DEPARTMENT, MANCHESTER

APPLICATIONS are invited for the appointment of ASSISTANT ARCHITECTS with experience of work on commercial and industrial projects, capable of preparing working drawings from preliminary details. Five-day week in operation. Applications stating age, experience, qualifications and salary required to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4. 9585

SENIOR ARCHITECTURAL ASSISTANT required urgently—must have good standard of design ability and at least five years' sound experience in Architect's office.
Intermediate ARCHITECTURAL ASSISTANT also required. Good training and office experience.
Please apply Leach, Rhodes & Walker, 90, Deansgate, Manchester, 3, giving all details and salary required. 1122

ASSISTANT ARCHITECT—qualified—urgently required to take responsible position in small progressive office—varied and interesting work. Opportunity for advancement according to ability. Write, giving full particulars and salary required, to Waring & Netts, A/A.R.I.B.A., 36, Jesmond Road, Newcastle-upon-Tyne, 2. 1121

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EXPERIENCED SENIOR ASSISTANTS required to take charge of Contracts with minimum supervision. Medium sized office. General practice with present emphasis on local authority housing. Apply in writing only, stating age, qualifications, experience and salary required, to: Thomas Sibthorp, F.R.I.B.A., A.R.I.C.S., A.M.T.P.I., 10, Manchester Square, W.1. 1003

RONALD WARD & PARTNERS require ARCHITECTURAL ASSISTANTS with contemporary outlook, and willing to use own initiative. Salary range £600 to £900. Congenial working conditions. Five-day week. Apply: 29, Chesham Place, Belgrave Square, S.W.1. Telephone: Belgravia 3361. 9999

JUNIOR ASSISTANT required in busy West End practice. Good opportunities for obtaining all round experience. Write giving age, salary required, etc., Box 1002.

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ARCHITECT requires part time assistance (approximately 3 days per week) in own London office of ASSISTANT with good design ability and experience of interior and exhibition work. Box 1046.

WANTED in London office of A.R.I.B.A. engaged on work for Housing Company, ARCHITECTURAL ASSISTANT, Intermediate R.I.B.A. standard. Experience in preparation of Sketch Designs, Working Drawings and Specifications essential. Salary according to experience and capabilities. Box 1067.

JUNIOR ARCHITECTURAL ASSISTANT required in City Office. Five-day week. Salary £350 to £500. Apply Box 9995.

EXPERIENCED ARCHITECTURAL DRAUGHTSMEN required for office in EPSOM, Surrey. Preference will be given to those who have passed the Intermediate examination of the R.I.B.A. Five-day week; pension scheme. Apply in writing to Personnel Manager, W. S. Atkins & Partners, 158 Victoria Street, S.W.1. 1040

EPARTMENT OF HEALTH FOR SCOTLAND: The Architectural Division which covers work on housing, hospitals, schools, local authority buildings, agricultural colleges and State institutions and includes development work, has vacancy in Edinburgh for an ASSISTANT ARCHITECT (non-pensionable post). Salary range £780—£1,215. Write Establishment Officer, Department of Health for Scotland, St. Andrew's House, Edinburgh, 1, for application form. Closing date Friday, 29th August, 1958. 1054

JUNIOR ARCHITECTURAL ASSISTANTS required in City Office. Varied Practice. Candidates should at least have reached Intermediate standard. Box 1045.

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ARCHITECTURAL ASSISTANT required with office experience. Applicants, who should be at or approaching Intermediate stage, should send details of education, training, and past employment, to Louis de Soissons, Peacock, Hodges, Robertson & Fraser, 12, Baring Crescent, Exeter. 1062

COMBINED TECHNICAL SERVICES, Egham, require ASSISTANTS who have architectural and structural engineering experience, for work on industrial building design under the direction of the company architect.
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A VACANCY occurs in the Architect's Department of the Milk Marketing Board for a SENIOR ASSISTANT capable of preparing working drawings and details of factory and office buildings. Applications, stating age, experience and salary required, to the Chief Personnel Officer, Milk Marketing Board, Thames Ditton, Surrey. 1110

ARCHITECTURAL ASSISTANT required immediately, Intermediate standard, for the general practice, but mostly housing. Please apply, stating age, salary required (car desirable), to E. John Evans, 66, High Street, Walton-on-Thames, Surrey. 1109

ENTHUSIASTIC NO. 1 wanted for City Architects' office. All-round experience essential. Work varied and interesting. Write giving full particulars to Box 1060.

ARCHITECTURAL ASSISTANT of Intermediate standard or over, required by small but busy office. Salary £500—£600 per annum according to ability and experience. Apply to Turner & Kitching, A/A.R.I.B.A., 20, Stone Street, Gravesend, Kent. Telephone: Gravesend 6996. 1100

ASSISTANT of Intermediate standard required by North Essex Branch Office engaged on architectural and engineering projects. Possibility of transfer to London Head Office at later date. Must be good draughtsman with sound knowledge of construction. Salary according to experience. Write Box 1099.

ARCHITECTURAL ASSISTANT of Intermediate R.I.B.A. standard required in Reading Office. Applicants must be capable draughtsmen, able to make surveys, produce working drawings and details. Must be used to working in a provincial office. Apply in writing, stating experience and salary required, to Box 1097.

TREHEARNE & NORMAN, PRESTON & PARTNERS, have a vacancy for a SENIOR ASSISTANT. Salary according to experience and qualifications. Apply: 83, Kingsway, W.C.2 (HOL. 4071). 1096

ARCHITECTURAL ASSISTANTS required for small busy practice; experience and detailing of houses and flats essential. Salary £600 to £850 according to qualifications and experience. Write giving particulars of architectural education and experience. W.C.2 district. Box 1095.

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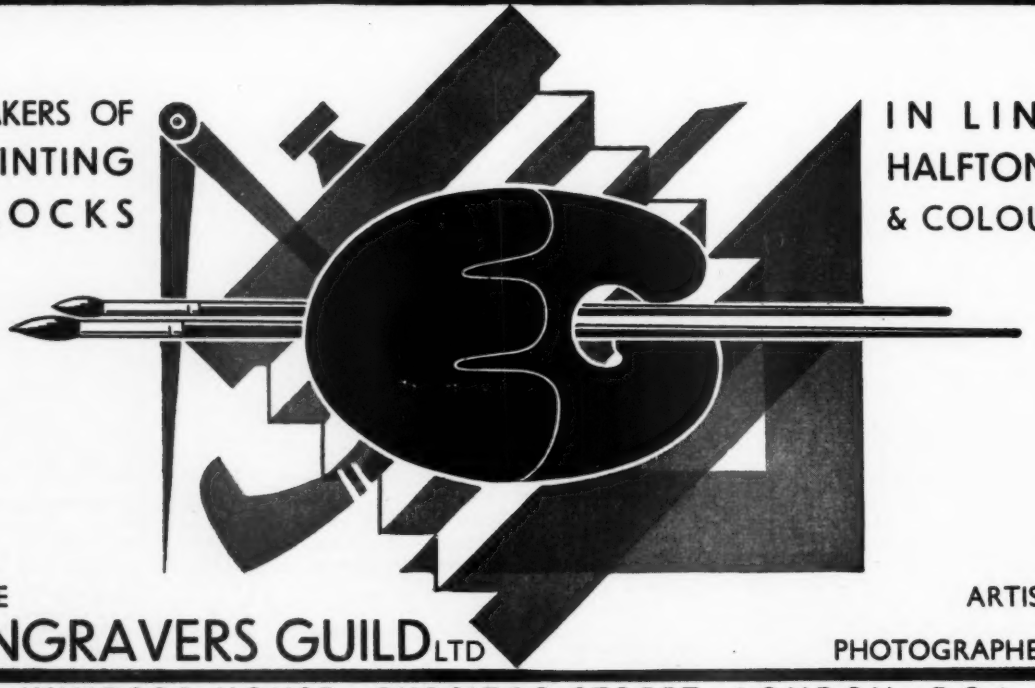

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SENIOR and INTERMEDIATE ASSISTANTS required immediately with experience in private practices for full and interesting programme in medium sized office. Full particulars and salary required to Deacon & Laing, Chartered Architects, 65, Goldington Road, Bedford. 1116

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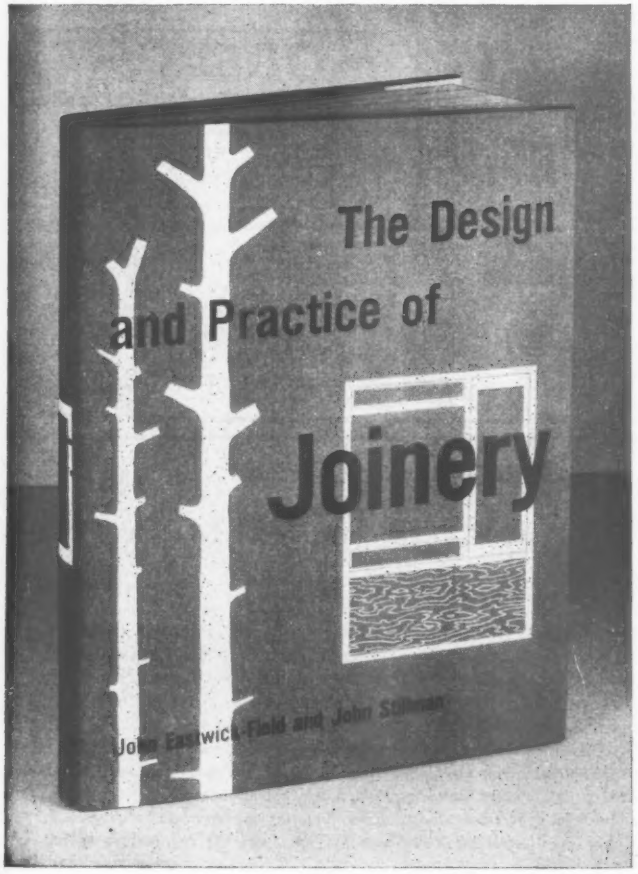

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Foreword by Robert H. Matthew, C.B.E., M.A., F.R.I.B.A.

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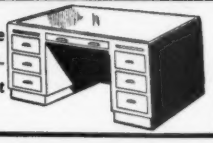
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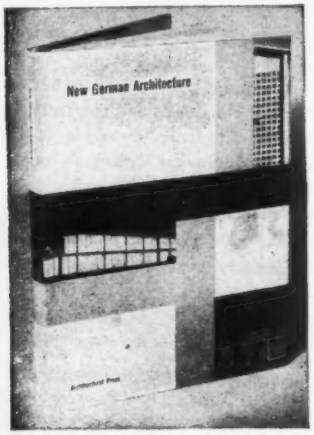

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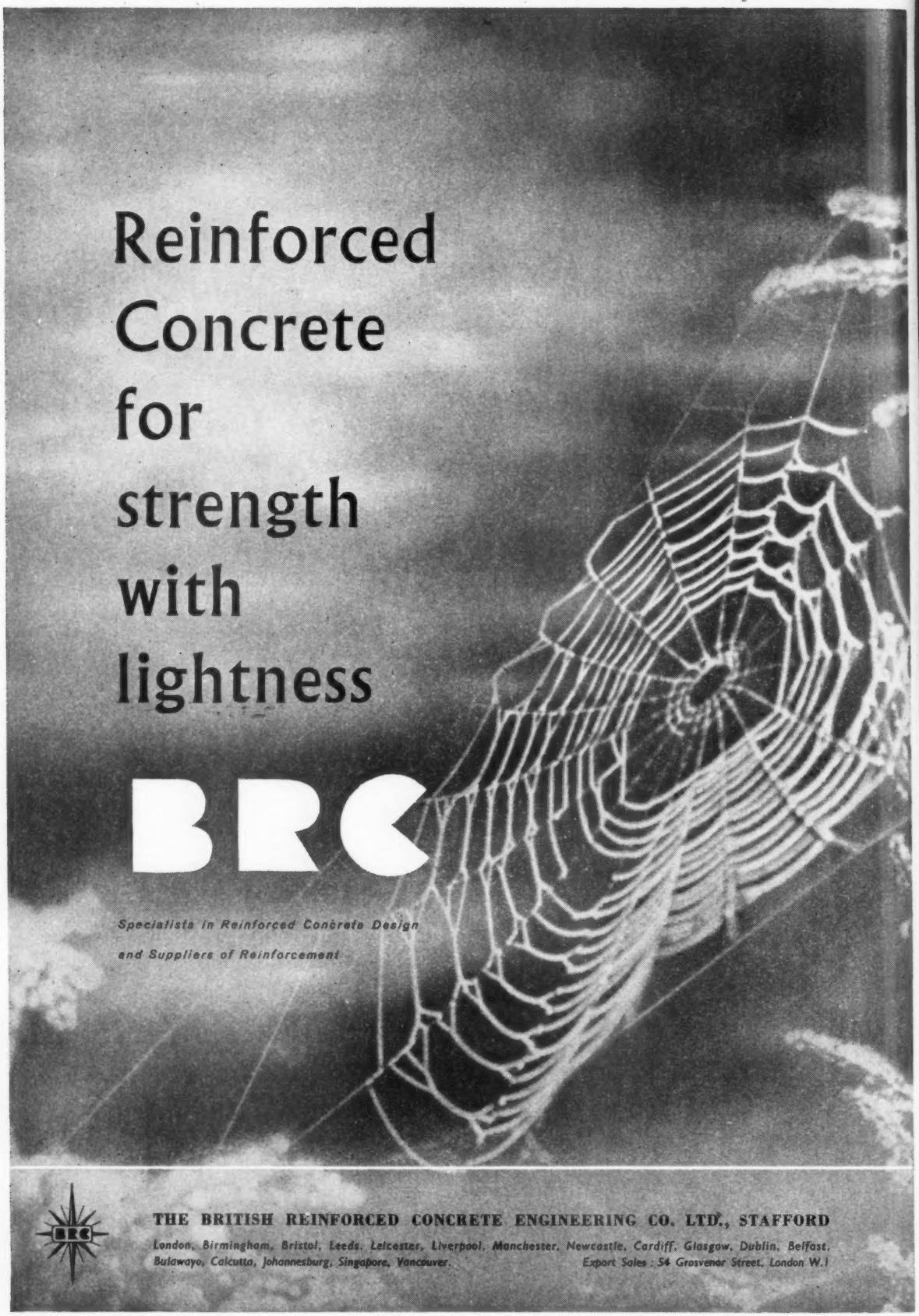

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