

# THE ARCHITECTS' JOURNAL



## standard contents

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

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Architectural Appointments  
Wanted and Vacant

No. [3164]

[Vol. 122]

THE ARCHITECTURAL PRESS

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S.W.1. 'Phone: Whitehall 0611

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Registered as a Newspaper.

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

AA	Architectural Association, 34/6, Bedford Square, W. C.1.	Museum 0974
AAI	Association of Art Institutions. Secy.: W. Marlborough Whitehead, "Dyneley," Castle Hill Avenue, Berkhamstead, Herts.	
ABS	Architects' Benevolent Society. 66, Portland Place, W.1.	Langham 5721
ABT	Association of Building Technicians. 1, Ashley Place, S.W.1.	Victoria 0447-8
ACGB	Arts Council of Great Britain. 4, St. James' Square, S.W.1.	Whitehall 9737
ADA	Aluminium Development Association. 33, Grosvenor Street, W.1.	Mayfair 7501/8
ArchSA	Architectural Students' Association. 34/36, Bedford Square, W.C.1.	
ARCUK	Architects' Registration Council. 68, Portland Place, W.1.	Langham 8738
BAE	Board of Architectural Education. 66, Portland Place, W.1.	Langham 5721
BATC	Building Apprenticeship and Training Council. Lambeth Bridge House, S.E.1.	
BC	Building Centre. 26, Store Street, Tottenham Court Road, W.C.1.	Reliance 7611, Ext. 1706
BCC	British Colour Council. 13, Portman Square, W.1.	Museum 5400
BCCF	British Cast Concrete Federation. 105, Uxbridge Road, Ealing, W.5.	Welbeck 4185
BCIRA	British Cast Iron Research Association. Alvechurch, Birmingham.	Ealing 9621
BDA	British Door Association. 10, The Boltons, S.W.10.	Redditch 716
BEDA	British Electrical Development Association. 2, Savoy Hill, W.C.2.	Fremantle 8494
BIA	British Ironfounders' Association. 145, Vincent Street, Glasgow, C.2.	Temple Bar 9434
BID	Building Industries Distributors. 52, High Holborn, W.C.1.	Glasgow Central 2891
BINC	Building Industries National Council. 11, Weymouth Street, W.1.	Chancery 7772
BOT	Board of Trade. Whitehall Gardens, Horseguards Avenue, Whitehall, S.W.1.	Langham 2785
BRDB	British Rubber Development Board. Market Buildings, Mark Lane, E.C.3.	Trafalgar 8855
BRIS	Building Research Station. Bucknalls Lane, Watford	Mansion House 9383
BSA	Building Societies Association. 14, Park Street, W.1.	Garston 2246
BSI	British Standards Institution. British Standards House, 2, Park St., W.1.	Mayfair 0515
BTE	Building Trades Exhibition. 4, Vernon Place, W.C.1.	Mayfair 9000
CABAS	City and Borough Architects Society. C/o Johnson Blackett, F.R.I.B.A., Civic Centre, Newport, Mon. Newport 65491	Holborn 8146/7
CAS	County Architects' Society. C/o F. R. Steele, F.R.I.B.A., County Hall, Chichester. Chichester 3001	
CCA	Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1.	Sloane 5255
CCP	Council for Codes of Practice. Lambeth Bridge House, S.E.1.	Reliance 7611
CDA	Copper Development Association. Kendals Hall, Radlett, Herts.	Radlett 5616
CIAM	Congrès Internationaux d'Architecture Moderne. Dolderal, 7, Zurich, Switzerland.	
COID	Council of Industrial Design. 28 Haymarket, S.W.1.	Trafalgar 8000
CPRE	Council for the Preservation of Rural England. 4, Hobart Place, S.W.	Sloane 4280
CUC	Coal Utilization Council. 3, Upper Belgrave Street, S.W.1.	Sloane 9116
CVE	Council for Visual Education. 13, Suffolk Street, Haymarket, S.W.1.	Reading 72255
DGW	Directorate General of Works, Ministry of Works, Lambeth Bridge House, S.E.1.	
DIA	Design and Industries Association. 13, Suffolk Street, S.W.1.	Reliance 7611
DPT	Department of Overseas Trade. Horseguards Avenue, Whitehall, S.W.1.	Whitehall 0540
EJMA	English Joinery Manufacturers' Association (Incorporated). Sackville House, 40, Piccadilly, W.1. Regent 4448	
EPNS	English Place-Name Society. 7, Selwyn Gardens, Cambridge.	
FAS	Faculty of Architects and Surveyors. 68, Gloucester Place, W.1.	Welbeck 9966
FASS	Federation of Association of Specialists and Sub-Contractors, Artillery House, Artillery Row, S.W.1. Abbey 7232	
FBBDO	Fibre Building Board Development Organization, Ltd. 47, Princes Gate, Kensington, S.W.7. Kensington 4577	
FBI	Federation of British Industries. 21, Tothill Street, S.W.1.	Whitehall 6711
FC	Forestry Commission. 25, Savile Row, W.1.	
FCMI	Federation of Coated Macadam Industries. 37, Chester Square, S.W.1.	Sloane 1002
FDMA	The Flush Door Manufacturers Association Ltd. Trowell, Nottingham. Ilkeston 623	
FLD	Friends of the Lake District. Pennington House, nr. Ulverston, Lancs.	Ulverston 201
FMB	Federation of Master Builders. 26, Great Ormond Street, Holborn, W.C.	
FPC	The Federation of Painting Contractors, St. Stephen's House, S.W.1.	Chancery 7583
FRHB	Federation of Registered House Builders. 82, New Cavendish Street, W.1.	Whitehall 3902
GBPA	Gypsum Building Products Association, 11, Ironmonger Lane, E.C.2.	Langham 4041
GC	Gas Council. 1, Grosvenor Place, S.W.1.	Monarch 8888
GG	Georgian Group. C/o R. H. Davies, F.R.I.B.A., 44, Lowndes Street, S.W.1.	Sloane 4554
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Belgravia 3081
IAAS	Incorporated Association of Architects and Surveyors. 75, Eaton Place, S.W.1.	Whitehall 2881
ICA	Institute of Contemporary Arts. 17-18, Dover Street, Piccadilly, W.1.	Sloane 5615
ICE	Institution of Civil Engineers. Great George Street, S.W.1.	Grosvenor 6186
IEE	Institution of Electrical Engineers. Savoy Place, W.C.2.	Whitehall 4577
IES	Illuminating Engineering Society. 32, Victoria Street, S.W.1.	Temple Bar 7676
		Abbey 5215



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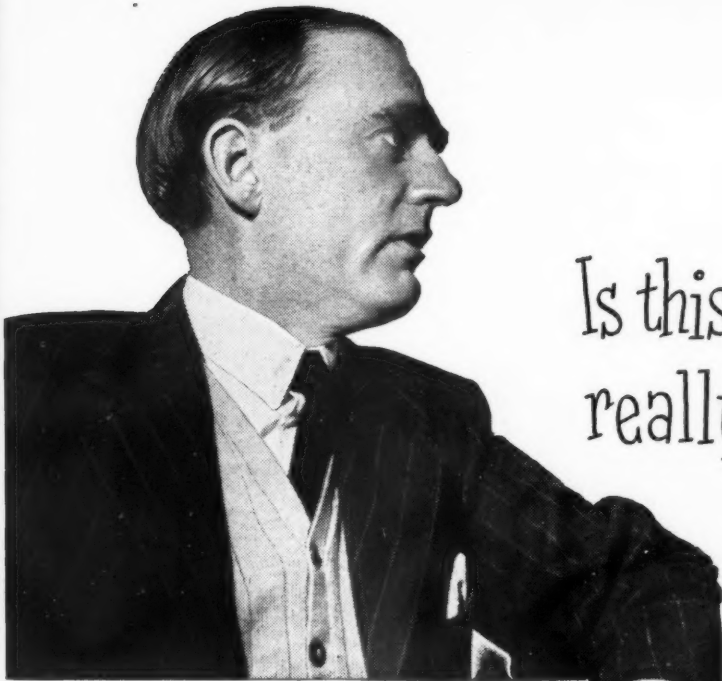
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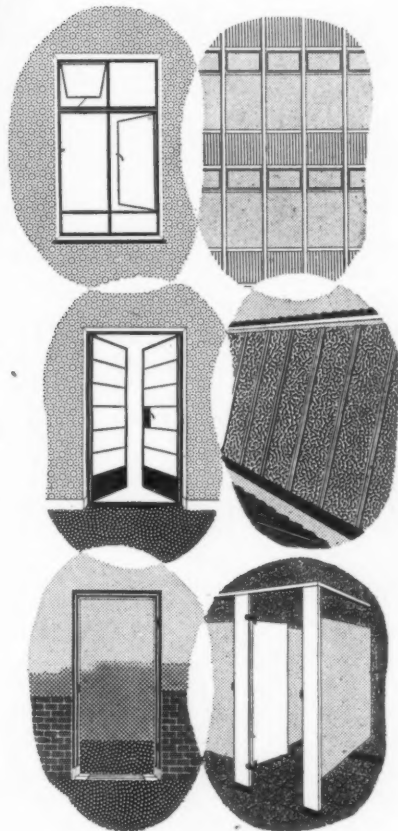
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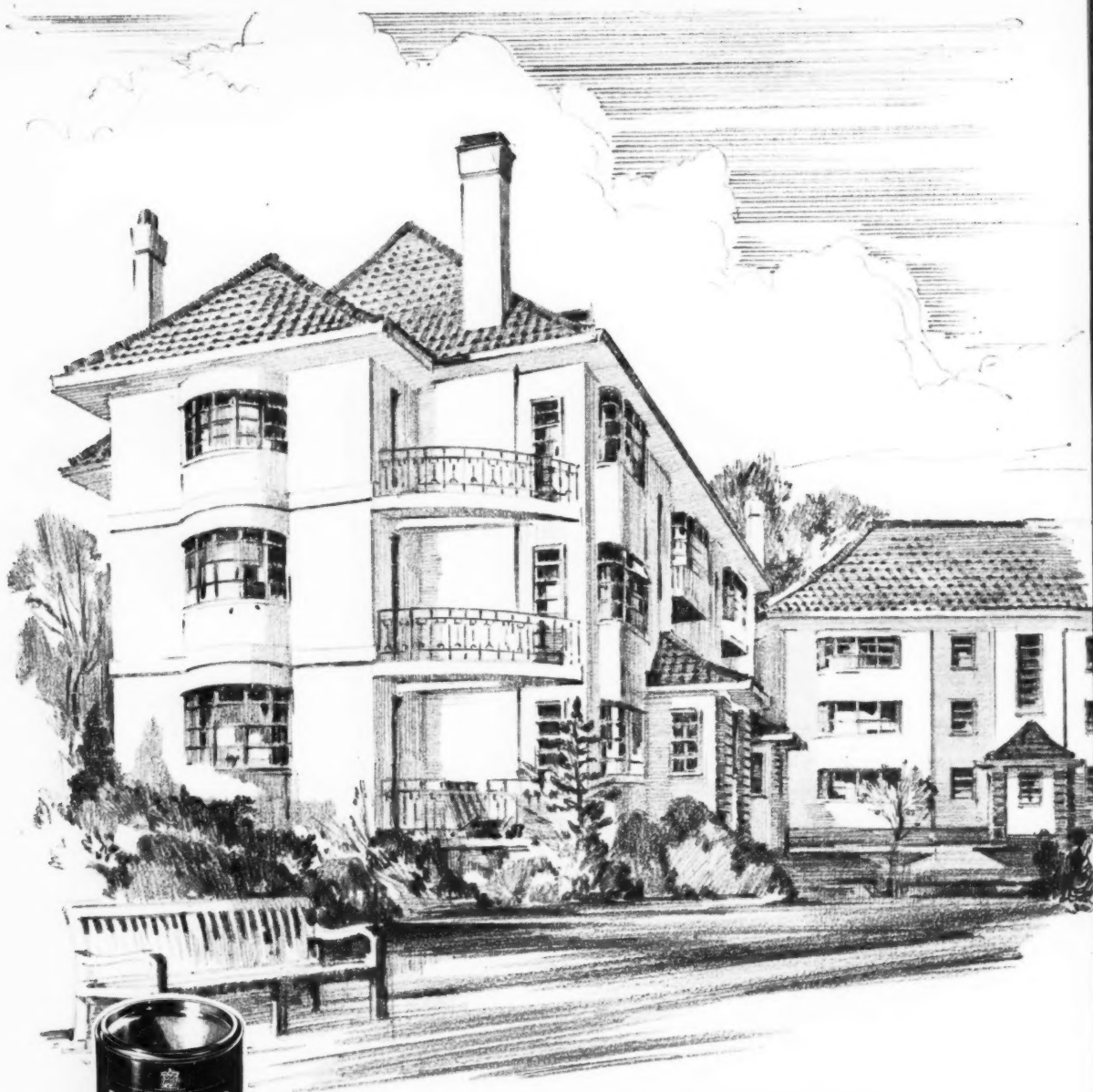
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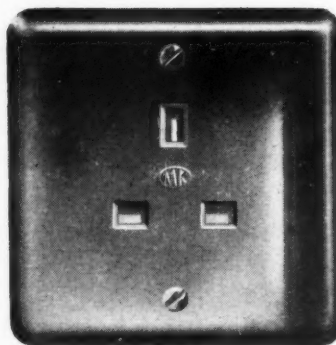
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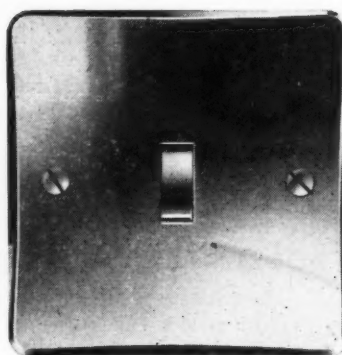
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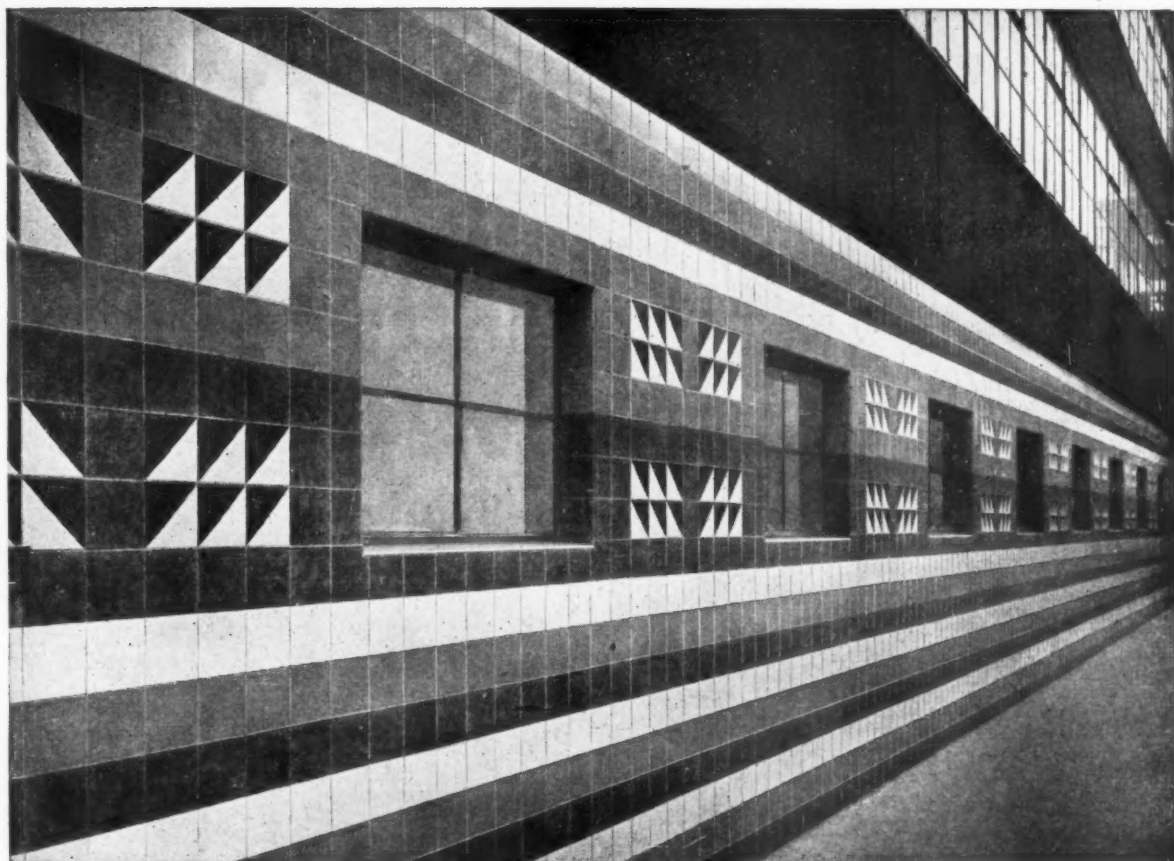
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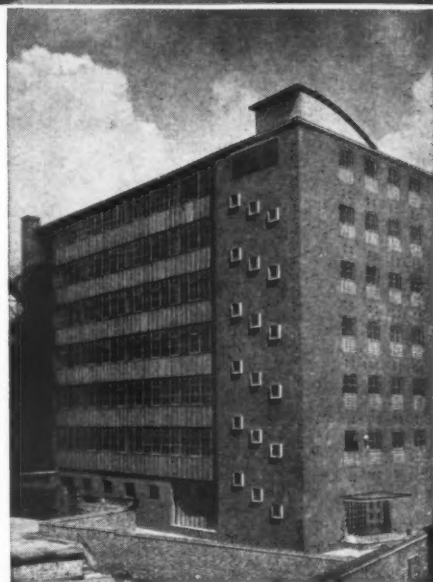
*M. K. Electric Limited, Wakefield Street, London N.18 Edmonton 5151*





18/20 Crucifix Lane, S.E.1. Architect: Edward H. Eames, A.R.I.B.A.

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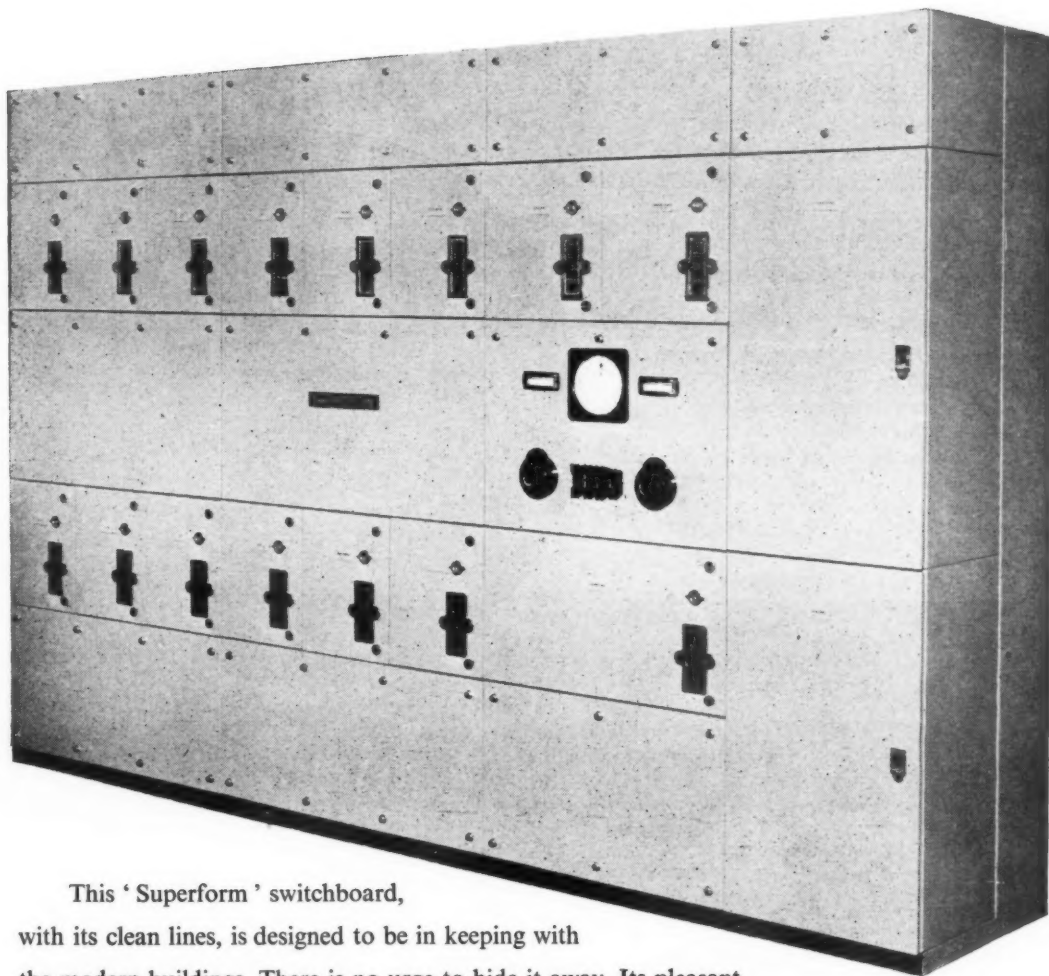
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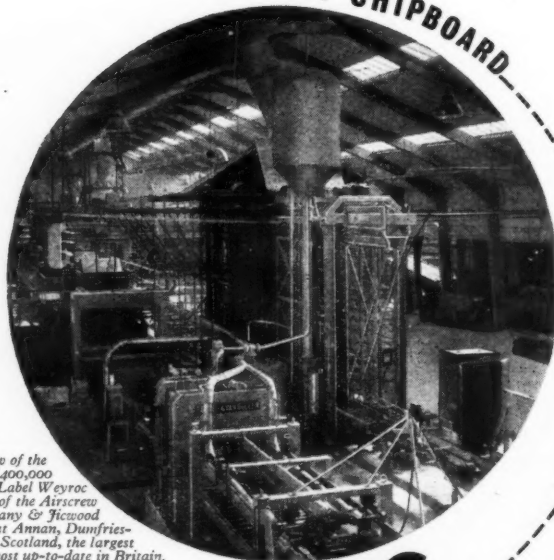
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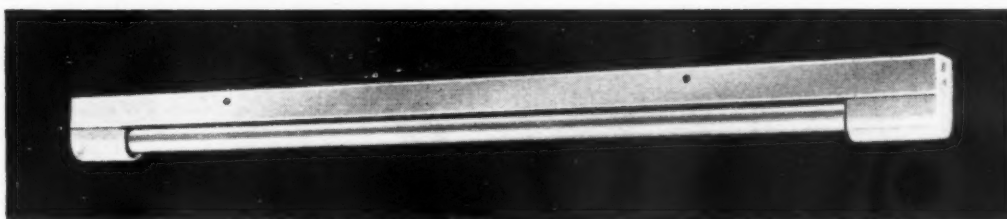
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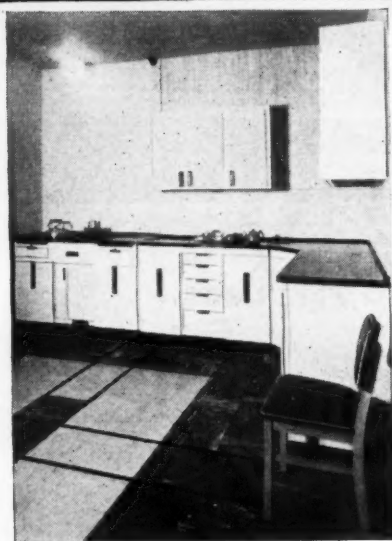


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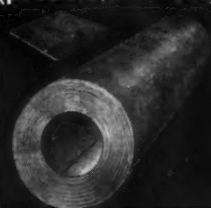
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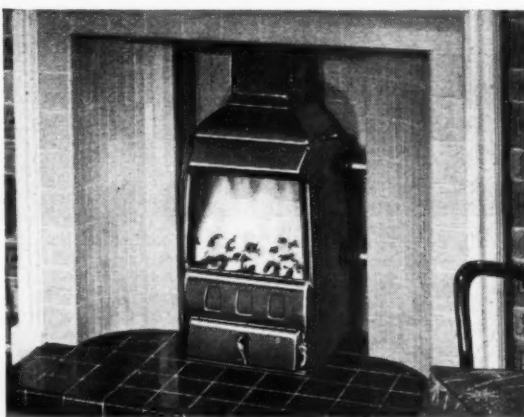


## PARKRAY 3

The Parkray 3 is a self-contained, smoke-consuming convector fire designed for installation in fireplace openings 16" or 18" wide and 22" or 24" high without alteration to the surround. Great flexibility in installation is made possible by detachable louvres and an adjustable flue connection. An adjustable throat restrictor saves approximately  $\frac{1}{3}$  of the heat normally lost up an open chimney, and draught burning eliminates about 80% of the smoke. As a result the Parkray 3, heating by radiation and convection, can bring an average room to the standard of comfort achieved by the ordinary open grate for about *half the fuel cost*. Remarkably flexible performance, however, enables the Parkray 3 to fully heat rooms of up to 2,500 cu. ft. (or 3,300 cu. ft. Egerton standard). Built-in gas ignition is optional.



✓ Tested to the standards required by the Ministry of Fuel and Power.



## PARKRAY No. 2 and 2A

The Parkray 2 and 2A are smoke-consuming freestanding convector fires which are extremely simple to install in a recess. The No. 2 boiler model has an operating efficiency on coal of approximately 50% and on coke of 65% — a big advance on the ordinary open fire with a back boiler. About 80% of the smoke which ordinary fires discharge into the air, is drawn down through the hot fuel bed and consumed. The No. 2 model provides domestic hot water and will also heat a towel rail or radiator. It is fitted with built-in gas ignition and has an adjustable throat restrictor. The No. 2A is the non-boiler model.

Write for full technical information to  
Radiation Group Sales Limited, Solid Fuel Division,  
Park Foundry, Belper, Nr. Derby.

See the  
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*cooking — hot water — ducted air house warming  
from ONE appliance — at the*  
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# Radiation

PIONEERS OF SMOKE REDUCTION



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- OPENING INWARDS
- TOP HUNG
- HORIZONTAL CENTRE HUNG
- BOTTOM HUNG
- VERTICAL PIVOT HUNG
- SIDE HUNG
- HORIZONTAL SLIDING
- VERTICAL SLIDING



The illustration shows One set of Electrically operated Twin Tension Rod Gear with Counter-Balance Unit operating one continuous opening light, 74' 0" long x 5' 0" deep. Note the Spiral Balance Wheel fitted at the end sprocket.

*Always Specify*

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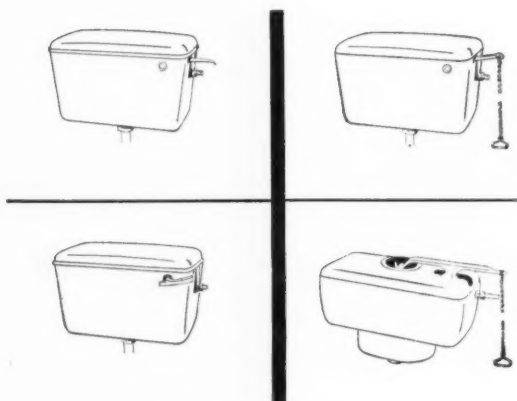
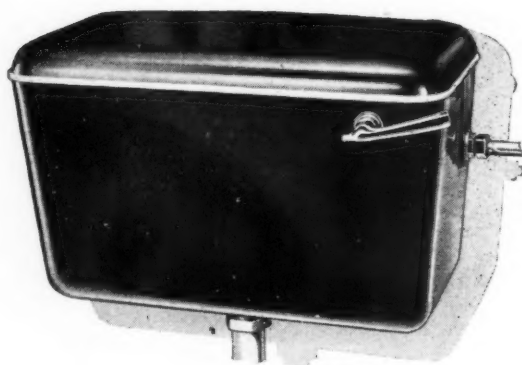
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Our illustrated folder gives details of four Lawley models in plastic, to suit all water regulations. We shall be pleased to forward copies on request.



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## ARCHITECTS' TYPICAL SPECIFICATIONS

### 'Formica' Laminated Plastic table or worktops.

*Supply and fix:* 'FORMICA' material bonded to approved base material, consisting of  $\frac{1}{8}$ " 'FORMICA' Laminated Plastic bonded under pressure with heat and water-resistant resin-type glue to  $\frac{1}{2}$ " 7-ply hardwood-faced exterior grade plywood, and (Alternatively)

- ★ (a) backed with  $\frac{1}{8}$ " 'FORMICA' Laminated Plastic backing and balancing veneer

or

- ★ (b) secured with stout screws through underframes into underside, at not wider than 12" centres.

Colour : ..... Pattern : ..... Finish : matt. Grade : Standard, or cigarette-proof.

### Edge Finish, bonded panel, saw or router trimmed to size.

- ★ (a) 'FORMICA' arris removed and burnished. Wood edge, finished smooth, primed and painted, colour as selected. Clean 'FORMICA' top.

or

- ★ (b) the square edge veneered 'FORMICA' Laminated Plastic  $\frac{1}{8}$ " resin-type glued. Machine off surplus at 60° bevel and burnish edge.

Colour : ..... Pattern : ..... Finish : matt. Grade : Standard.

or

- ★ (c) Burnished aluminium 'quick edge' arris fitted as makers' instructions.  $\frac{1}{8}$ " 'FORMICA' edge veneer.

Colour : ..... Pattern : ..... Finish : matt/glossy. Grade : Standard.

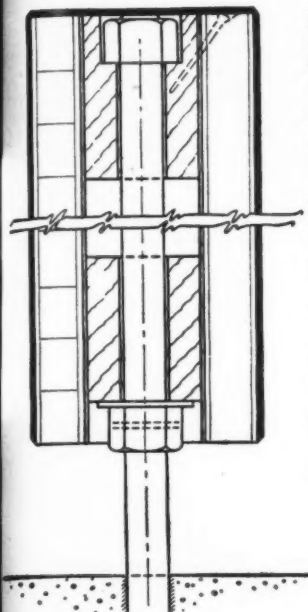
or

- ★ (d) hardwood box edged of approved section fitted, dressed flush and falling away at 2°-3°, varnished or waxed finished. Guard 'FORMICA' material during varnishing.

- ★ Specify alternatives



## ORCHARD HOTEL, RUISLIP.



Hotel kitchen partition or shelf back, five side veneered in 'FORMICA' material easy cleaned, non-grease absorbing and hygienic.

$\frac{3}{8}$ " blockboard panels.

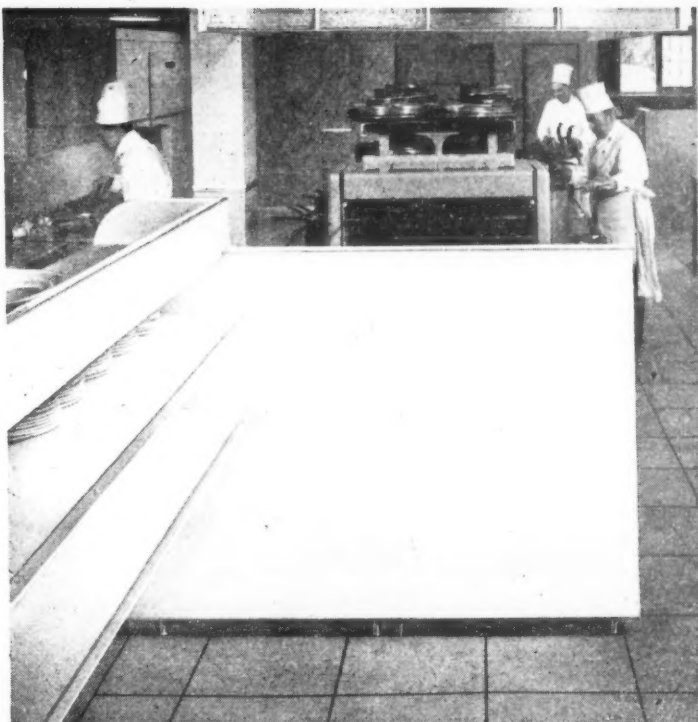
$\frac{1}{8}$ " matt or glossy finish standard grade 'FORMICA' Laminated Plastic.

Synthetic-resin glue bonded under pressure.

Glued to strong inner frame.

Steel rod grouted into floor, threaded at top and bottom nut secured by drilling and pinning or support obtained from a sleeve.

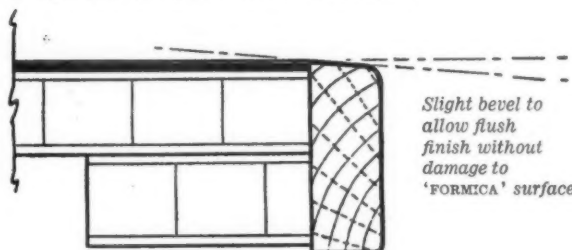
Top 'FORMICA' veneer bonded after partition fixed.



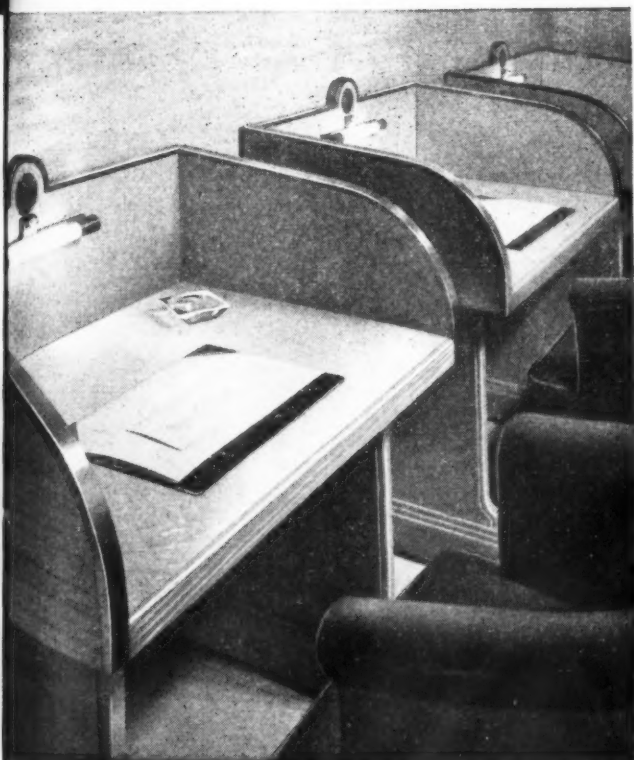
## BANK OF AMERICA, LONDON, W.1.

Customers' writing desks with interior surfaces finished in Bird's-eye Maple 'FORMICA' pattern to give durable washable finish against ink splashes and forgotten cigarettes.

- Matt-finish  $\frac{1}{8}$ " 'FORMICA' Laminated Plastic veneer cigarette-proof grade.
- Synthetic-resin glue bonded under pressure.



- Base of first quality blockboard well secured at ends to resist warping.
- Front edge deepened with pad to take hardwood edge.
- **Technical Note:** The front edge should be 'FORMICA'-veneered as a protection against abrasion from coat buttons and damp outdoor clothes.



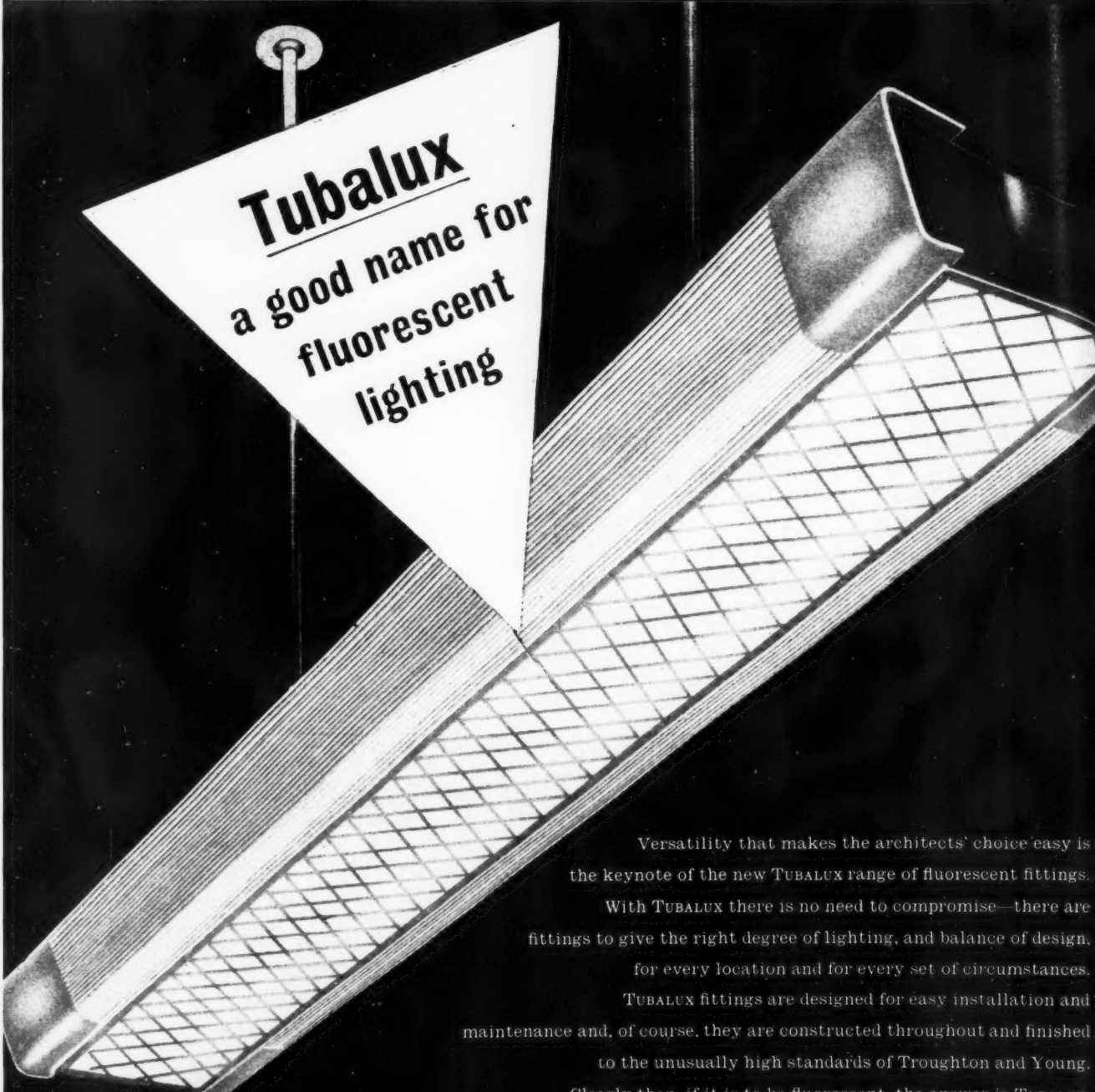
If you have an unusual problem the De La Rue Technical Information Service will be glad to help you solve it. Just write or telephone to the Technical Information Service Department, Thomas De La Rue & Co. Ltd., 84-86 Regent Street, London, W.1



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lighting

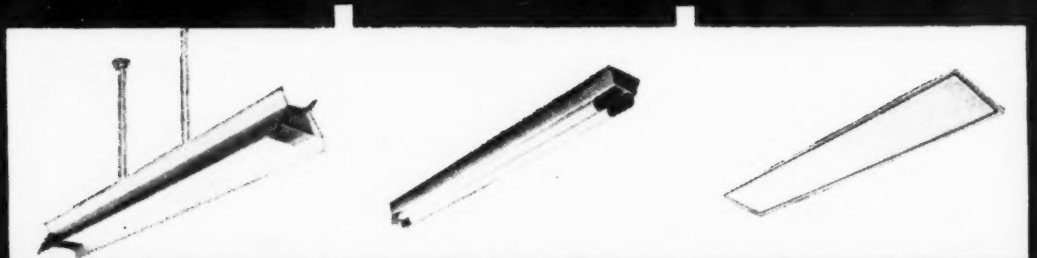
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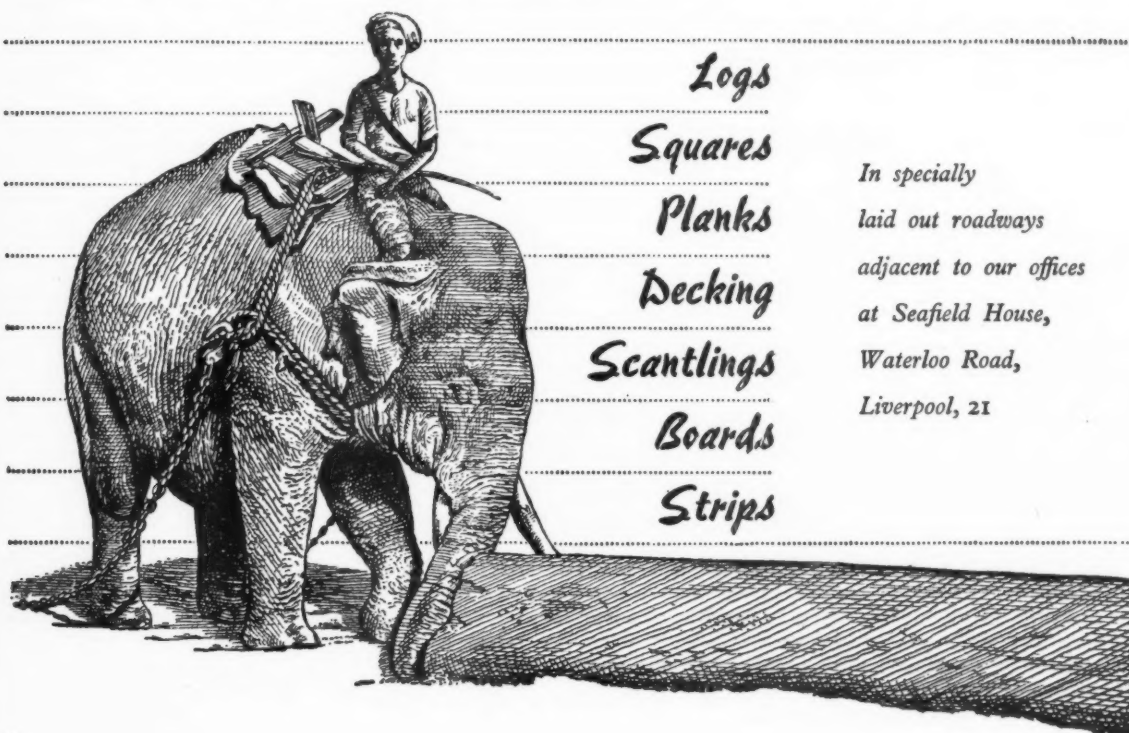
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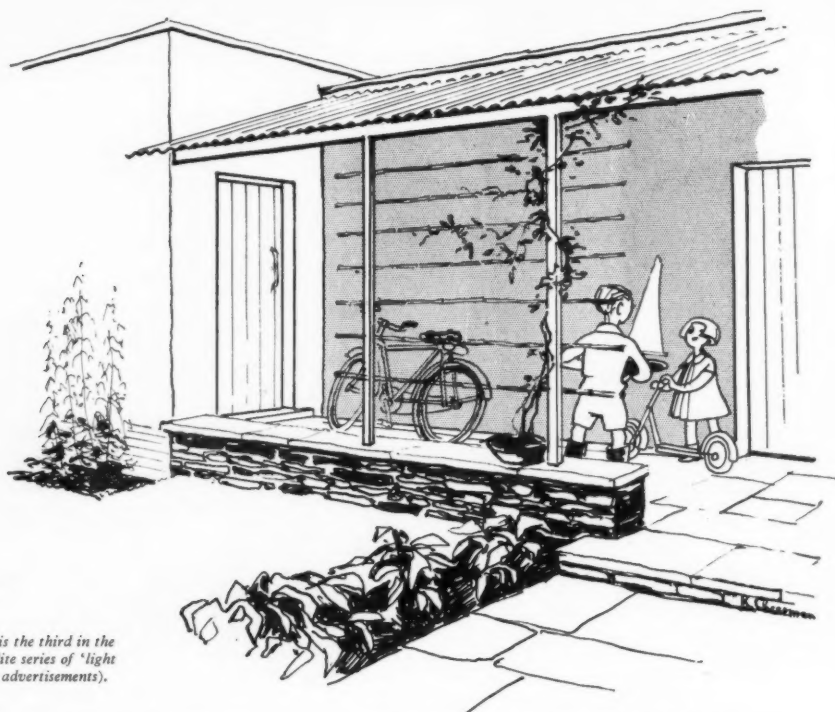
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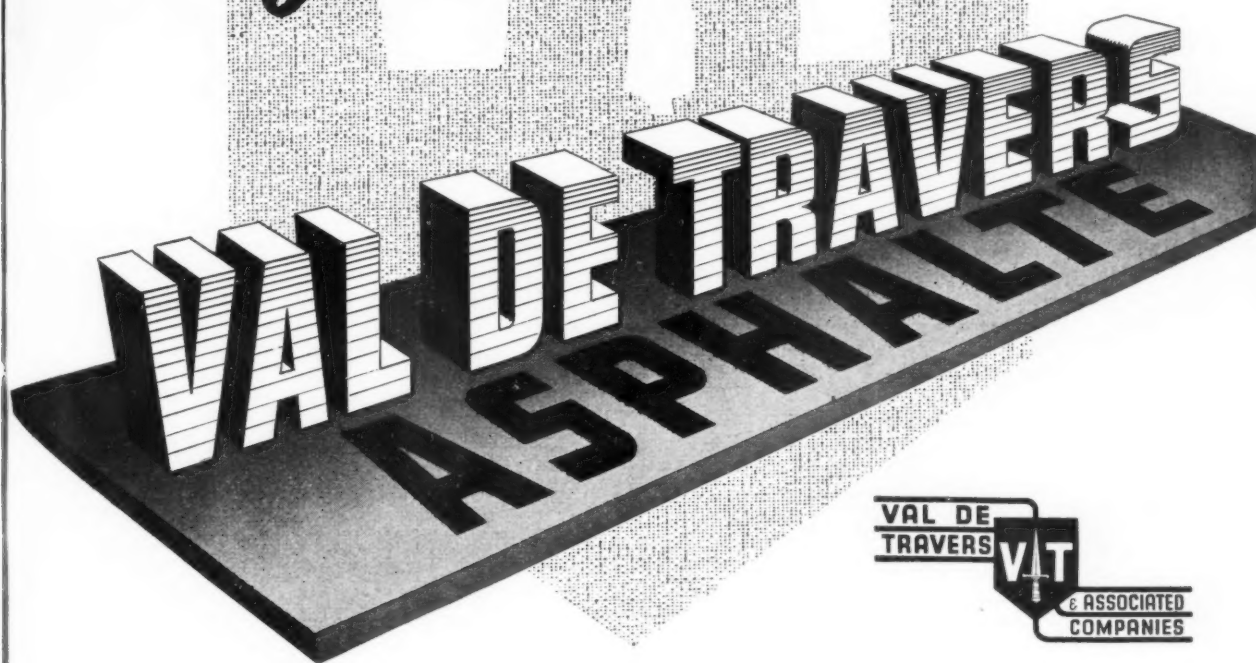
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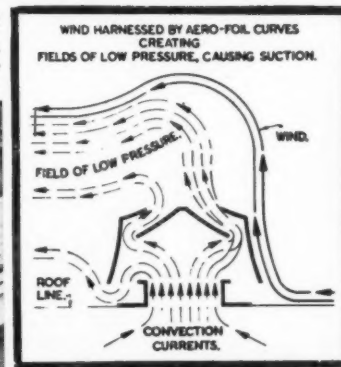
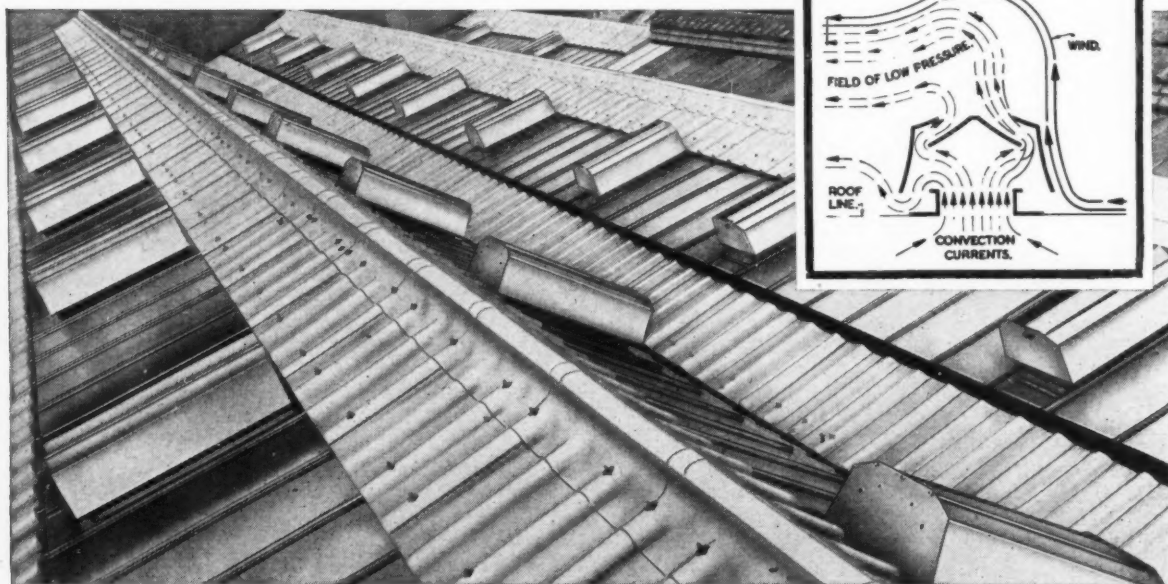
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*Architects : Brownrigg & Turner B.A., A/ARIBA  
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# THE **PLIMBERITE** **REBOND**

## PARTITIONING SYSTEM

The photograph (below, left) shews PLIMBERITE Rebond Partitioning in the British Van Heusen Company's new factory at Bishops Lydeard, Taunton.

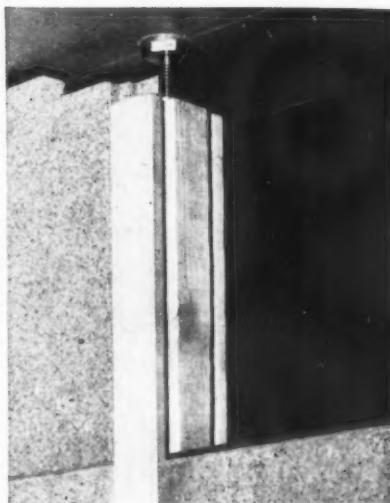
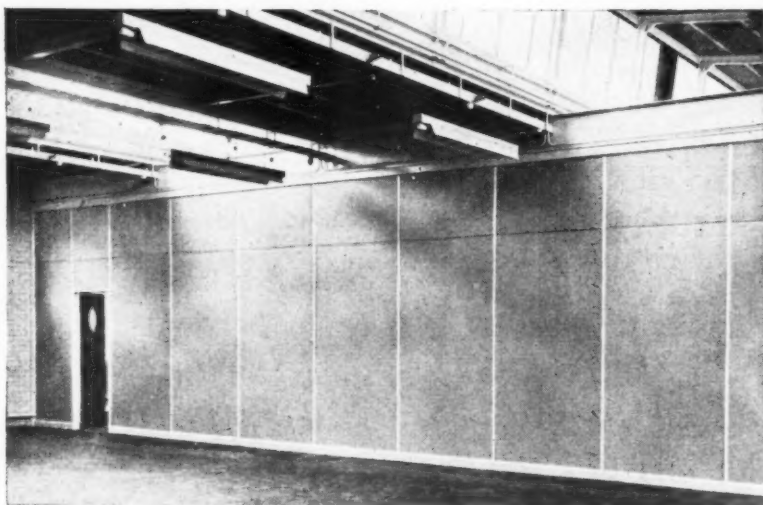
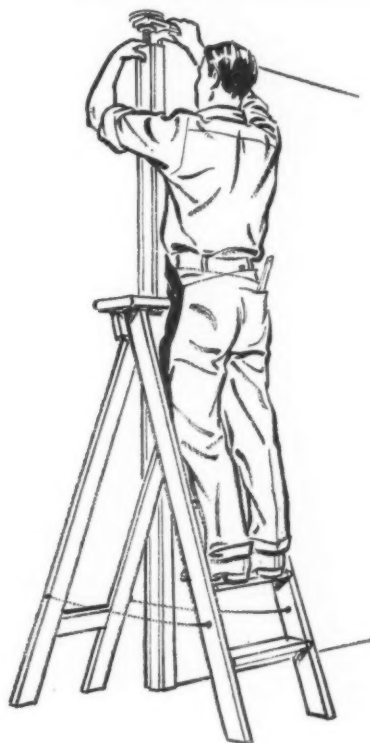
Architect: Steer & Shirley-Smith, A./A.R.I.B.A.

Contractor: Stansell & Sons (Taunton), Limited.

The System consists of timber posts at 4 ft. 1 in. centres, grooved to receive  $\frac{3}{4}$ " PLIMBERITE boards whose vertical edges are rebated to form tongues which slot into the grooves in the posts. The posts are held in position on the floor by a pin, and at the top by the PLIMBERITE REBOND screw jack, as shewn in the photograph (bottom, right).

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Full working details with constructional drawings are contained in the PLIMBERITE REBOND Booklet, which may be had on request.



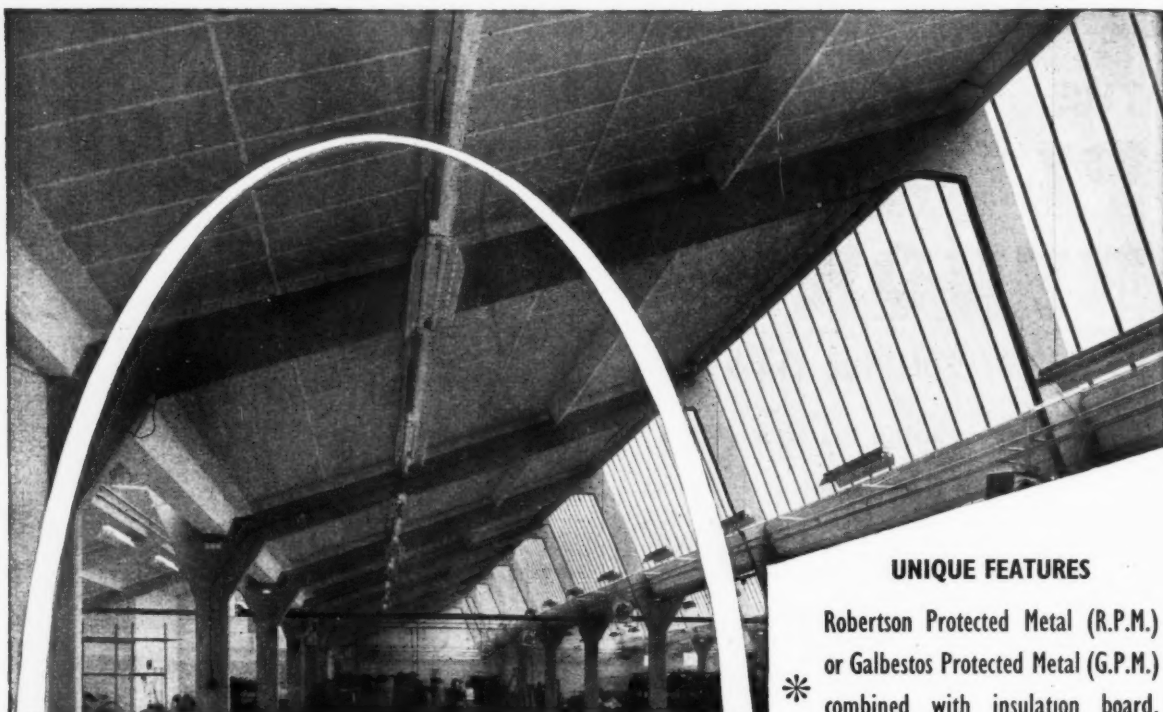
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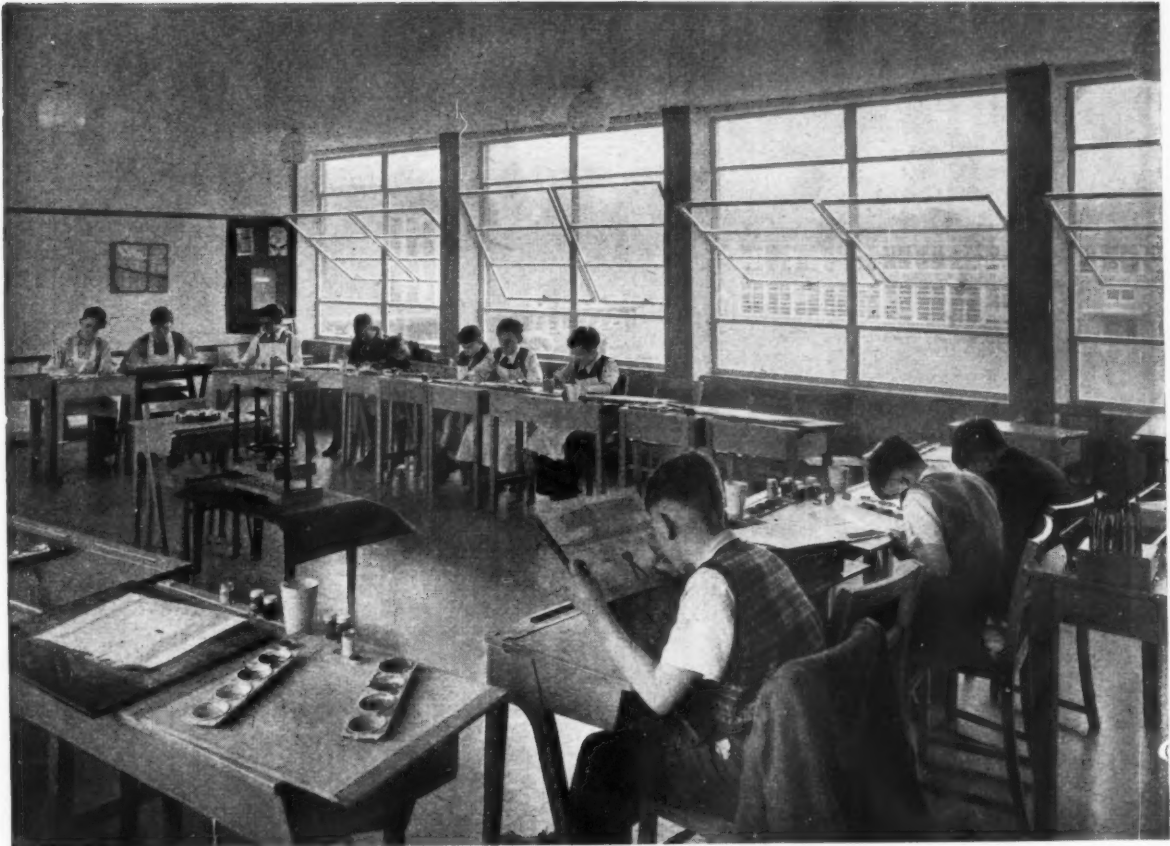
### UNIQUE FEATURES

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- \* Inter-purlin 'D' strip. Roof sheets add support to lining.
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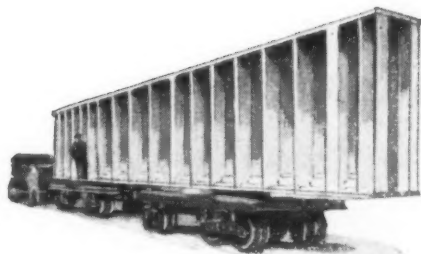
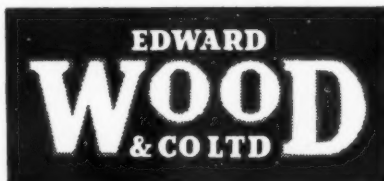


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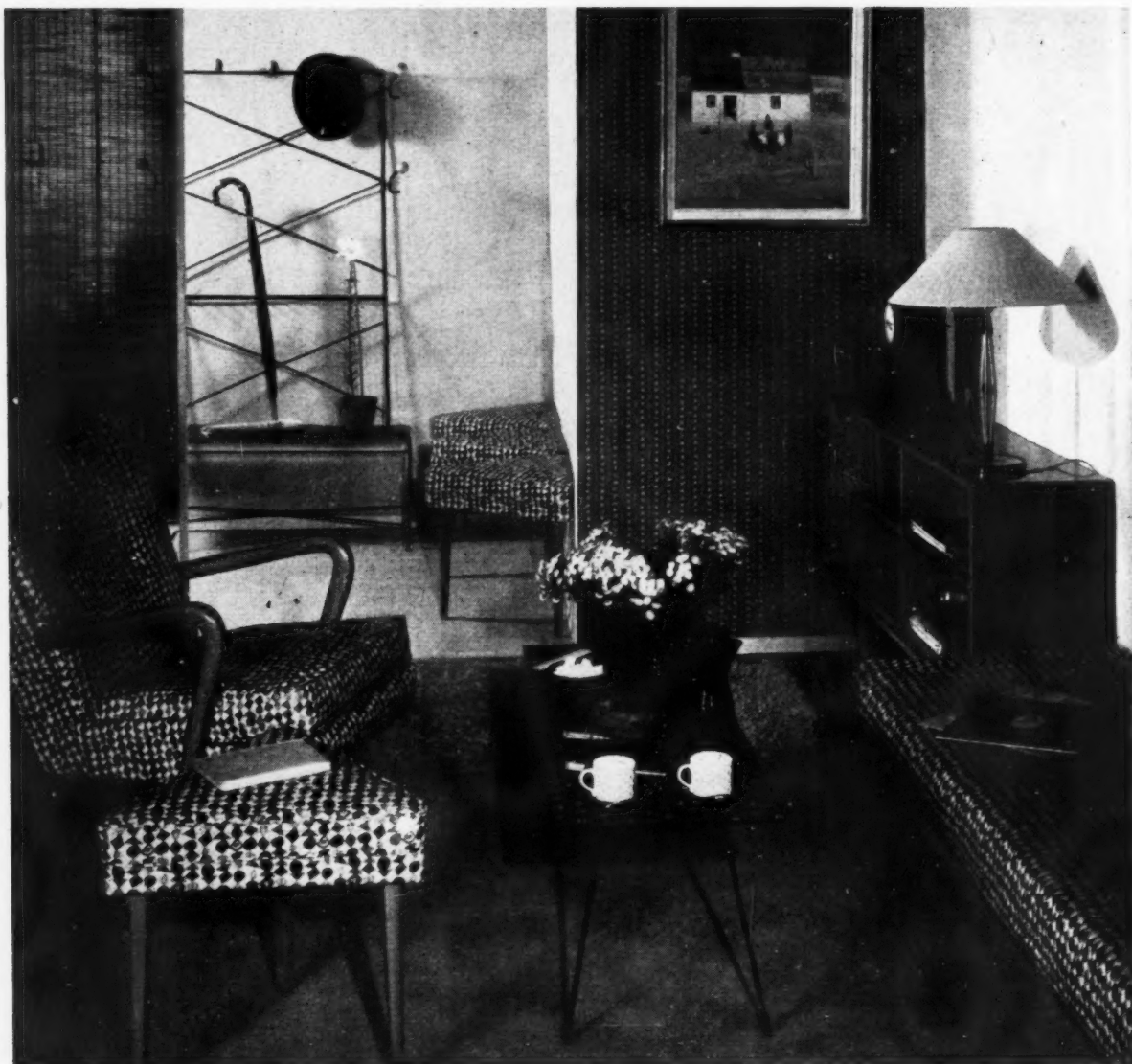
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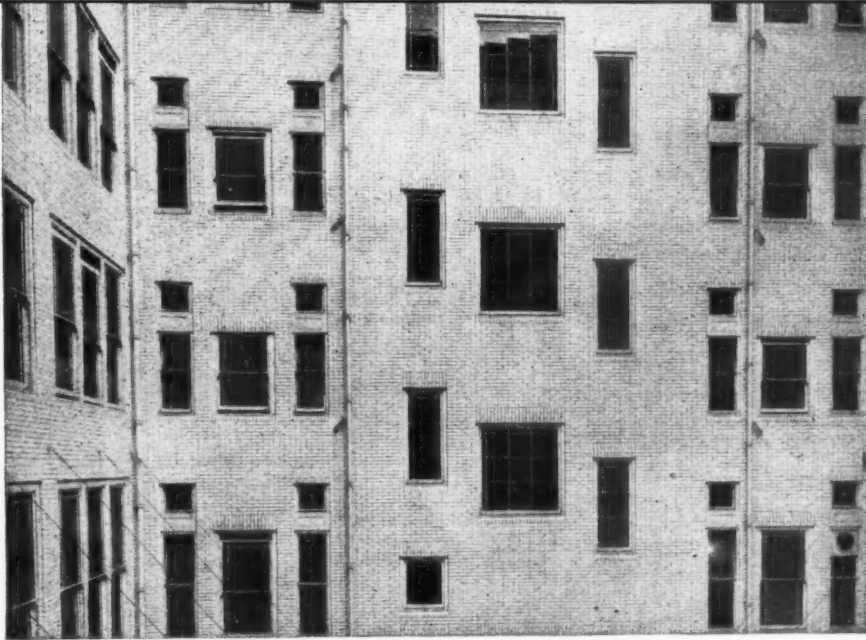
ILLUSTRATED In Rydura Fabric: Divan, H.K. Calypso Chair and Oracle Stools.

In Rymalite Board: Table by J. Scott Smith Ltd., and Patterned Wall (right).





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*Open interior courts at the Cunard Buildings, Liverpool. Architects: Messrs. Willink & Dod, F.F.R.I.B.A. Cunard Buildings, Liverpool.*

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**BUILDING EXHIBITION  
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Stand 177 Row H  
Stand 208 Row J**



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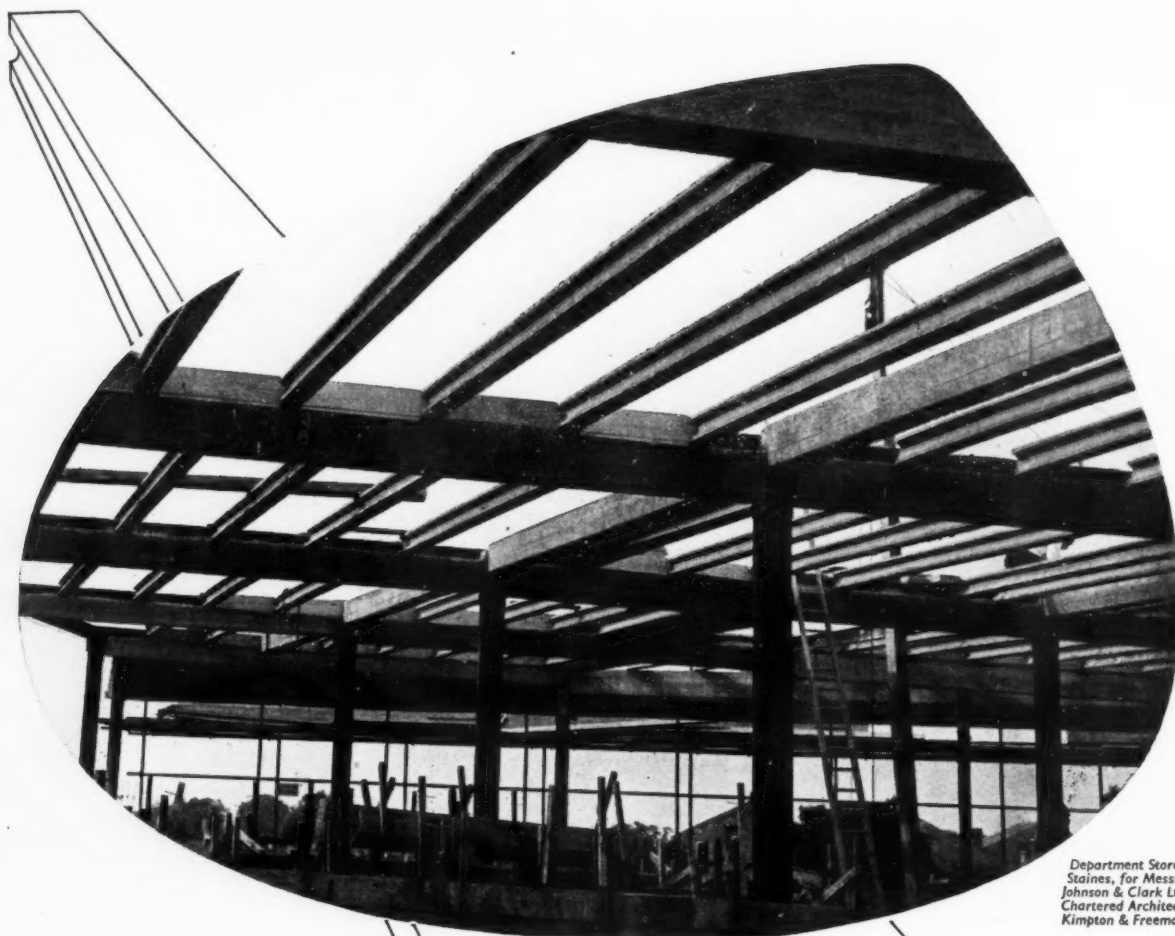
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# PIERHEAD

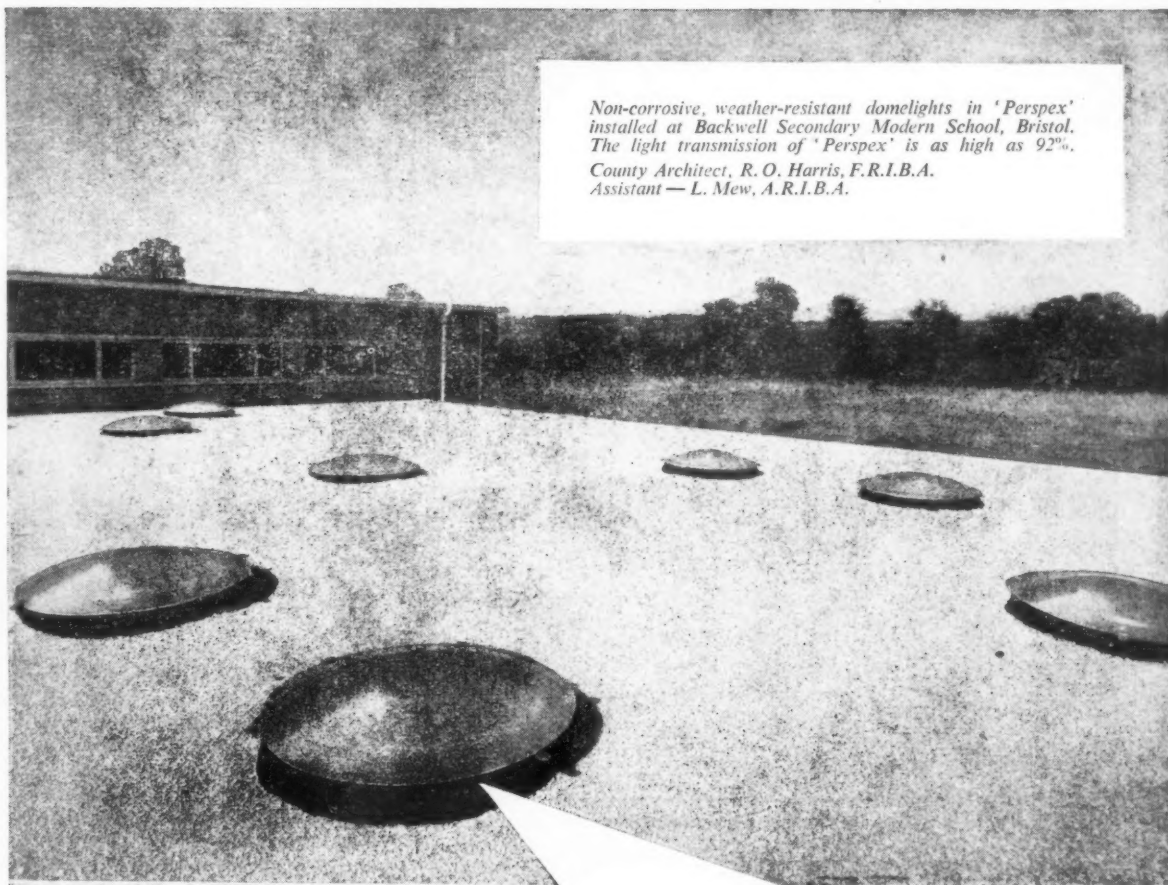
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For the above contract Pierhead Ltd. are carrying out the Composite Prestressed Flooring, the Beam Encasing, Reinforced Stairs etc., and Prestressed Concrete Roofing.

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*Non-corrosive, weather-resistant domelights in 'Perspex' installed at Backwell Secondary Modern School, Bristol. The light transmission of 'Perspex' is as high as 92%. County Architect, R. O. Harris, F.R.I.B.A. Assistant — L. Mew, A.R.I.B.A.*

## Modern Material for Modern School

### *Domelights in 'Perspex' Acrylic sheet*

Modern in design and construction down to the last detail, the Backwell Secondary Modern School has dome roof-lights made from 'Perspex' Acrylic sheet, by Henry Hope & Son Ltd., Smethwick. There are many reasons why 'Perspex' should be used for roof-lighting; here are some of them...

#### **Light and tough**

Domelights in 'Perspex' Acrylic sheet are easy and safe to handle. They are less liable to damage when being fitted and afterwards.

#### **High light transmission**

Clear 'Perspex' has a high optical efficiency, up to 92% light transmission. Where diffused light is required to cut out sun glare, opal or coloured 'Perspex' can be used.

#### **Economy**

Domelights made in 'Perspex' Acrylic sheet cost less. Because they're easy to fit, too, labour costs are cut. No maintenance is needed; 'Perspex' is not affected by weather, sunlight, smoke or salt air.

#### **Adaptability**

Domelights in 'Perspex' are not restricted to conventional designs; furthermore, special decorative effects can be obtained by using the transparent or translucent colours.

Domelights in 'Perspex' Acrylic sheet are now available from several manufacturers and merchants. Write to your nearest I.C.I. Sales Office for names and addresses.

## 'PERSPEX'

*'Perspex' is the registered trade mark for the acrylic sheet manufactured by I.C.I.*

**IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON, S.W.1**



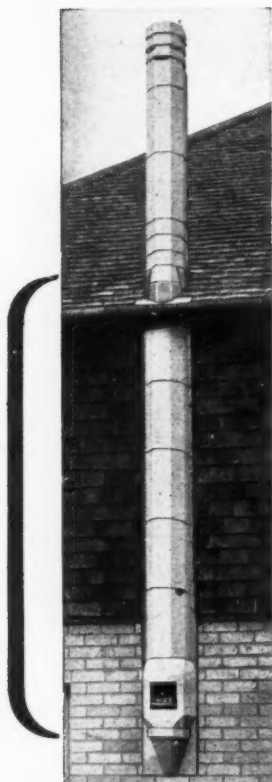
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## PRECAST EXTERNAL FLUE

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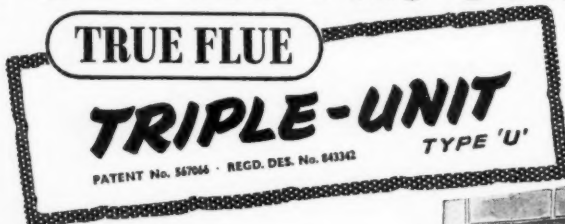
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Although this is one of our most recent developments we have already supplied approaching 2,000 of these flues to various local Authorities and Contractors.



Write for illustrated booklet and price list to the address at the foot of this page.

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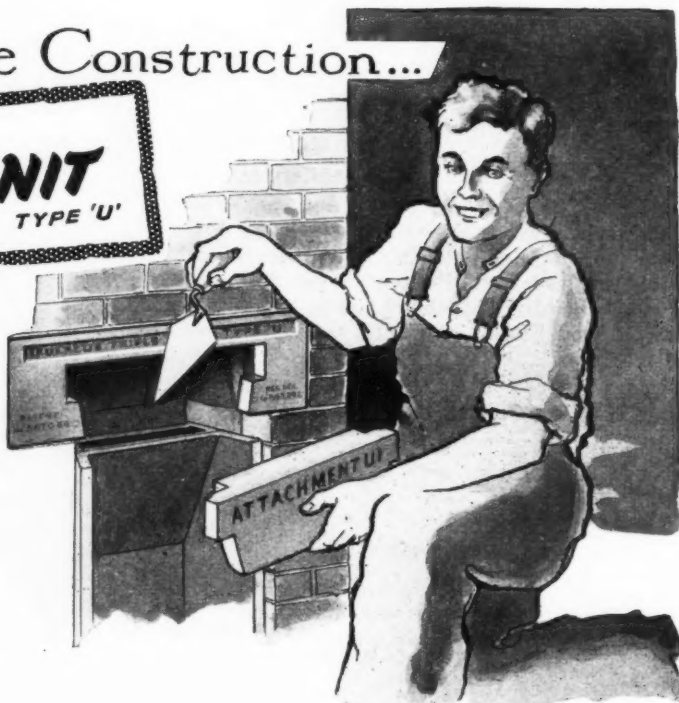


These labour-saving and efficient devices, of which there are several types available, are made of heat-resisting refractory concrete and form a stream-lined connection between the fire and the flue.

The unit illustrated eliminates the labour involved in forming the Gather-Over in brickwork above the fireplace opening. When placed in position it forms a base for TRUE FLUE circular rebated linings or for the 9in. by 9in. parged flue.

The lintol has a removable front portion to enable the Unit to be built in immediately above the appliance, thus enabling a fireplace surround of more pleasing proportions to be used. The front attachment is removed when the appliance is fitted and bedded back in position when any necessary infilling around the back and sides has been carried out. The type of front attachment will vary according to the design of the heating appliance and fireplace surround.

Please apply for illustrated brochure incorporating list of heating appliances with requisite Triple Unit.



**TRUE FLUE LTD. CONVECTOR HOUSE · ACACIA ROAD · ST. JOHN'S WOOD · N.W.8**

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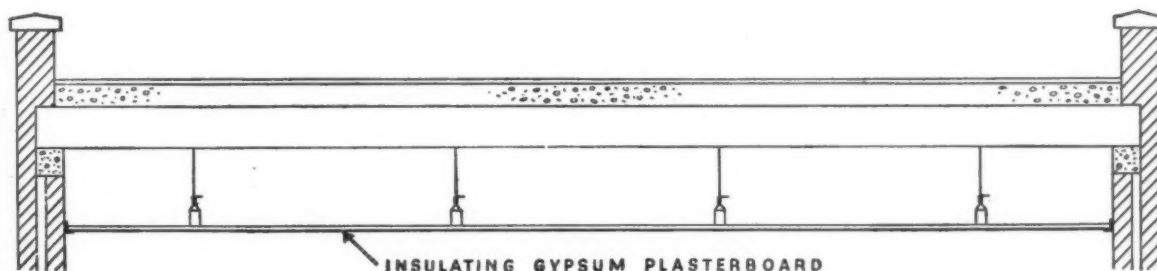
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Construction: Concrete roof, felt covered, with a suspended Insulated Gypsum Plasterboard ceiling.

### SUSPENDED CEILING

Area	956 sq. yds.
Contract cost (erected)	17/7d. per sq. yd.
'U' value (roof only)	0.53
'U' value (roof and ceiling lining)	0.23
Flame Spread Rating	Class 1 (B.S. 476)



Whatever the building, fire hazard must be minimised. Gypsum plasterboard is fire resisting to a higher degree than any other board of comparable cost.

**INSULATING GYPSUM PLASTERBOARD**  
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PLASTER PRODUCTS (GREENHITHE) LIMITED, GREENHITHE, KENT Greenhithe 2251/5

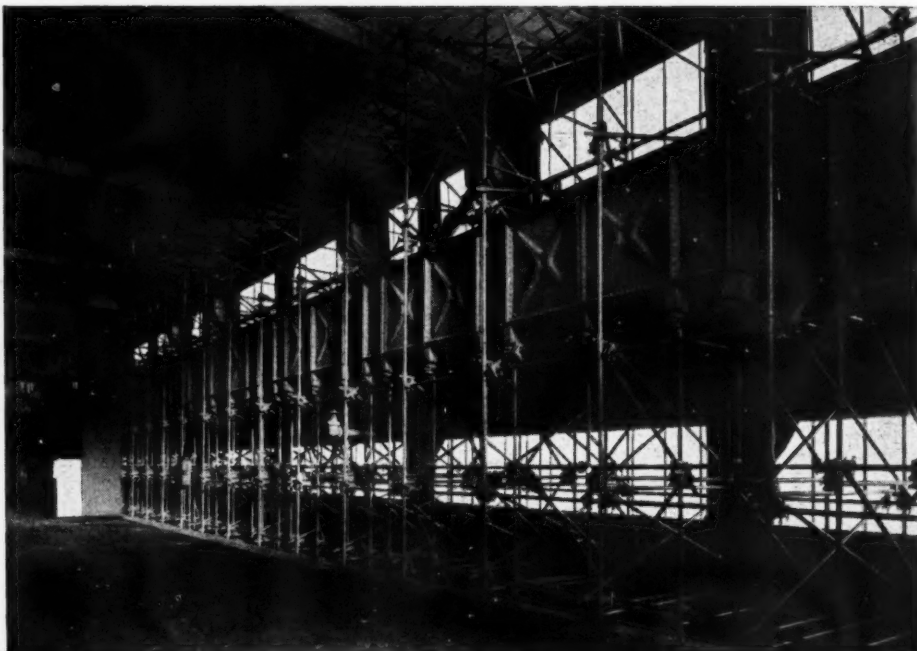
THE BRITISH PLASTER BOARD (MANUFACTURING) LIMITED, BATH HOUSE, 82 PICCADILLY, W.1 Grosvenor 7050

Published by The Gypsum Building Products Association





Pyrok anti-condensation and decorative treatment has been given to the exterior of Braithwaite tanks at the Hydraulic Research Station, Howbery Park for the Ministry of Works



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Pyrok is a Vermiculite-cement surfacing applied by continuous spray, setting rapidly and adhering strongly to structural steelwork, concrete, stone, brick and fibre-board. Pyrok gives complete protection to iron and steelwork and does not permit oxidization beneath its surface. Particularly effective against condensation, Pyrok is a protection against fire and has remarkable acoustic and insulating properties.

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Contracts are undertaken by Licensees in all parts of the U.K. and in countries abroad. We shall be glad to supply further information on request.

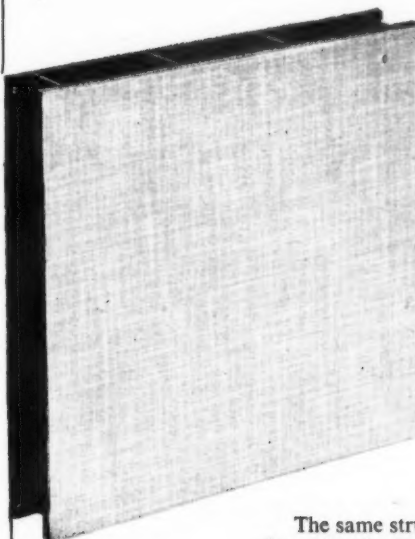
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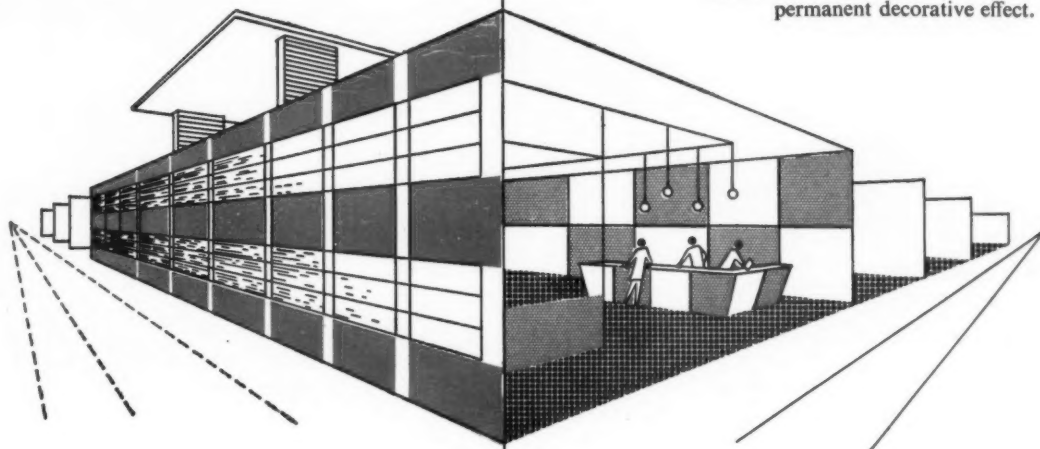
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Standard Overall Panel Thicknesses

1½" and 1"

Standard size of panel

8' 0" x 4' 0" wide

Max. size for use externally

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Textile, or Oriental on white backgrounds.

### COLOURS

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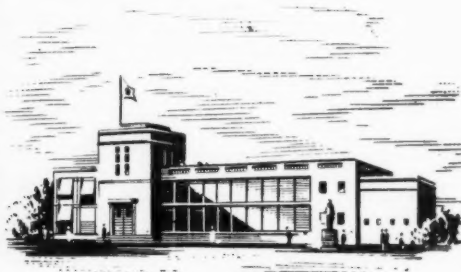
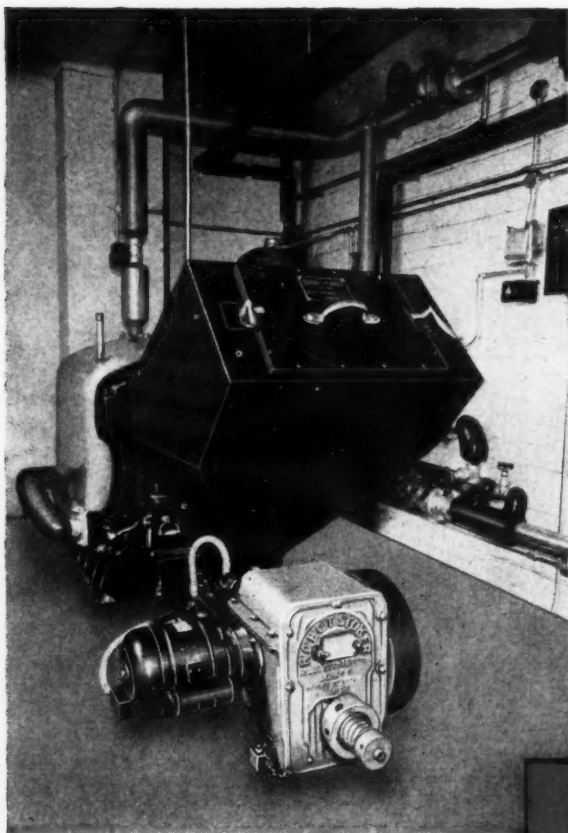
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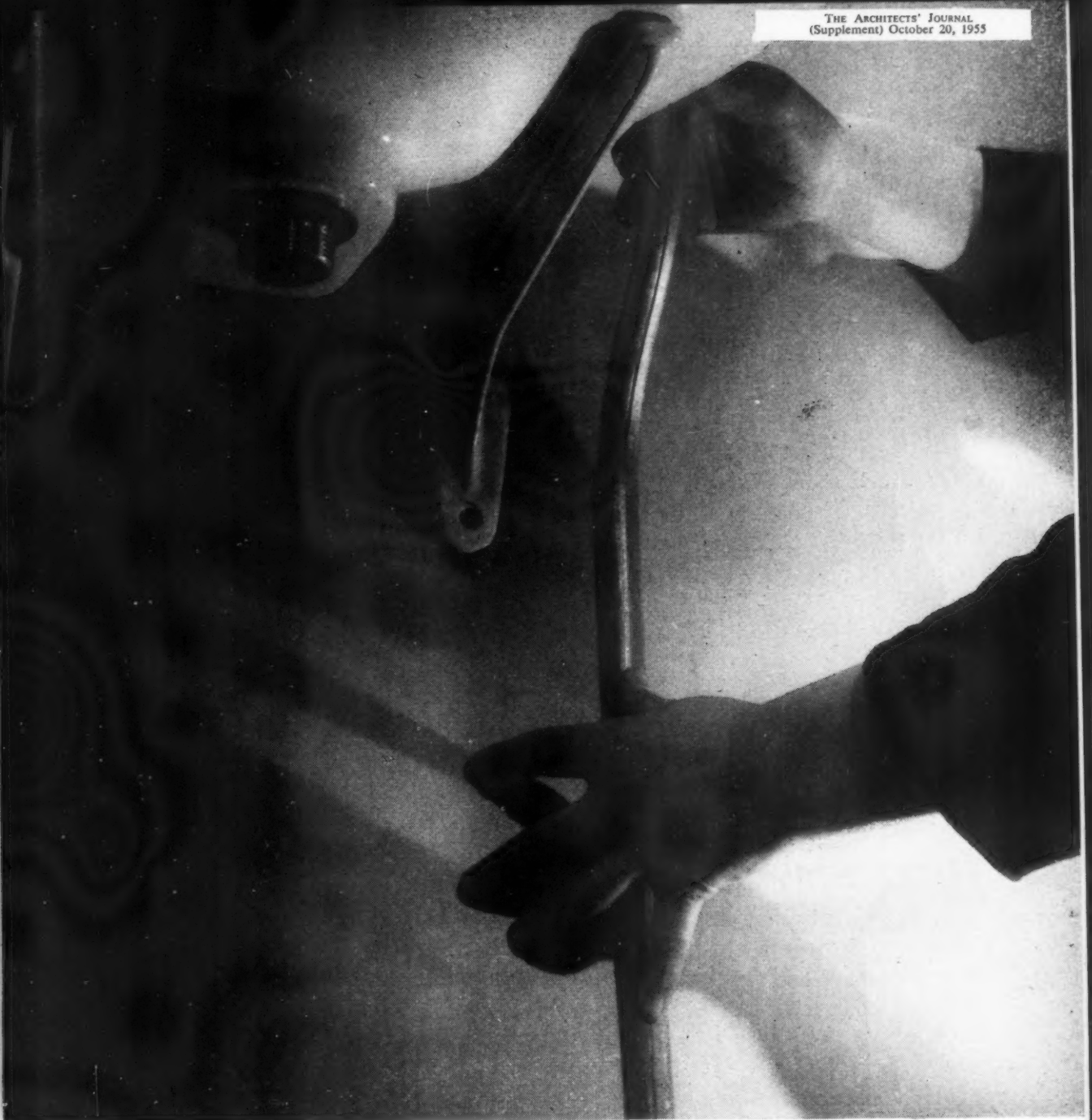
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Lead Pipe—readily shaped and bent when fabricating or fixing and highly resistant to corrosion—is the best pipe material for plumbing work.

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*The Cotswold Gateway Hotel  
at Burford, Glos.*

## SADIA WATER HEATERS



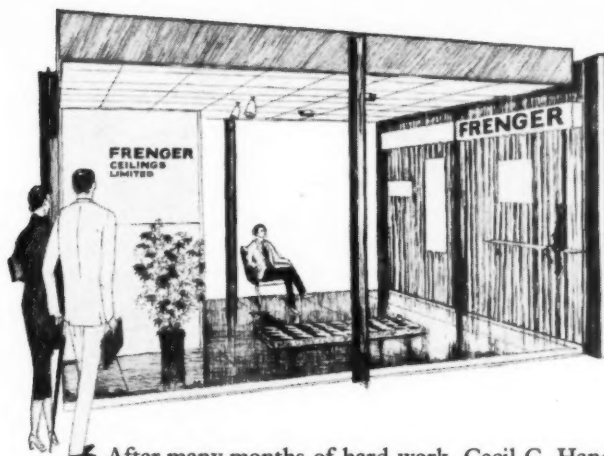
**CUT DOWN RUNNING COSTS**  
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Messrs Hunt, Edmunds & Co Ltd, the Banbury brewers, are carrying out extensive modernisation of their several properties in the Cotswolds. The latest to be completed is the beautiful old Cotswold Gateway Hotel at Burford, on the main London/Cheltenham Road (A.40), owned by Wayside Inns Ltd (a subsidiary of Hunt, Edmunds & Co Ltd). The alterations were planned by Hunt, Edmunds' architectural staff, and here too as on other occasions Sadia Water Heaters of various capacity were installed. Before this, hot water was supplied by solid fuel boilers which, together with the coal, were housed in the two main cellars. These cellars are now used for stocking beer in barrels and this makes possible a profitable retail trade in draught beer. But more important is the fact that there is now *ample and constant* piping hot water for guests' rooms and bathrooms, for the manager's flat and for use in the bar, kitchen, pantry and everywhere else. Wayside Inns Ltd. find that this simple, dependable and cleaner SADIA way provides a substantial saving in staff and running costs.

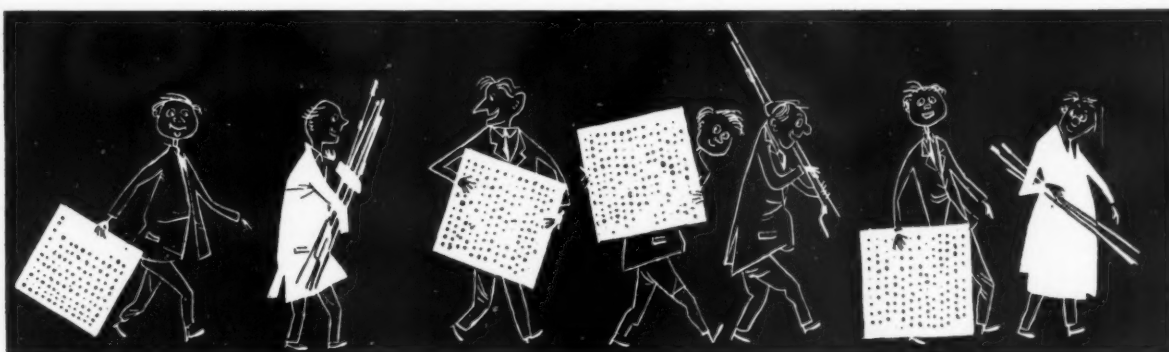


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Telephone: WAXlow 2355*



After many months of hard work, Cecil C. Handisyde, A.R.I.B.A., A.A.DIP., has designed the stand of the Building Exhibition and with the collaboration of the Frenger team we are able to announce that it will be definitely finished before the



opening on 16th November — although this may mean borrowing an odd ceiling or two from our many successful contracts completed throughout the British Isles. Come and have a chat with us on Stand 155 and we will tell you more about ourselves.

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● THE HEATED ACOUSTIC CEILING

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Our sympathy's entirely with you, Mrs. B. There are some people who cheerfully spend a small fortune on redecorating, yet positively seem to enjoy living with antiquated locks and door furniture, cracked and stained finger plates, rusty postal knockers, and so on. But the more enlightened 'furnish' their doors as well—refitting with elegant and enduring Yale door furniture chosen from an impressive range of designs and finishes.

Locks and door furniture are among the many Yale products which bring security, convenience and dignity to doors of every kind—in factories, offices, hotels, homes and many other buildings.

**Where there's a door there's a need for**



DOOR FURNITURE  
MASTER KEYED SUITES  
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*The Yale & Towne Manufacturing Company • British Lock & Hardware Division • Willenhall • Staffs • England*





*This recessed lighting scheme of the canteen in the American Embassy was designed by Philips*

## ***For Imaginative Lighting***

Some of the more imaginative lighting schemes of recent years have been the result of close co-operation between architects, electrical contractors, and the Philips Lighting Design Service.

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**Visit Philips Lighting Stand No. F 124 at the Building Exhibition, Olympia, November 16—30. Full details of Philips Lighting Design Service will be obtainable.**

**Philips will be happy to design for you—there is no charge**



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# There are three types of GYPROC Lath

## —the perfect base for Paristone and Gypstone Plasters

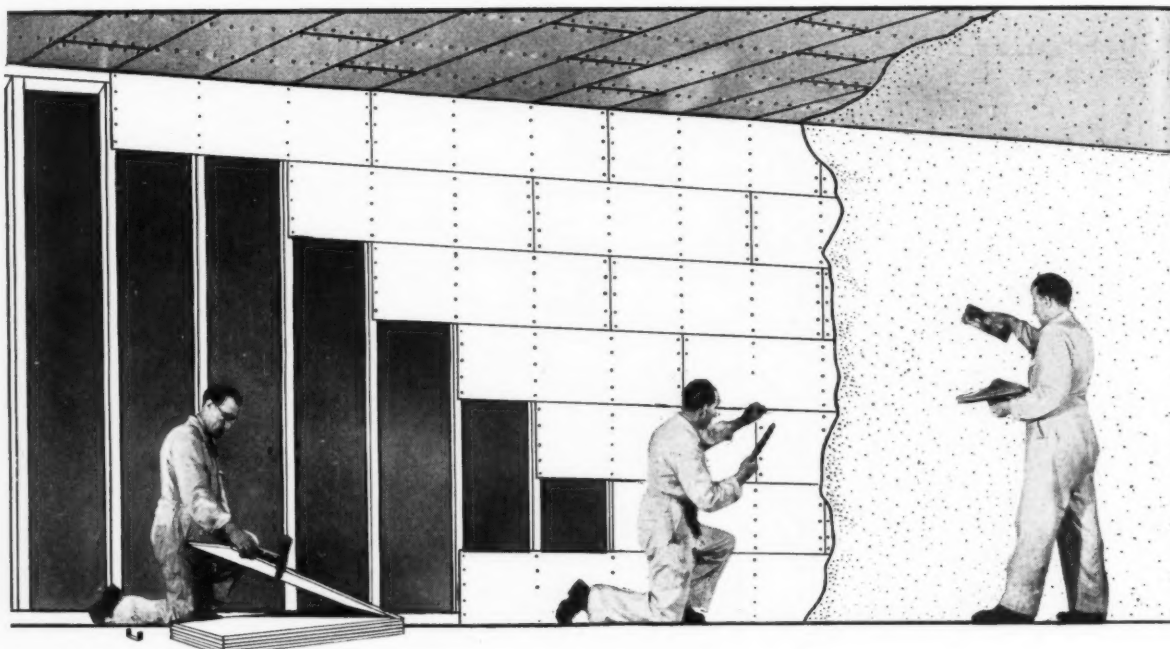


Fig. 1

Diagrammatic representation of the correct application of GYPROC Lath

1. Longitudinal, paper-covered, rounded edges of lath fixed across studs or joists.
2. Five nails per width of lath on every stud or joist.
3. End joints in each course staggered and fixed centrally over a support.
4. Short ends of lath tightly butted; long edge touching or with gap not exceeding  $\frac{1}{8}$ ".

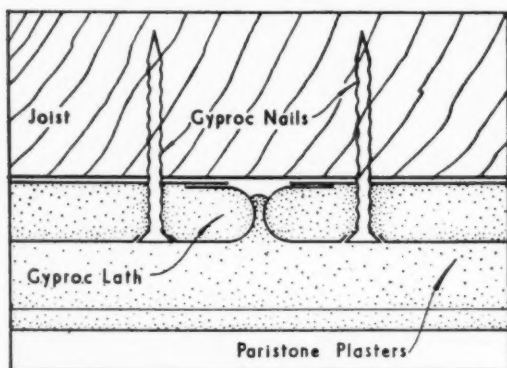


Fig. 2

Makers of PARISTONE Browning Plaster (Haired, Unhaired and Metal Lathing Grades), PARISTONE Wall Finishing Plaster, CRETSTONE Concrete Bonding Plaster, GYPSTONE Board Finishing Plaster, GYPLITE Vermiculite Insulating Plaster (Undercoat and Finishing Grades).

A high degree of fire resistance is afforded by *plain GYPROC Lath* plastered with either Paristone or Gypstone, but for special purposes, an even greater degree of fire protection can be obtained by using **GYPROC Perforated Lath**, plastered.

Where thermal insulation is a specific requirement, **GYPROC Insulating Lath**, with a bright aluminium veneer on one side, should be used.

GYPROC Lath, with its specially designed edges (see Fig. 2), does not require scrimming before plastering.

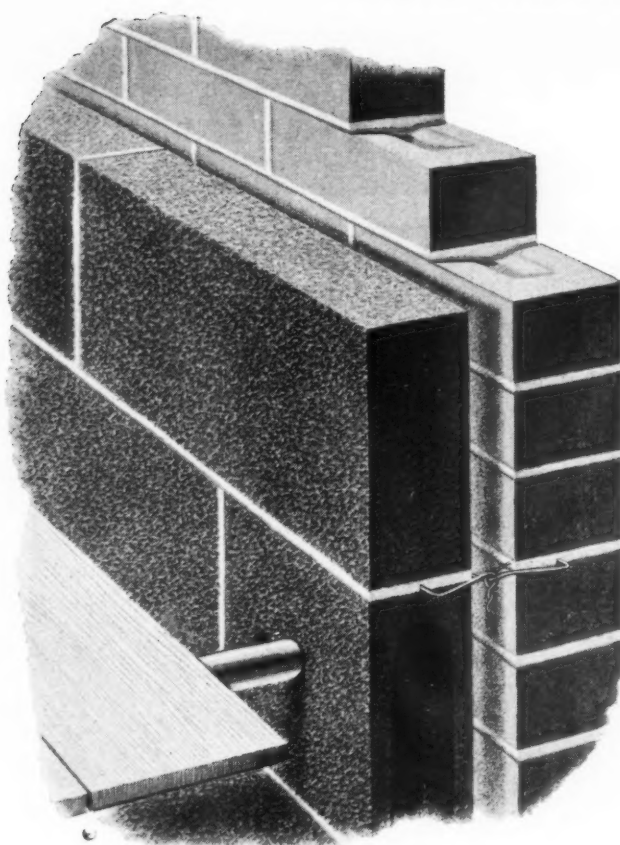
All GYPROC Lath is supplied in bundles containing 6 sheets, easily carried by one man. Dimensions 16" wide, lengths 42", 48" and 54".

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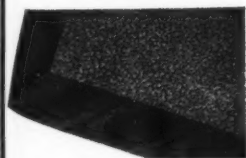
Head Office: Singlewell Road, Gravesend, Kent. Telephone: Gravesend 4251-4. Telegrams: Gyproc, Gravesend.  
Glasgow Office: Gyproc Wharf, Shieldhall, Glasgow, S.W.1. Telephone: Govan 2141-3. Telegrams: Gyproc, Glasgow.  
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by the  
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Used  
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again  
by the  
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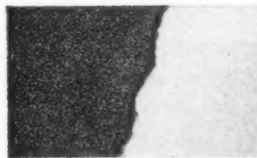
***Broad-Acheson cellular loadbearing blocks***  
***build better • build warmer • build cheaper***



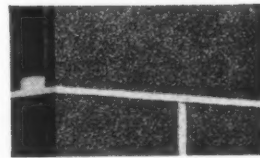
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They are the obvious choice for all premises where regulations demand washable floors, and for all other buildings where hygienic conditions are essential.

Clay Floor Quarries are highly resistant to impact and abrasion. They are available in a wide range of sizes, thicknesses and shapes, and in uniform shades of red, blue, brown and buff, or in multi-colours, and actually **COST LESS THAN ANY OTHER FLOORING MATERIAL**

Correctly laid, a Quarry floor will last as long as the building.

For further information, please write to The Secretary, Floor Quarry Association, Federation House, Stoke-on-Trent.

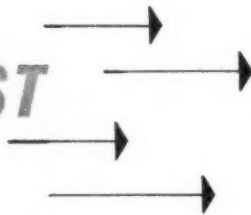
# Clay Floor Quarries



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## for protection

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MOISTURE,  
GREASE, OIL,  
CHEMICALS  
AND CORROSION

Protect yourself too, against the dangers of cable failure. Always specify BICC Plastic Cables for Domestic and Industrial Lighting, Power Applications and Telecommunications.

A wide range of wiring cables is available for prompt delivery. Your local BICC Branch Office or Depot (There are 41 throughout the British Isles) will be glad to give you further information.

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**BRITISH INSULATED CALLENDER'S CABLES LIMITED**

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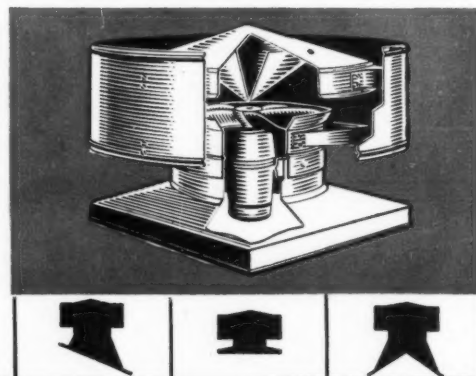
# Breathing Space...

## IN INDUSTRY

### GREENWOOD-AIRVAC 'Lowline'

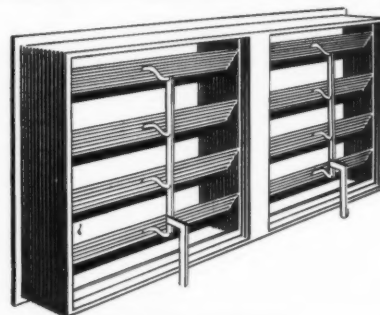
This is a roof ventilator of proved performance. Extraction can be natural, or mechanical with built-in fan available in a wide variety of standard ratings.

A full range of mountings is available for flat, ridge or sloping roofs. Special sizes can be made to order.



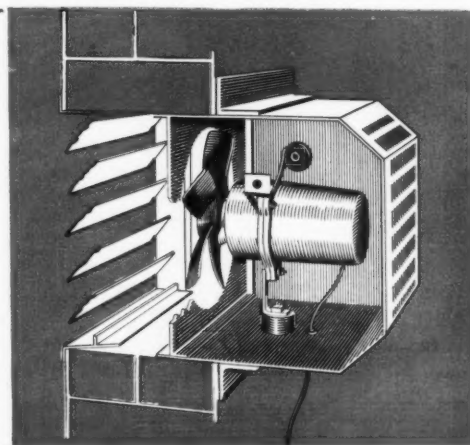
### Heavy Duty MOVABLE LOUVRE Ventilators

Balanced ventilation can be assured when these heavy duty movable louvre ventilators are specified with 'Mechavent' roof extractors. As single or multibank panels the units are available in sizes ranging from 3 to 24 louvres, which are hollow-sectioned and streamlined to ensure the minimum resistance to air flow. The well-designed operating gear works in solid brass bearings and locks the louvres in any desired position.



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Designed to extract fumes, steam and smoky atmosphere, etc., in Schools, Hospitals, Factories and Offices, these highly efficient extractors are economical and quiet in use. Several sizes are available for various wall thicknesses to operate on single or three phase supply up to 440 volts. Special features include anti-backdraught louvres, full flow grille and totally enclosed motor. Fixing is a simple matter and the units are completely rust and corrosion proof. Available from 9" fan diameter upwards.



## Greenwood-Airvac ventilation

GREENWOOD'S AND AIRVAC VENTILATING COMPANY LTD

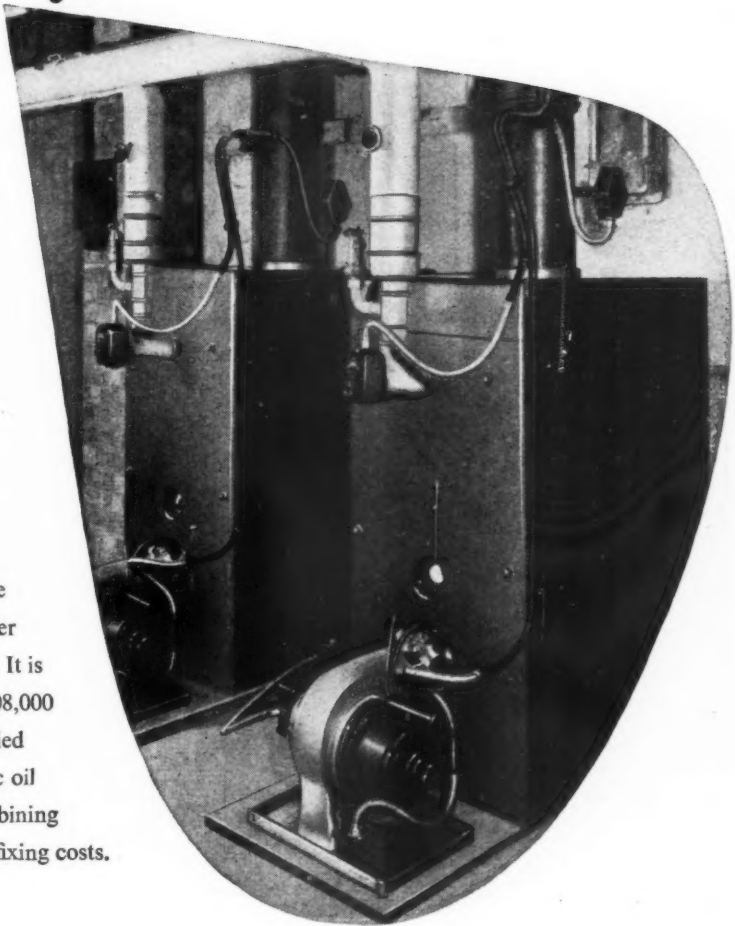
Designers and Manufacturers of Ventilating Equipment for Buildings, Vehicles and Ships

BEACON HOUSE, KINGSWAY, LONDON, W.C.2. CHANCERY 8135/6/7. "Airvac", London



*It stands to reason*

Only a boiler designed from the very first for oil will extract the maximum efficiency from oil. The argument for the Potterton oil-fired Boiler is as simple as that. The Potterton achieves a true working efficiency of 78% of the heat from the oil transferred to the water (the maximum that can be used in any boiler without fear of excessive condensation). It is available in a range of outputs from 108,000 B.T.U. to 288,000 B.T.U. and is supplied as a complete unit with fully automatic oil burners, and fitted controls—thus combining optimum performance with minimum fixing costs.



# POTTERTON *Oil-Fired* BOILERS

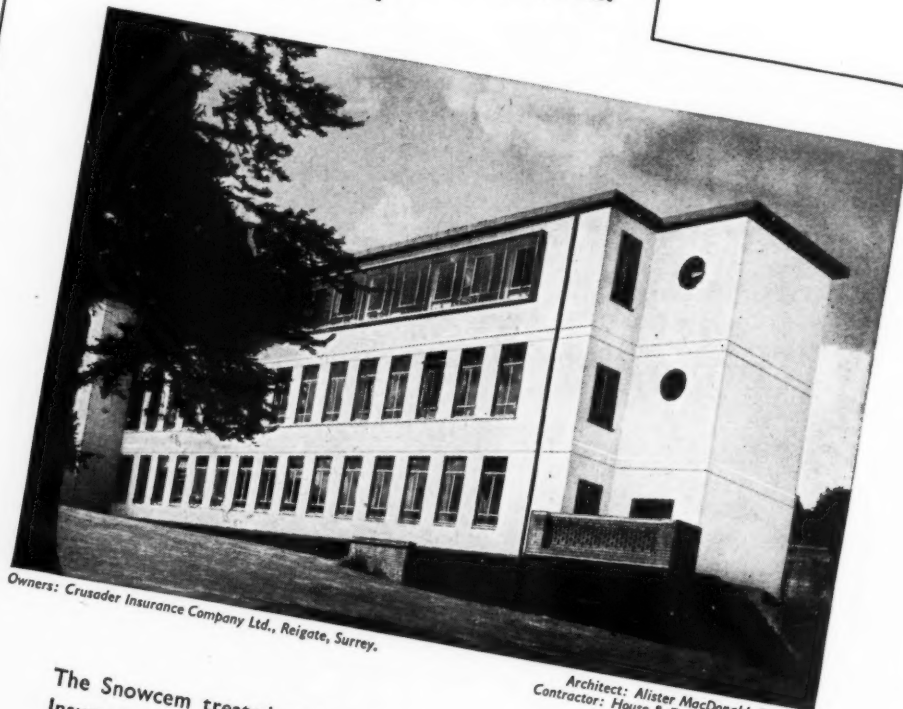


THOMAS DE LA RUE & CO. LTD., 20/30 BUCKHOLD ROAD. LONDON, S.W.18.

DLR 471

FROM THE SNOWCEM FILES:—

Crusader Insurance Company Ltd.  
Reigate, Surrey



Owners: Crusader Insurance Company Ltd., Reigate, Surrey.

Architect: Alister MacDonald, F.R.I.B.A.  
Contractor: House & Tester, Salford, Surrey.

The Snowcem treated walls of this new extension to the Crusader Insurance Company's building provide a colourful feature in a delightful setting.

**SNOWCEM** is easily applied to concrete, cement rendering or suitable brickwork by brush or spray. Available in seven colours: White, Cream, Mid Cream, Buff, Pink, Silver Grey and Pale Green.

**SNOWCEM**



WATERPROOF CEMENT PAINT  
*Decoration PLUS protection at LOW cost*

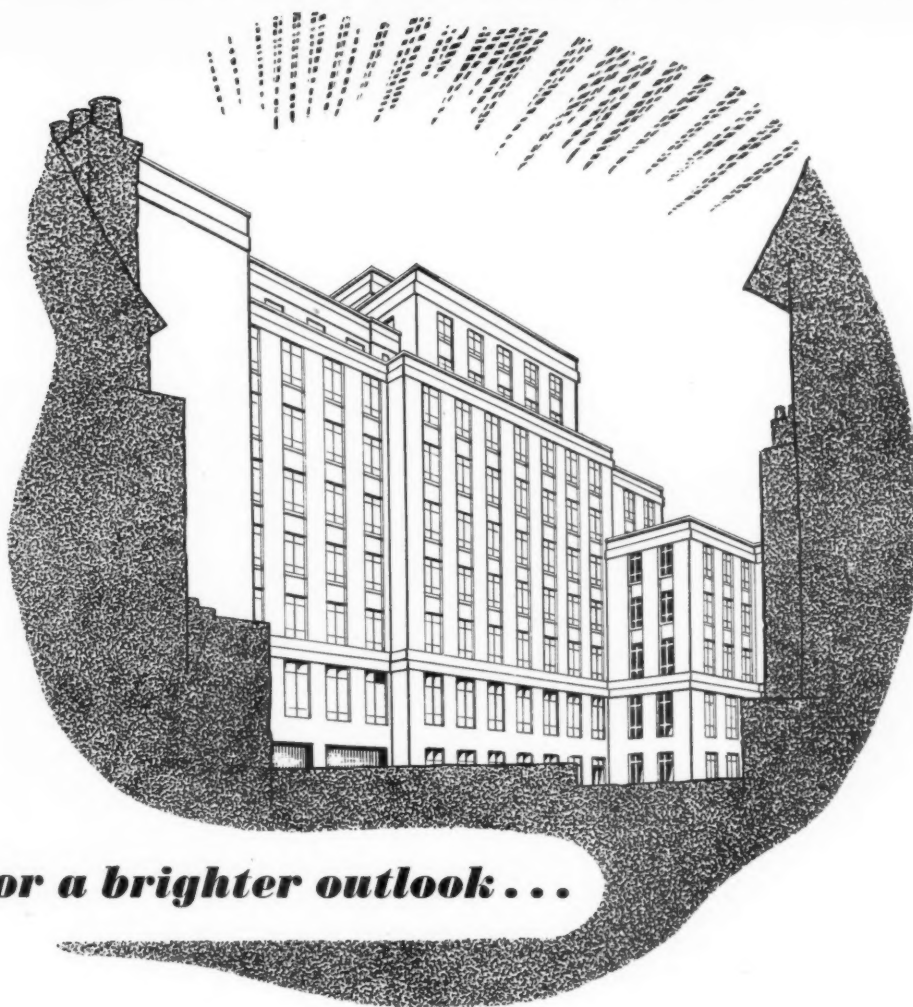
★ BRITISH CEMENT IS THE CHEAPEST IN THE WORLD

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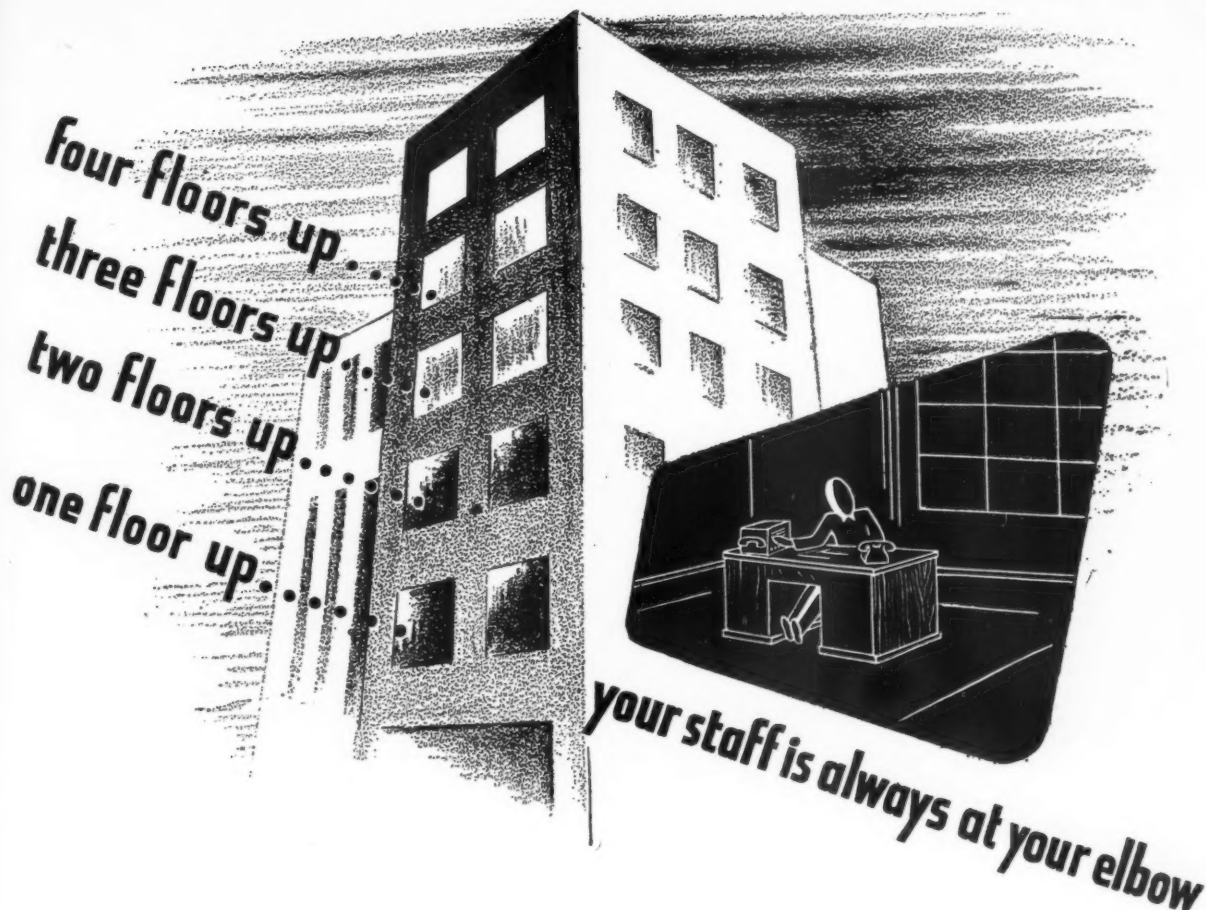
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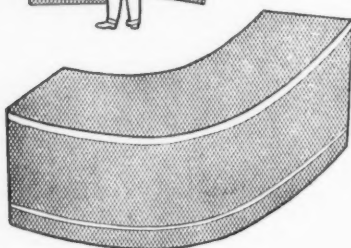
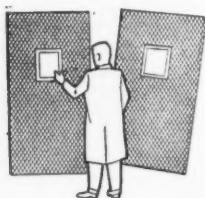
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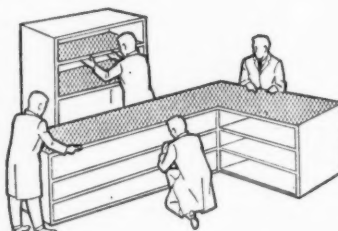
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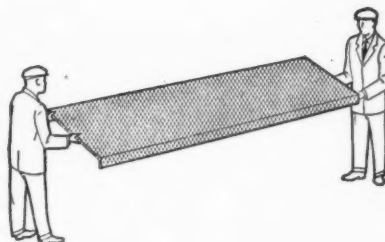
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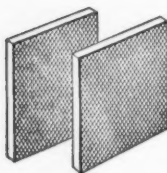
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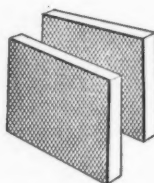
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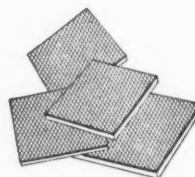
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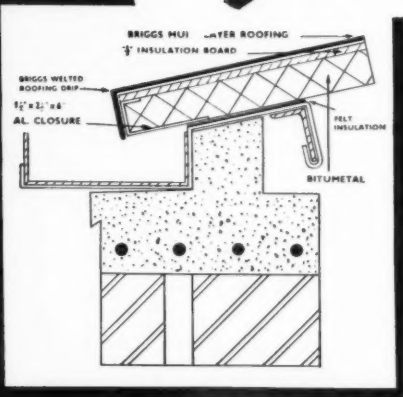


TO ARCHITECTS ABOUT TO PLAN ROOFS



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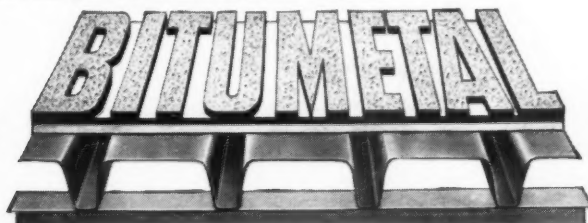


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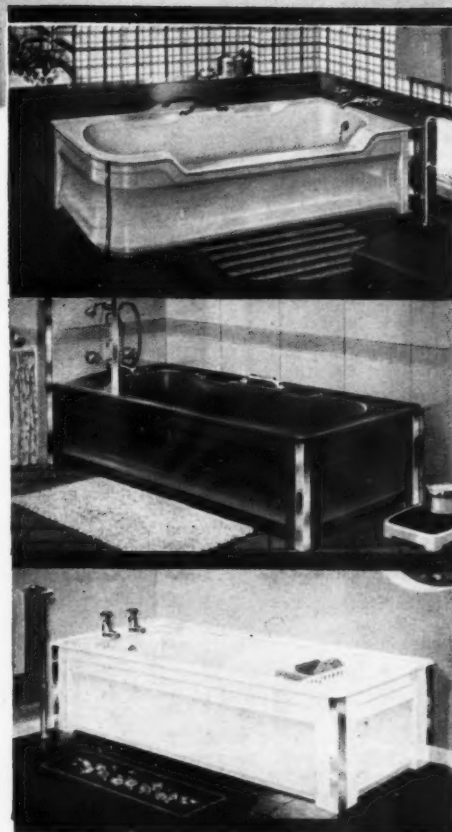
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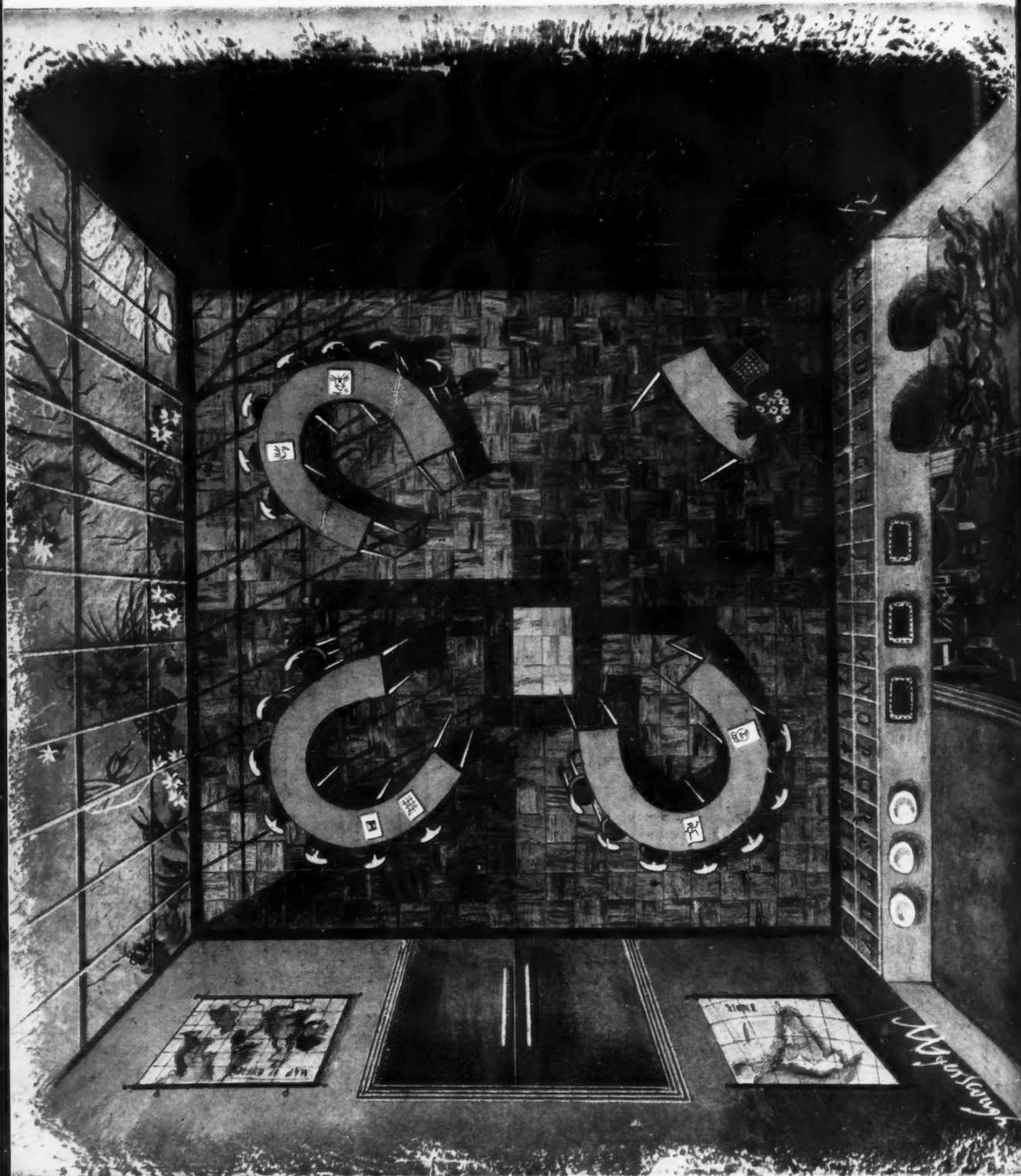
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PIER LUIGI NERVI

Dr. Nervi's address on concrete construction, reprinted in full elsewhere in this issue, must have done something, at least, to reassure those who were upset by Ove Arup's Third Programme talk a little while ago, for Dr. Nervi came out strongly for the thesis that "the outward appearance of a good building cannot, and must not, be anything but the visible expression of an efficient structural or constructional reality." Doctors differ, you see, and one having knocked a smart nail into the coffin of what he called the structural fallacy, the other has prised it out again.

\*

But what is probably of more lasting interest than Nervi's gallant assumption of the architect's aesthetic responsibility,

or even the fascinating structural techniques he has used to put up his remarkable buildings, is the relationship between client, designer and constructor which he outlined.

\*

The lump-sum contract would most probably frighten most English builders out of their wits anyhow, if the project under construction involved untried techniques and materials, and it doesn't seem likely that they would be any happier if they had the designer on their own staff into the bargain. Nevertheless, it is clear that having designer and contractor under the same letter-head has produced results as remarkable in Nervi's case as it did in Auguste Perret's—no, sorry, *more* remarkable, for Nervi's ideas on concrete are, of course, more advanced than Perret's.

## ENGLAND'S ARCHITECTURE . . .

Over last week-end two distinguished voices were heard on the air on English design and English art in general; neither was the voice of an Englishman born, yet neither could decently be called a foreigner to the subject in hand. On Saturday on the Third, Professor Henry-Russell Hitchcock closed the series on English Architecture and Town-planning with a survey of post-war achievements. It was one of those talks with a delayed action—as one listened to it one noted the assured and perceptive architectural criticism, but on reflection one realized that a whole set of accepted values had been turned upside down.

\*

Post-war housing was, in the main, dismissed as a purely statistical achievement, Hertfordshire schools as play-therapy with pre-fabrication, and the works which Professor Hitchcock

found worth considering in detail were Pimlico by Powell and Moya; Hallfield (Paddington) by Tecton, Drake and Lasdun; the LCC's Loughborough Road maisonette blocks; Powell and Moya's school at Putney; the Smithsonian's school at Hunstanton, and Marchwood power station by Farmer and Dark.

\*

How many native-born critics would have produced a list like that—and why not?

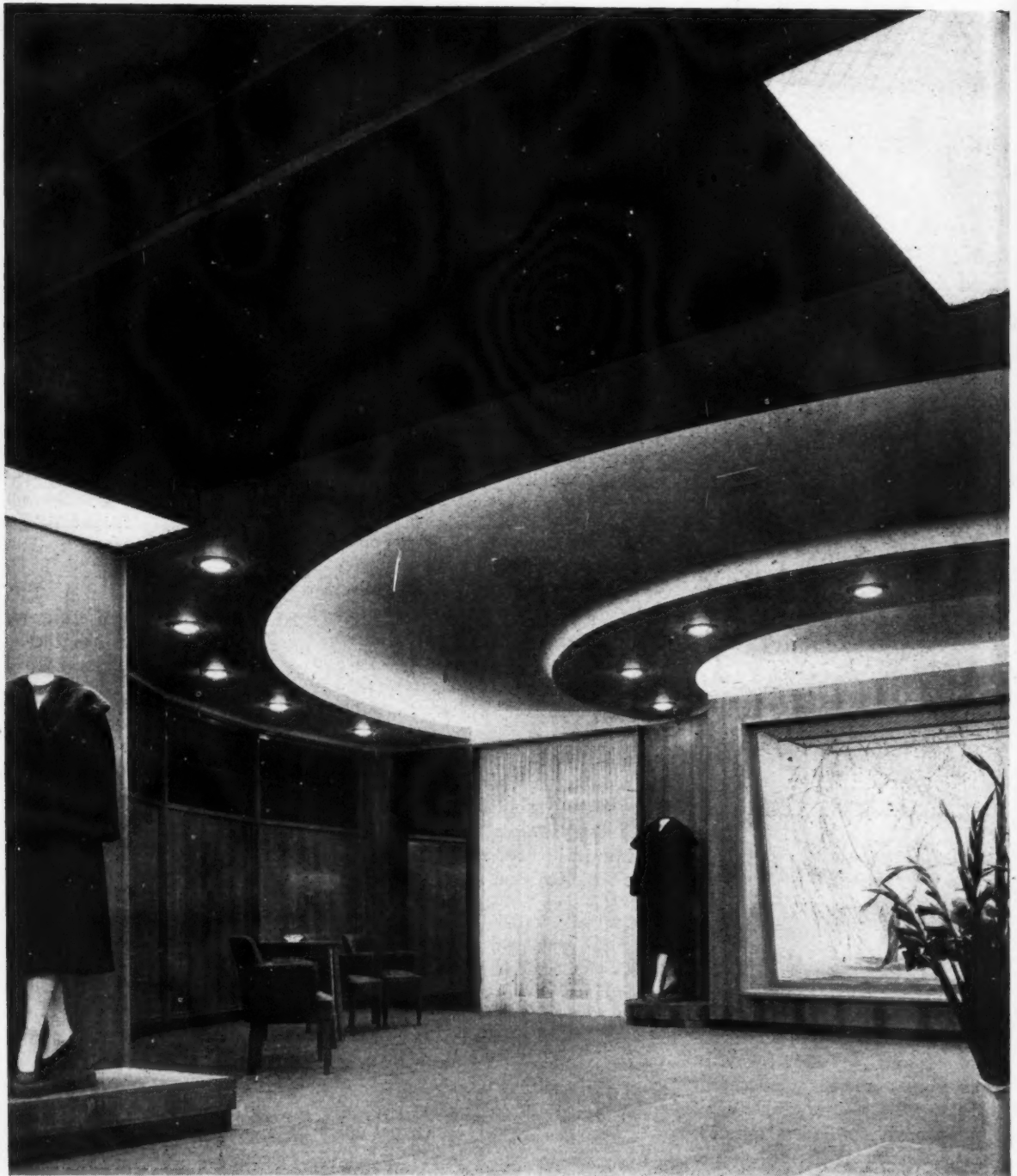
## . . . AND ARCHITECTURE'S ENGLISHNESS

On Sunday, on the Home Service, Professor Nikolaus Pevsner launched his series of Reith Lectures—the first on art to be delivered from this most elevated of radio's levels of address—in a manner so informal without being casual, so homely without being cosy, that he must surely have succeeded in the almost impossible task he set himself, to interest a Sunday evening audience in a talk on visual matters. When such a person of international standing decides to become a self-made Englishman, one might expect a certain solemnity when he addresses the nation of his choosing upon the Englishness of their Art and Architecture, but when the argument is made to hinge around a meditation upon the difference in national characters revealed by the fact that the English for *costoletto* is "chop" and other homely instances (not necessarily culinary, however) one has an approach so fresh and un-academic that practically anything can happen.

\*

ASTRAGAL, for one, has an appointment with his radio every Sunday at 9.15, and so, in accordance with the ancient precept "know thyself," should you.

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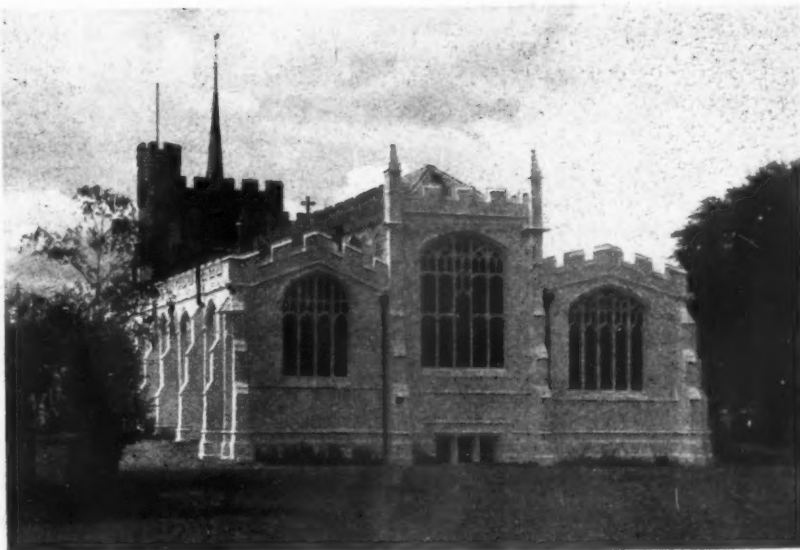
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## PUZZLE: FIND THE WITCHES

The recent Conference on Regional Planning and Development was, apparently, a lively and spirited affair, in spite of the witch-hunting which kept some of the representatives away. "It is interesting to see," writes one of ASTRAGAL'S colleagues, "how architects are always in the van when new ideas are being developed—at the creative stage, in fact. It is well known that the initial impulse for the Conference came from E. A. A. Rowse, former Principal of the AA School of Architecture and founder of the School of Planning, which was so unfortunately closed a short while ago. And the preparatory committee, which was responsible for organizing the conference, contained eight architects (including its chairman), several of them well known to readers of the JOURNAL.

"The most important thing about the Conference," my correspondent confirms, "was that a wide variety of experts attended from over forty countries. Those who attended heard doctors arguing with engineers, administrators with economists, agrobiologists with sociologists . . . And they were arguing about methods of co-operation, in fact how to get together to attack jobs which are so much greater than any one profession. The aim was to contrast the old idea of building a town here, a dam there, or an isolated health centre, or a shelter belt, or any one good and necessary item of development, with the new idea of comprehensive development, where all aspects are planned together. The TVA, that great prototype of successful multi-purpose projects, was rightly reviewed, and a first class speaker—Dr. E. Ackerman, former assistant general manager, came over specially from the USA to talk about it. The Gold Coast Volta river scheme was also described, and the Conference was impressed by the way the lessons learned in the TVA were being applied in the planning stage of this remarkable Afro-British-Canadian project. And the Indian Community Development Projects, in which every villager has been implicated in the plan from the start, made an exciting contribution to the planning with the people idea."

ASTRAGAL gathers that all this was very stimulating, and he hopes that



*The whitewashed church at Hitchin. See note on this page.*

nothing will deter donors from contributing generously towards the proposal for the setting up in London of the centre for Regional Planning and Development which was proposed by the Conference on the last day. It would give this country a chance to take the lead in yet another new scientific development, and in doing so to bow gracefully to its pioneers in Regional Planning—to Geddes, who started it all, and to Abercrombie and Rowse who spread the idea as educators.

## LOSS TO THE V AND A

The McKnight Kauffer Exhibition currently on view at the V and A will be the last exhibition under the directorship of Sir Leigh Ashton, who is retiring for health reasons. Under his guidance the V and A has made progress and produced results almost as spectacular as those of the Royal College under Robin Darwin. Whoever inherits the mantle of Sir Leigh will have quite a standard to live up to.

## NEARLY OFF THE RAILS

The re-decoration of the shareholders' room at Euston was carried out with such care and skill that one is perhaps justified in expecting equally high standards from the new Royal Scot bar in the Grand Hall. But this job by the Hotels Executive is a bit on the fussy side: the bar itself is all right, but the wall panelling, pleasant in itself, could have done without the repeated rose and thistle motif; and was it really

essential to use up a few square feet of carpet which happened to be left over from another refreshment room in Leeds or somewhere?

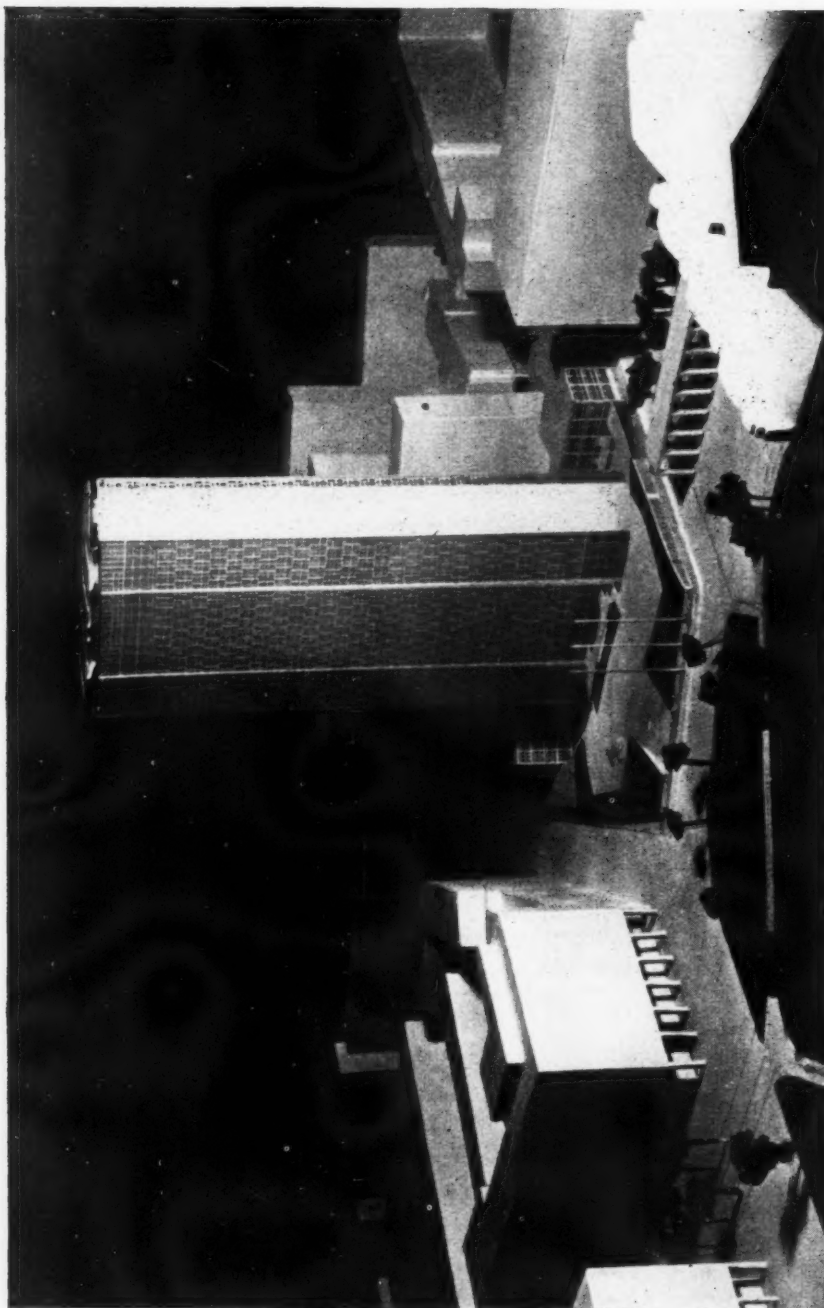
## WHITED SEPULCHRE

Those of our readers who share Le Corbusier's well-known enthusiasm for the days when "les cathédrales étaient blanches," will doubtless be gratified by the sight of the newly-whitewashed church at Hitchin, shown above. Certainly the obliteration of the shaggy texture of weathered mediaeval stone makes it easier to appreciate the formal qualities of the architecture, but much as one would like to think that this elegant paint job is a bold experiment on the part of a determined aesthete, it is, alas, almost certainly no more than a purely utilitarian attempt to save porous stonework from further crumbling. If this recipe really works, it would be a marvellous way of giving our gothic a gay new look, and preserving it at the same time. The procedure is as old as Durham cathedral, apparently—can BRS tell us if it works? And speaking of initials, how does the shade of William Morris, as incarnate in SPAB, feel about this: does anti-scrape extend to anti-paint?

## NOT HARD TO PORT

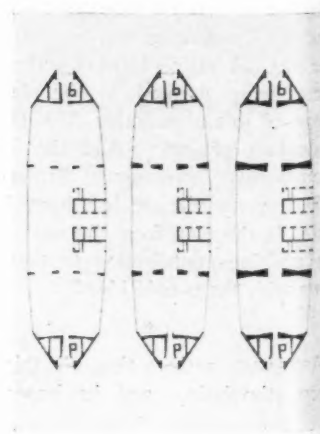
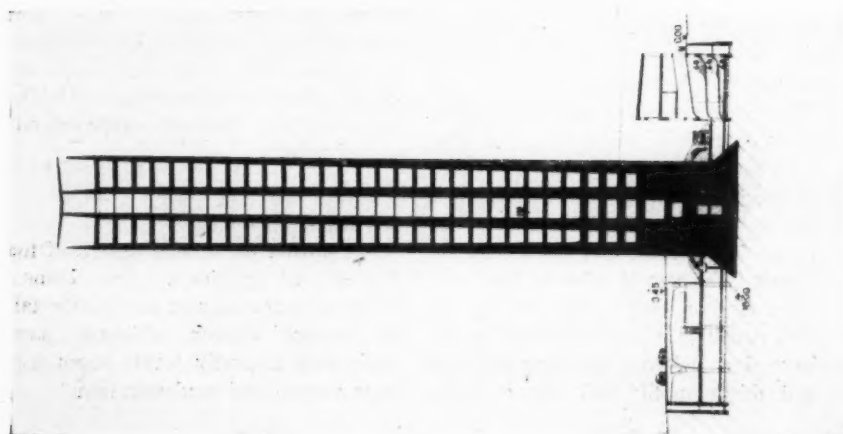
Quote, from the annual report of the Travel and Holidays Association: "London's new airport can hardly fail to impress visitors, although port equipment generally leaves room for improvement and modernization."





## *Nervi Smashes A Convention*

Function and structure alone do not make architecture—there is also imagination. Rarely has this point been so forcibly brought out as it is in the new Pirelli building for Milan, seen in model form above, as it would appear from a helicopter hovering above the roof of Milan Central Station. The work of a team of architects and engineers, among whom Gio Ponti and Pier Luigi Nervi are the most notable, it stems from a conventionally rigorous analysis of structure and function, but persevered with, and worked upon, by Nervi's powerful structural imagination, until the design suddenly crystallized in the form in which it now appears—four massive bifurcated columns tapering away to nothing as they rise, above left, paired between two triangular salients, housing stairs and services at either end, left. Such a solution, which smashes through all the conventions of office construction (except, alas, the basic one of inflated land values) will surely give the Pirelli building a standing among the commercial masterpieces of the mid-Century equal to that of Mies van der Rohe's entirely conventional Seagram building in New York—but when will the City of London offer anything of equal rank, even within accepted conventions? (The talk given last week in London by Nervi is published on page 519: ASTRAGAL comments on page 511.)





## POINTS FROM THIS ISSUE

Pier Luigi Nervi in London .. .. .	pages 511, 514 and 519
The Regional Planning Conference ..	below and on pages 513 and 517
New trends in building .. .. .	pages 537

## The Editors

## WHO SPREAD THE TALE?

**B**EFORE the general public has really accepted the ideas behind town planning, or even country planning, it has become only too evident that neither, singly, is really sufficient. To be truly effective, planning today has to be on a regional basis, a point which Professor Myles Wright emphasized in his recent broadcast, and which has been amply proved by the conference on Regional Planning and Development, briefly reported on page 517 of this issue. It is singularly unfortunate that the efforts of the organizers of this conference to establish a permanent centre in this country, and the events of conference itself, have received little publicity. This is due to the fact that all the Press have been chasing the red-daubed hares released by the Foreign Office. We know now that the conference was not controlled, or even partly controlled, by Communist sympathisers using it to spread Communism. We also know that at least four architect planners have been described publicly, but only one by name, as suspected Communists. It is because architects are concerned that we raise the matter in the JOURNAL. It seems totally unjust that a Government department should be able to accuse people of conspiracy without having to prove it (not that Communism is a crime yet in this country). And it is also unjust that a number of respectable professors, planners and architects should be made to feel that, through associating at a conference organized by a committee which may have had a Communist sympathizing minority, they might at any time be suspected of similar sympathies and therefore liable, for example, to be refused visas to some foreign countries.

The interesting thing which should be discovered, however, is who started the rumours that prompted the Foreign Office to dissuade foreign governments and civil servants from participating in the conference? It seems more than likely that somebody was hoping to spoil the conference. They were not unsuccessful—as far as publicity is concerned.

## LEARNING BY EXPERIENCE

The Arts Council, in its tenth annual report, states that it is ready "to provide the means and machinery of . . . a continuous survey of cultural needs—not only, indeed, in terms of bricks and mortar, but, what is equally important, in terms of the subsidies required to maintain the arts once they are physically housed." Of the Council's ability to provide such a survey we cannot judge, but it shows a ready-

ASTRAGAL finds this excessively gentlemanly, when one considers that some of the things at ports least likely to make a favourable impression on visitors are alleged improvements carried out in the last few years in allegedly modern styles. Can you hear me, Southampton, Dover . . . ?

## CB AT BC

Something not to miss if you are in the Bloomsbury area is the Cotton Board show at the Building Centre (Store Street). The CB and the BC between them have staged a surprisingly impressive collection of furnishing fabrics in cotton and cotton mixtures, displayed without excess of art, but with a good sense of how patterns can set one another off. Many of the patterns are new, most of the best ones are by designers one had hardly heard of, and although the catalogue makes a point of colours like "milk chocolate," "warm honey" and "wheat" the exhibition as a whole shows no evidence of a general return to The Beige Decades, and the colour schemes are mostly as strong, gay and punchy as one could wish.

\*

The exhibition is recommended for shaking up one's ideas about furnishing with fabrics; the catalogue is discommended for being too shy about prices.

## PVA AT RIBA

Another exhibition which opened last week (at the RIBA) is worth visiting. It has been designed by the Central Electricity Authority to interest architects in pulverized fuel ash, and shows the use of this plentiful waste product—the more refined and more manageable successor to clinker—in making mass concrete, lightweight aggregate, bricks and building blocks. In all of these uses it promises advantages over traditional products; and it is a pity, therefore, that of all the actual products on show at the exhibition only one, a lightweight building block, is so far freely available on the English market. Incidentally there is one feature in the exhibition which might lead to misunderstanding: a sintered aggregate is shown applied to the face of a large slab as though to suggest that it could be used as a facing material. Have a go if you like, but remember that it is highly porous.

ASTRAGAL

Century equal to that of miles and centuries of time. The City of London offer anything of equal rank, even within accepted conventions? (The talk given last week in London by Nervi is published on page 519: ASTRAGAL comments on page 511.)

acceptance of a recommendation in the report of the recent Queen's Hall enquiry, that, if the Government is going to provide assistance for the accommodation of cultural amenities in the form of new or reconditioned theatres, concert halls and art galleries, then it is most important that the assistance meets the requirements of a co-ordinated plan for the whole country. This is sound enough. What is odd is the Council's statement that a million pounds a year "for the next ten years would furnish Britain with all the additional buildings . . . which it can sustain."

The Arts Council suggest that about thirty provincial theatres, and a similar number of concert halls is all that is needed at the moment. Such a burst of construction of one type of building in such a short period of time would effectively prevent the experience gained and the lessons learnt in the design and use of the first theatres to be built being taken advantage of in subsequent designs. Assuming that it takes two years to design and build a theatre, and one year to test it out, an unduly large number of theatres would have to be started each year to complete the programme in the allotted time of ten years. Even if the Government permitted such added capital expenditure, the number of building starts and the shortness of the total building period would prevent the proper advantages accruing from a slower evolution of a final and proved design.

However, the Council seem to be aware, to a certain extent, of the danger of indiscriminate building. They suitably state: "The birth rate of white elephants must not be encouraged." One might add that the whiteness of the elephant increases with the shortening of the period of gestation.



W. W. J. Trollope, L.R.I.B.A.

Geoffrey L. Price, A.R.I.B.A.

R. L. Head, S. Duncan,  
J. Richman, Denville P. Howell,  
A. C. Franklin, Erich Herrmann  
(all A.R.I.B.A.)

Eric A. Tornbohm, A.R.I.B.A.  
Borough Architect, Darlington

### Tees-Side: Patience Strongly Recommended

SIR,—When first I read the letters from your critics of the architects of Tees-side, I felt inclined to be critical of the critics.

But it is good that young men should have their dreams. For when eventually they find themselves working in the cold light of day, perchance some trace of magic may survive to touch the sullen clay.

And when in turn harsh critics fall upon them they may recall that once they too had dreams.

London.

W. W. J. TROLLOPE.

### ... It's Just As Bad Elsewhere

SIR,—I think the devastatingly critical letters on the Tees-side architects' work are a little unfair. I would not suggest that any of the buildings you illustrated are brilliant pieces of architecture, but I do think that they can compare favourably with a great deal of work in other areas. Plymouth, for example, can show many large building schemes, but is there one really fine building in the rebuilt central area? And even the City of London itself is surely full of stuff which is little better in quality than that offered by Tees-side.

I quite agree that a number of the schemes illustrated are perhaps uninspired, but I would suggest that the poor architect is not entirely to blame. There are two other important people who are concerned—the client and the photographer.

I am sure it is true to say that the average client in highly industrialized areas such as Tees-side is by no means as interested in architecture as is his counterpart in what some might term the more "civilized" parts of the country, and all must agree that good architecture does require a good client, as well as a good architect.

Nearly all the photographs in your article were extremely poor; they mostly seem to have been taken on dull days and by amateur photographers and, whether we like it or not, there is no doubt that good photography can and does influence one's impression of any building.

I feel sure that you will not allow a few criticisms to deter you from further articles of this kind, and I look forward to your production of another "absolute disgrace."

GEOFFREY L. PRICE.

Newcastle.

[The photographs were taken by professionals whose work is constantly published in the JOURNAL.—EDS.]

### ... What Can The Layman Think?

SIR,—We would appreciate the opportunity of endorsing the remarks of Ian Douglas' letter in your issue of September 29, under the heading "Don't tell Architects about Subtopia—they create it."

The immediate reaction amongst the staff of this office on seeing your issue on The Architects of Tees-side was, what can be the layman's opinion of architects if he sees the buildings illustrated in this article? Mr. Douglas has told us, and we can only shamefacedly agree, that judging on the photographs which accompanied the article, he is perfectly entitled to hold the views which he expressed.

We would, however, respectfully submit that there are more than "one or two" exceptions (vide LCC, Coventry and the New Towns), as Mr. Douglas claims, to his "eagerly creating Subtopia" type of architect. Nevertheless, until the public can be sure that designs produced for them by architects will be of a good standard functionally, constructionally, and aesthetically, let us stop talking, as a profession, in terms of legislation to compel persons who intend building to employ an architect. As long as buildings of the general aesthetic quality illustrated are attributable to the profession, such legislation would serve very little to improve design standards of building, but would merely ensure a better living for the private architect at the expense of the public.

R. L. HEAD, S. DUNCAN, J. RICHMAN,  
DENVILLE P. HOWELL, A. C. FRANKLIN,  
ERICH HERRMANN.

### ... Don't Judge The Goods By The Byre

SIR,—Before full battle is joined, let me agree with some of the criticism of your issue of September 22. It was unkind and unworthy.

As exhibit "A" if assessed on the poor photographs of the backside of a pleasant little school and an asbestos-roofed cow byre then your correspondents' conclusions are reasonable.

With five million pounds worth of post war building to my credit a worthy selection could have been produced and would possibly have included a £250,000 Grammar School which has been highly acclaimed by reputable critics (real lun'on gents) and is being honoured by an official opening by HRH Duke of Edinburgh next month.

Please implore your readers not to be too fooled by your article, but to venture "north of Watford" to see for themselves. We seldom eat Missionaries nowadays unless they are very young and tender.

Darlington.

ERIC A. TORNBOHM.



## RIBA

*New Vice-President*

Dr. J. L. Martin, Architect to the LCC, has been elected a vice-president of the RIBA.

## BUILDING

*"Work Harder"*

If everyone connected with the building industry—and that includes architects—worked twenty per cent harder, the country could be saved £100 m. That is what the president of the LMBA, L. J. Holloway, told builders in London last week.

And he pointed out that an increase of twenty per cent. in productivity would bring production up to no more than pre-war figures.

*More Spec. Houses?*

The government may want free enterprise house-builders to increase their output, said the president of the NFBTE, Harvey G. Frost, when he spoke to builders in Newcastle last week.

This prophecy was suggested, he said, by the discussions about subsidies now taking place. He pointed out that if the houses completed by free enterprise builders this year (69,313) had been built for letting by local authorities, charges to the rates and taxes of at least £24 m. a year for sixty years would have been involved.

*Is the Green Belt a Menace to Spec. Builders?*

In the talk referred to above Harvey G. Frost made what it would be no exaggeration to call an attack on green belts.

He said, in effect, that if the Minister of Housing and Local Government, Duncan Sandys, wanted free enterprise builders to increase their output (something they could not do without land) he "should ensure that his green belt policy is operated with discretion."

## NUFFIELD

*Harlow Health Centres*

The Nuffield Provincial Hospitals Trust is to invest £200,000 over the next five years in the development of the health services of Harlow.

Last week Lord Nuffield opened the first three Group Practice and Clinic Centres which form part of the scheme for the

whole town. These Centres, to be known as Nuffield House, Osler House and Sydenham House, have recently been completed at a cost of £60,000. They will be used by general medical and dental practitioners on a group practice basis, and by the Essex County Council Health Authority. During the next few years, as Harlow grows, there will be provided three similar buildings, a special building for the Essex County health authority and two industrial health centres. In addition, the Trust are making an outright grant to the Harlow Industrial Health Service towards the initial running costs.

These buildings, with those already completed, will provide accommodation to meet the health needs at home and in the factory of the ultimate population of the town, which will be 80,000.

The buildings will be owned on behalf of

the Trust by the Nuffield Health and Social Services Fund, from whom the practitioners and the authorities will rent their accommodation. The actual building and management of the centres will be undertaken by the Harlow Development Corporation as Agents for the Fund.

## BSI

*School Furniture*

The first of a new series of British Standards for school furniture, applying particularly to school dining tables and chairs, is shortly to be published. This Standard will embody important new principles, mainly affecting the heights of chairs and tables. These figures are based on the results of recent anthropometric surveys.

*Was the recent International Conference on Regional Planning (at Bedford College) as subversive\* an activity as its critics suggested? We think the following summary of the principal papers will answer that question.*

## REGIONAL PLANNING

The TVA in Perspective, by Dr. E. Ackerman; The Indian Community Development Project, by T. Swaminathan; The Volta River Project, by J. G. Liverman.

E. A. Ackerman said that TVA is probably the most famous piece of regional planning in the world, although its role as a planning agency is not always understood. Some would deny that it was a planning agency at all, and its own reluctance to claim such a function made it necessary to explain its effect on the Valley.

It began work 22 years ago when 3,000,000 lived in the Tennessee Valley section of the USA. It was then an undeveloped region with an economy of agricultural raw materials (tobacco, cotton, etc.) with the result that a major part of the profits went to those elsewhere who processed the crops. Education and diet were both bad, typhoid and tuberculosis widespread, malaria the great scourge. Half of the Valley's forest land had been logged so often that only scrub remained, while the river itself alternated between dry season pools and huge floods. Ninety-seven per cent. of the people had no electricity.

To deal with the situation Congress set up the Authority "clothed with the powers of Government but possessed of the flexibility of private enterprise." It was to promote navigation, control floods, market electricity and rehabilitate two existing fertilizer plants. It had power to build dams and transmission lines and to acquire property. All other powers were retained by the President of the USA and only delegated to TVA from time to time. TVA's powers were therefore limited—"strategic but not broad." Banking, fiscal policy, social welfare, transport, etc., were excluded. TVA was a river controlling body; all else was done by example or persuasion.

Nevertheless, TVA had always thought out its activities in terms of their effect, material and social, upon people. In the USA, in 1933, even that was revolutionary. Dr. Ackerman, therefore, emphasized that TVA had: (1) used a decentralized approach, using many existing planning agencies, municipal and state; (2) persuasion and demonstration;

(3) "leverage" devices (e.g., the issue of seed). This had been done alongside the complete control of the waterway and power system throughout the entire basin. TVA had not tried to make an "empire," it had promoted or encouraged existing planning agencies or local authorities in some seven states and eighty cities. It had provided intellectual and technical leadership... "not a goal but a direction; not one plan but the conscious selection by the people of successive plans." It had made wide use of "demonstrations" to illustrate the development of recreation parks, reforestation, public health, etc. After demonstration it had abdicated its responsibilities to the local community.

Demonstration, however, had often been reinforced by "leverage" in the form of services, technical advice, materials and financial aid. The greatest lever had been the distribution of cheap electricity—from which almost all else in the ecology of the region had followed. Free advice in town planning, flood control, forestry, and many other things had been given; forestry seedlings (over 320 million) had been distributed. The Authority had created trade unions where none had previously existed. It had eliminated racial segregation in its own area long before the recent Supreme Court ruling.

All this democratic planning had been possible only because it was subject to "the logic of a single water master." Only thus can every kilowatt-hour be squeezed out of the Tennessee. By keeping power plant four years ahead of need TVA had possessed the most potent lever of all for converting plans into action.

The achievement included 40 dams and generating plants, with 10,000 miles of transmission line serving 93 per cent. of the region's farms. Control had provided a 600-mile navigation channel and 12-million acre/feet of flood control storage. There were 66 parks alongside the reservoirs. Fertilizer production and forestry were each a story in themselves. The landscape had changed in twenty years from the old brown of cotton and tobacco to the green of pasture. 225,000 acres of waste had been planted. The worst diseases had gone. The eradication of malaria had been TVA's "big success story." Per capita income had increased since 1933 by 539 per cent. Large and well-equipped schools and colleges now served an area where illiteracy had been normal.

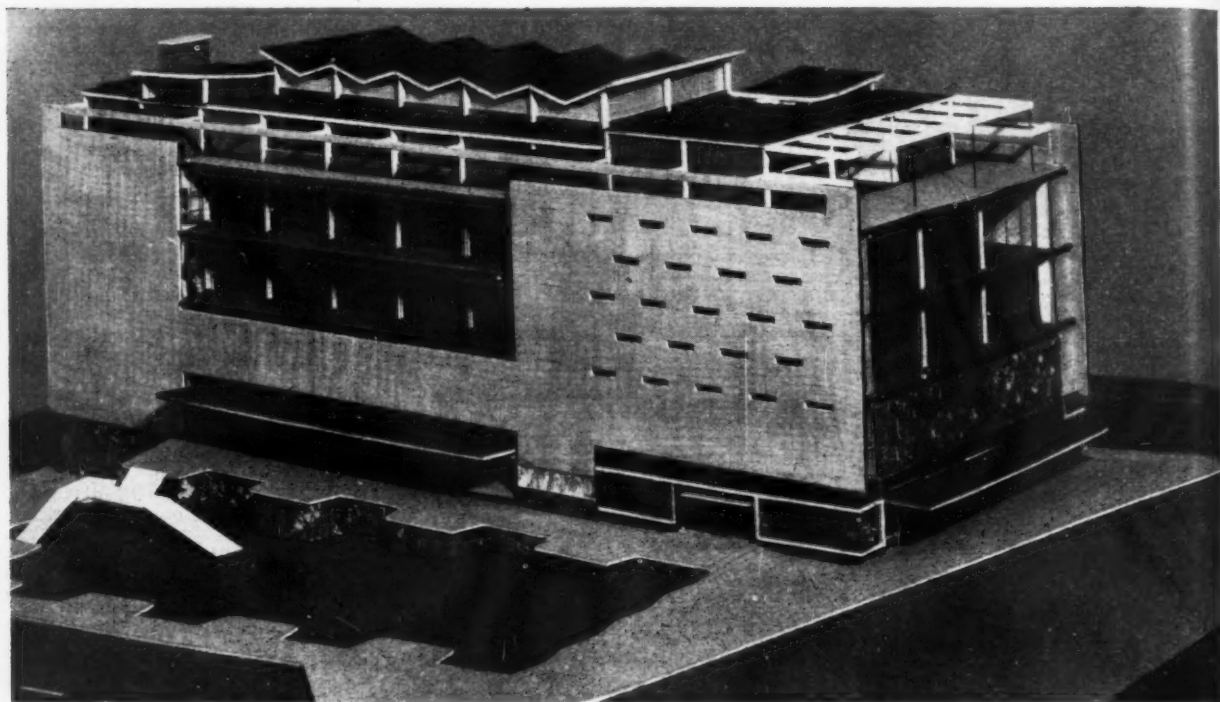
Much remained to be done—especially in forestry, which had not yet passed its half-way mark. "Areas of special need"—up the tributary watersheds—had yet to be brought fully into the scheme. Development, even since 1933, while very dramatic, had also been spotty, certain areas getting left behind. Nevertheless, both forestry and agriculture had taken the direction that TVA had expected and hoped for. Everything had confirmed, first: that to produce power ahead of need was sound economic planning; second: that to equip the people

(Continued on page 519)

\* See leader on page 515.

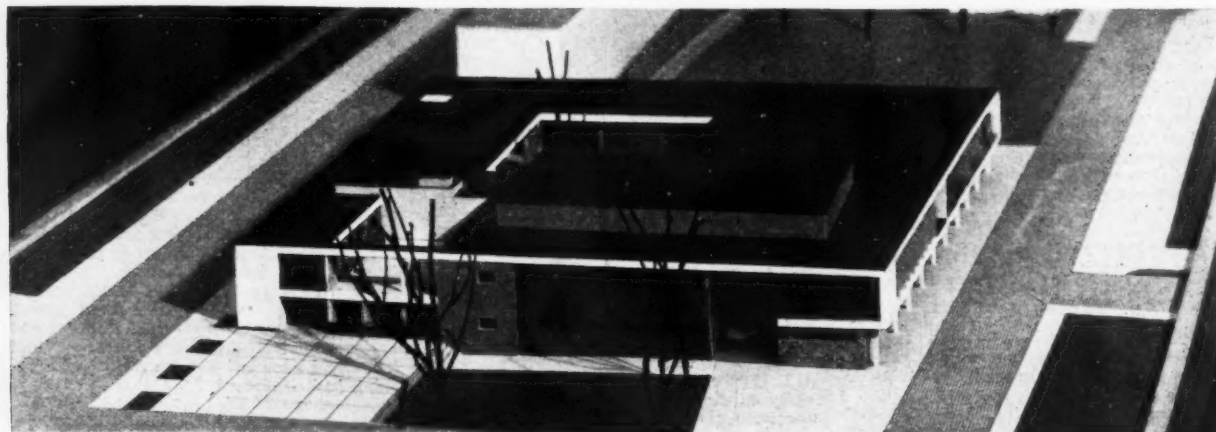
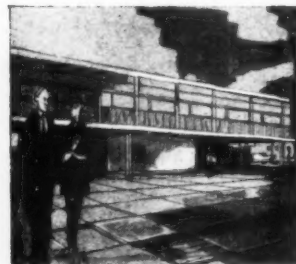
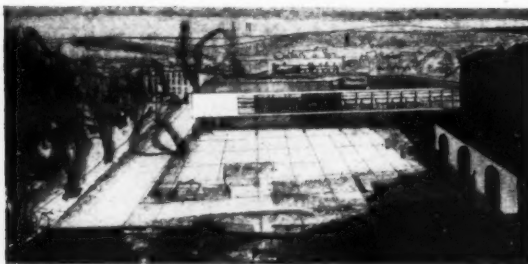
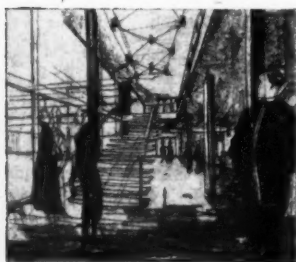


# THE "INTERNATIONAL STYLE" AT LIVERPOOL SCHOOL



When Henry-Russell Hitchcock opened the current annual exhibition at the Liverpool School of Architecture and Department of Civic Design, he said (as reported in last week's JOURNAL) that the work fitted into the "International Style." Here are two of the exhibits. Above: a model of a Co-operative Departmental Store, Halifax, submitted by David Glennie.

This is on view until October 21 in the school exhibition at the Walker Art Gallery, Liverpool. Below is a project for Music Rooms at Cheltenham by Michael Rostron. Left, the entrance foyer; centre, an aerial view from Queens Square; right, the administrative entrance. Bottom is a model of the scheme. This thesis was awarded the Sir Charles Reilly Medal and Prize.



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(Continued from page 517)

of a region to develop their own institutions was better than any hard and fast blue-print. This, however, was not the negation of planning; it was, rather, progressive and planned mutual aid.

#### INDIAN COMMUNITY DEVELOPMENT

T. Swaminathan, Economic Minister to the Indian High Commissioner, said that in the under-developed countries of the world there lived 67 per cent. of the population, "enjoying" 15 per cent. of the world's income. One of the most crowded of such areas was India. The departure of the British had left a vacuum; it had also been a challenge to which India had responded; freedom had not in itself been a solution of India's problems, it had provided opportunity for large-scale "social engineering."

The Planning Commission had been established in 1950. The idea was to bring about a gradual transformation of village life by enlisting the help of the people themselves, through the practice of more scientific agriculture, better sanitation, roads, etc. A network of workers at "village level" had been established. The Community Project already embraced 25,264 villages with a population of over 16 millions. By 1961 four-fifths of India's population would be included in the scheme. Communications, health, cottage industries, housing and social welfare were all within the scope of the plan.

The agricultural programme included land reclamation, the use of better seeds, fertilizers and pedigree stock. 450,000 acres had been reclaimed and a million put under irrigation, while some 60,000 tons of seeds had been distributed. The Communications Programme was designed to link each village with a main road; to date some 16,000 miles of road had been made. The Education Programme was providing primary and secondary schools and, for groups of villages, advanced technical schools for training artisans and for teaching improved building methods. A major problem had been the provision of wells or water tanks for each village, and drainage. 3,200 wells had been dug. Veterinary services and clinics were available for each Mandi Unit (group of villages). Pride of place, however, has been given to transforming the outlook of the people, to making them more self-reliant and more co-operative, as well as more literate and more healthy. Each village council, with one expert attached, is the vital cog in the machine. For each Mandi Unit there is a veterinary surgeon, medical officer, midwives, storekeeper, etc. Bombay State was taken by Mr. Swaminathan as an example of this far-reaching decentralization.

#### VOLTA RIVER PROJECT

The paper by J. G. Liverman, of the Volta River Preparatory Commission, was read because Mr. Liverman had withdrawn from the Conference. The paper said that the Gold Coast had been the subject of a plan sponsored by the British Government, the Gold Coast Government, Aluminium Ltd. of Canada, and British Aluminium Ltd. The Volta River Basin comprised an area of 150,000 square miles (three times the size of England). The building of a dam at the Ajena gorge would create a lake of 3,000 square miles and enable half a million kilowatts to be generated. The bauxite deposits of the Gold Coast were known to be more than 200 million tons. The objective, therefore, was aluminium; the smelting tool will be hydro-electricity. A hundred miles of railway, electricity for other parts of the Gold Coast and irrigation generally are envisaged. Cost at full development will be £150,000,000. Since Mr. Liverman's paper dealt rather with a project for the future than with actual achievement it has been summarized more briefly than those of the TVA and the Indian scheme.

*When Pier Luigi Nervi, the Italian architect, spoke in London last week, he pointed out that all his designs—"even those that might seem to have been developed on more formalistic lines"—were "the direct result of structural or constructional considerations." He illustrated his "constant endeavour to find the most efficient design from the technical and the economic point of view" by describing his most important work, and showing slides of it. We reproduce the complete speech and some of the pictures. [The speech was given at the Friends Meeting House, Euston Road, and was sponsored by the ISE and the Joint Committee on Structural Concrete.]*

## DEVELOPMENTS IN STRUCTURAL TECHNIQUE

By Pier Luigi Nervi

I am very honoured and deeply grateful for this opportunity of meeting my English colleagues and of talking to them about some of the work I have done.

I should make it clear that I both designed these works and was responsible for their construction as partner and technical director in the firm who built them. And I must say, also, that this opportunity of uniting these two aspects of the construction process—design and execution—which have tended more and more to separate into two distinct functions, has greatly contributed to any success I may have achieved.

The fact that design and actual construction could be united in this way was due to the method of placing contracts, known as the "competition-tender," which is already fairly widespread and is tending to be increasingly used in Italy. The method consists in inviting a number of firms, known to be well qualified from the technical point of view, to submit a tender including the actual design as well as a price quotation. The design is based on an outline provided by the commissioning authority and these outlines always allow ample freedom for the best architectural and structural solutions to the problem. Design and tender are sent in as in all normal competitions of this kind. The commissioning authority makes separate examinations of the technical and the economic data and selects the design which seems the most satisfactory from all points of view.

A design that is good from the aesthetic and technical points of view is nearly always sufficiently economical; in any case, the commissioning authority has full data on which to base a choice and may even accept a tender which is not the lowest, if the qualities of the design are such as to outweigh a small difference in cost.

In some cases, the invitation to tender asks for a lump sum contract, so that, except for unforeseen circumstances, the commissioning authority knows exactly how much the finished work will cost.

The advantages of such a system are obvious. Competition stimulates the designer-contractor to develop the most suitable design from the economic as well as from the technical point of view, and to study new and more efficient building methods for its execution. The extensive knowledge of materials which he possesses as a practical contractor, his realization of the limitations and difficulties of the actual execution and his study of means of overcoming them will, on the one hand ensure a realistic approach to the design, but they may also suggest daring, yet rational solutions, that might have seemed impossible to the purely professional designer. Moreover, the designer-contractor can carry out preliminary tests and experiments—even quite costly ones—within his own organization, where this would be practically impossible for the purely professional man.

It seems to me necessary to make these points clear, in order to emphasize what I consider the most important characteristics

of my works: that they are the result of a constant endeavour to find the most efficient design from the technical and the economic point of view. All my designs, even those that might seem to have been developed on more formalistic lines, are, therefore, the direct result of structural or constructional considerations.

Moreover, I am deeply convinced—and this conviction is strengthened by a critical appraisal of the most significant architectural works of the past as well as of the present—that the outward appearance of a good building cannot, and must not, be anything but the visible expression of an efficient structural or constructional reality.

In other words, form must be the necessary result, and not the initial basis, of structure.

#### THE FLORENCE STADIUM

The first important work which my firm was commissioned to carry out was the Stadium for the City of Florence, in 1927.

The outline given by the City's Technical Department was very sketchy; it specified the number of spectators that the stadium should hold (35,000), the dimensions of the covered grandstand, the length of the running track, the provision of a Marathon tower and a few more details of a general nature.

Essential items, from the architectural and economic point of view, were the design of the wide-span canopy to the grandstand, the open stands, the external staircases and the Marathon tower.

The principle of the design for the covered stand is obvious. It provides for the equilibrium of the whole structure without ground anchorage: these anchorages are always uneconomical because they involve the use of large quantities of material to counteract the forces transmitted from the anchorage to the ground, through the structure.

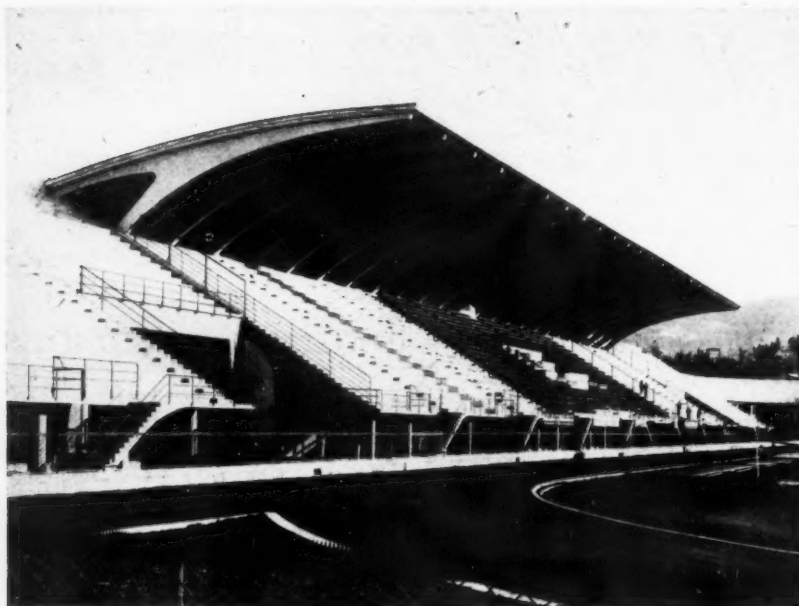
The variation in section of the main ribs is determined by the law governing the variation of moments.

Purely aesthetic considerations inspired the slight curve of the canopy and of the haunching of the main ribs.

An interesting problem was set by the outside staircases, which involved considerable difficulties in construction, and which made me realize, for the first time, the extent to which the full development of reinforced concrete is linked up with the problem of timber formwork and its inability to adapt itself to curving or spiralling surfaces.

I found the exact calculation of staircases impossible and I therefore limited myself to a calculation of this complex, statically indeterminate system in terms of simple, statically determinate elements, and calculated them for the greatest stability even at the cost of high unit stresses, as I was confident that the wonderful plastic qualities of concrete would of themselves bring about full and efficient monolithicity between the structural elements.

Events have fully justified my confidence, and the strictest acceptance tests and—more important—time and use, have demonstrated the perfect stability of the structure.



Above: one of Nervi's earliest work in private practice; the Stadium at Florence. It was opened in 1932 and was without precedent in concrete shapes.

A particularly interesting opportunity was given to my firm in connection with the competition organized by the Italian Air Force authorities in 1935 for the construction of large hangars spanning 330 ft. by 135 ft. internally, with door openings of 165 ft. span.

I designed the structure as a geodetic framework acting together as a whole, as I believed this would give the most economical solution and the one requiring the least steel.

With this type of design the theoretical calculations were extremely complicated and on a much larger scale than those for the spiral staircase I have previously mentioned. I therefore decided to make a preliminary calculation and then to make a detailed study of the stresses by means of experiments on a model.

The model experiments were carried out at the Milan Polytechnic, under the direction of Prof. Ing. Danusso and Prof. Ing. Oberti; I believe this is one of the first instances in which the results of model tests have been applied to a really large-scale structure.

The results of the model tests enabled me to go fully into the static behaviour of the structure and to estimate the stresses in the whole framework, and it was found that the

estimates provided by the preliminary calculations used in the construction of the model required hardly any alteration.

The actual construction was not easy, and provided yet another illustration of the economic disadvantages of timber formwork wherever reinforced concrete work goes beyond the simplest shapes.

In 1940 the Italian Air Force authorities invited new tenders for the construction of hangar No. 6, of similar dimensions. At that time, the need for economy in materials and timber had become even more acute and this is why, on the basis of the experience acquired, I decided to simplify and lighten the structure by designing the ribs as a lattice, which would enable me to make use of prefabrication. I also altered the system of supports in order to simplify the static system and make it more symmetrical.

In this case again, model tests were carried out. The greater structural simplicity and the extensive study made of the previous hangar design enabled me to make a still better approximate calculation, the results of which agreed exactly with those of the model tests.

The precasting of the units and their erec-

tion proved quite simple.

The method of assembly had been tested by my own firm, in its workshops, and by the Laboratory of the Milan Polytechnic. The joints were made by welding the steel and placing high strength concrete *in situ* in the space left at the junction of four units. The results were excellent, as may be observed on visiting the remains of the six hangars. The Germans destroyed them when they retreated by demolishing the supporting columns, but even after the fall of the roof, the great majority of the joints are still intact.

#### FERRO-CEMENT

Meanwhile, conditions at the time had led me to work on a new type of construction that I called "ferro-cement." It is based on the principle of a very thin, highly reinforced slab obtained by forcing a very good quality cement mortar, made with cement and sand, through several layers of steel mesh and small diameter bars, joined together to form a section only a little thinner than the final unit.

The mortar was placed either by hand or by vibration and the results were extremely promising, not only because of the exceptional flexibility, strength and freedom from cracking of the slabs so obtained, but even more because the mortar being held by the mesh, one could greatly simplify the formwork or even do away with it altogether.

This new method was devised mainly for the quick and simple construction of small ships of a tonnage not exceeding 500 tons. In 1943, work was started on three motor-transport boats for the Italian navy and one sailing ship, with auxiliary motor, for private industry.

The events of the war prevented the completion of this work, but in 1945 my firm built the yacht "Irene" which is still in use and in perfect condition, and in 1948 I adapted the method to build a 40-ft. ketch, the "Nennele" for my personal use. The hull of the "Irene" is 1½ in. thick, that of the ketch "Nennele" ½ in. thick.

#### THE FIRST TURIN EXHIBITION HALL

These designs, and others, both for ships and buildings, which it would be too long to describe, gave me the necessary experience to attempt, in 1948, a much greater work—the roof of the Exhibition Hall at Turin.

In this case again, my firm was invited, along with several others, to submit a design and tender for the construction of a large exhibition hall, to replace the Palace of Fashion destroyed during the war.

The problem was particularly interesting, not only because of the dimensions of the hall (nearly 330-ft. span) but also because of the very short time allowed for the execution of the work, which was to start in September and had to be finished by the end of April. This very short time was a real problem in view of the difficult climate in Turin.

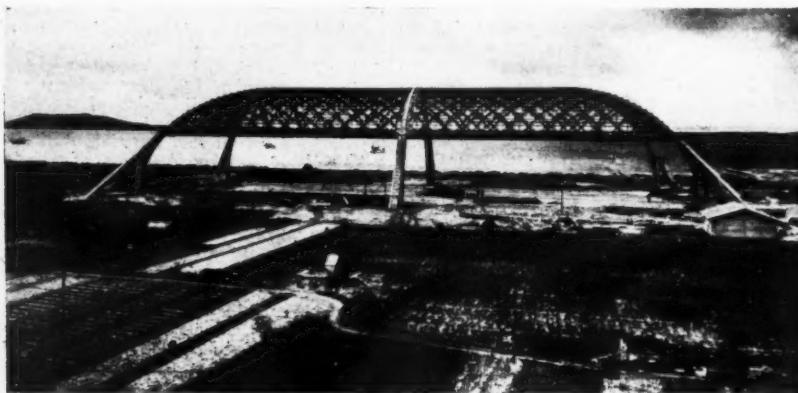
The solution I immediately thought of was a structure in corrugated "ferro-cement," which would attain the necessary stability by virtue of the corrugations and would enable us to use precasting, as in the case of the hangars, and to manufacture the roof units while the floors and supporting structure were being built.

On this basis I designed a roof structure with corrugations of about 8-ft. span, divided into units 13 ft. long. The units were to be made of "ferro-cement" in order to be as light as possible (thickness 1½ in.) and would be rendered monolithic by reinforced concrete ribs cast *in situ*, and located at the peaks and troughs of the corrugations. In this way the "ferro-cement" units would act as junction units between the *in situ* ribs which in turn would take over the main structural work.

The units are closed at each end by stiffening diaphragms and adjacent units are joined together by a 1½ in thickness of mortar placed *in situ*.

The casting of the units proceeded without any difficulty and without the need for double

Below: a hangar developed by Nervi as a result of experiments at Milan Polytechnic and a prototype built at Orvieto. It was demolished in the German retreat, but even after the fall of the roof the joints remained intact.





formwork, as would have been the case with ordinary reinforced concrete. Because of the richness of the mortar (800 kg. of best quality cement to 1 cu. m. of sand), the units could be de-moulded in either two or three days, according to the outside temperature.

Lifting and placing the units proceeded regularly and enabled about 3,230 sq. ft. of roof to be completed each day.

The construction took place in three stages, to get the fullest possible use from the movable formwork.

The corrugated roof was connected to the main supporting columns (which are at 24 ft. 7½ in. centres) by fan-shaped "ferro-cement" units springing from inclined reinforced concrete elements.

The method of construction with precast corrugated "ferro-cement" units is readily applicable to the construction of large span domes and enabled me to solve the problem of the 420-ft. diameter roof for the Sports Palace at Vienna.

I made this design in collaboration with my architect son, Antonio, and entered it for the competition organized by the city of Vienna, but it was not successful.

It still has a certain interest, however, principally because it shows how the method can solve at one time all the various problems involved in the design of a roof with such a large diameter.

Quite apart from the essentially subjective judgment of its architectural aspect, which may or may not be found pleasing, a purely objective judgment will show how the problems of structural efficiency, economy, thermal insulation, provision for air-conditioning ducts, natural lighting and, more especially, acoustics and sound absorption (very important factors in large buildings) have all been simultaneously solved.

I have, moreover, often observed that a design that is sound structurally is generally satisfactory in every other way.

For the design of the 130-ft. diameter half-dome at the end of the main Exhibition Hall in Turin, I used a method, based on precast units, which I had studied and actually used, though on small-scale structures, immediately after the war.

This method had also been inspired by the need for economizing in timber, which was extremely scarce in Italy at that time.

The method is suitable for the construction of vaults or domes and consists in filling the space to be covered with precast units measuring approximately 6 ft. 6 in. by 13 ft. The units are cast in concrete moulds which in turn are constructed on a model reproducing a section of the vault or dome to be built.

The edges of each unit are so shaped that when placed side by side they form channels about 4 in. wide between the units, which are filled with *in situ* reinforced concrete and form a network of supporting ribs that completes the structural system. The units are made of "ferro-cement" and are ½ in. thick.

During erection they are supported on scaffolding and require no actual formwork.

The units may be made in any shape and, provided allowance is made for the formation of the ribs, they lend themselves readily to the expression of any architectural form.

#### THE SECOND HALL

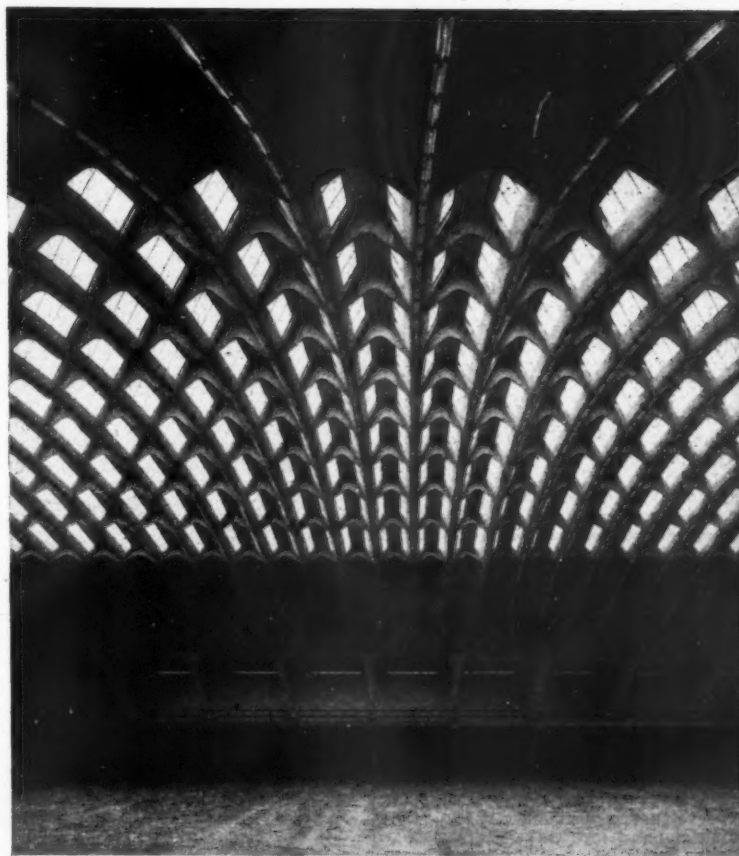
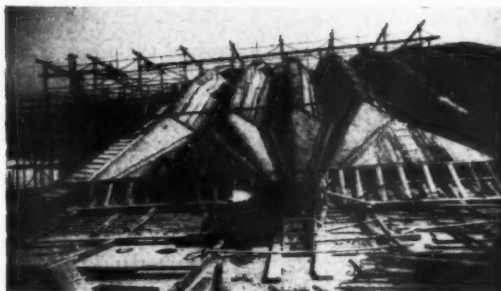
One year later, the organizing body in charge of the Turin Exhibition Hall asked my firm to submit another design and tender for a new hall, measuring 180 ft. by 540 ft. to be built close to the main hall.

Again, the time allowed for completion was very short, as the work was to be started in November, and had to be ready before the end of March.

It was again necessary to use precasting, which could conveniently be carried out in the basement of the adjoining main hall.

My design was for a hipped vault, supported by four arches on a sloping plane with a slope corresponding approximately to the thrust of the vault.

For the construction of the vault, I decided to use the same method as for the half-dome



Top: the corrugated pre-cast concrete units of the Turin Exhibition Hall. (See also view on page 522.) Centre: views of the roof of the Hall under construction, showing the collection of forces to the buttresses. Above: interior of the Hall. It has a 312-ft. span and was completed in eight months.

in the main exhibition building, covering the required area with precast units placed in rows parallel to the angles of the roof and allowing for a strip of glazing round the

edges to provide daylighting. To obtain this daylighting, the units in this part of the roof consisted only of the channels which formed the ribs.

For the surrounding flat-roofed portion, which spans 33 ft., I designed a system of corrugated beams in "ferro-cement," pre-cast at the same time as the vault units. These beams are placed side by side and finished with a lightweight screed. Erection proved very quick and easy.

The beams in question are  $\frac{1}{2}$  in. thick at the top, increasing to  $1\frac{1}{2}$  in. at the soffit to provide room for the necessary reinforcement.

They were cast in concrete moulds which, in turn, had been made in a plaster mould. The visible underside of the beam, which is in contact with the form during casting, is perfectly regular and smooth, with a perfection of surface that could never be obtained by any of the usual finishing processes.

This method of construction is very adaptable; I have used it many times for curved structures and always with excellent results.

An interesting application of precasting for the construction of vaults and domes is the design I made for the elliptical roof of the hall in the New Baths at Chianciano.

The elliptical plan complicated the problem and made it necessary to prepare formwork for half the roof, but here again the method proved most satisfactory, both as regards the quality of the work which it made possible, and as regards the saving in time as compared with *in situ* work.

A new method for the construction of roofs, based on "ferro-cement" moulds mounted on travelling scaffolding, movable both horizontally and vertically, which I designed in connection with an important competition, enabled me to free the construction of the ribbed roof from the restrictions imposed by timber formwork. This new freedom made it possible, not only to profile and position the main and secondary beams according to constructional convenience, but also to design roofs with ribs located along the isostatic lines of the principal bending moments, a design which makes possible strict adherence to the laws of statics and, therefore, makes the most efficient use of the materials.

It is interesting to observe the harmonious effect and the aesthetically satisfying result of the interplay of ribs placed in this way—a clear reminder of the mysterious affinity to be found between physical laws and our own senses.

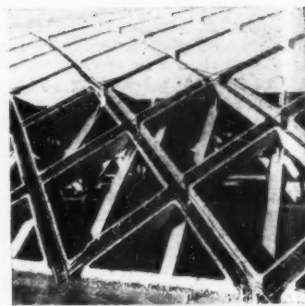
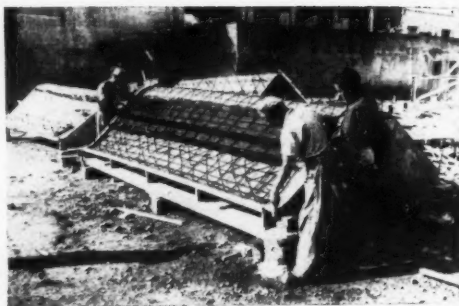
These observations, you will notice, all point to the fundamental importance of purely constructional problems in the design of reinforced-concrete structures. The buildings which I have had the pleasure of showing you would, in the main, have been impossible to build if the method of construction had not been studied from beginning to end as an integral part of the design.

I also want to emphasize that the full development of reinforced concrete, not only from the engineering, but also from the architectural point of view, is closely linked to a gradual liberation from the restrictions imposed by timber formwork, which in fact obliges the designer to conform to the pattern of timber construction, and is in direct opposition to the plasticity of form that is the most important structural and architectural characteristic of reinforced concrete. I believe that precasting, the use of "ferro-cement," and methods of roof construction with travelling "ferro-cement" formwork, may be a not unimportant step in this direction.

In closing, I should like to mention the contribution that reinforced concrete has made to the development of present-day tendencies in architecture.

After the first unfortunate attempts to adapt the new material to the structural forms of masonry or timber, reinforced concrete, spurred on by technical requirements and by its own unlimited possibilities, turned very quickly towards new structural forms, which, to the surprise of their inventors themselves, were found to possess an inherent beauty of their own.

It can be said that the most characteristic



Above: left, one of the 13-ft. long pre-cast concrete corrugations spanning 8 ft., which were used on the first 1948-49 Turin Exhibition Hall. By this means of pre-fabrication an average of 3,230 sq. ft. of roof was completed each day. Right: the system of roofing employed in the second and smaller Exhibition Hall at Turin, and described at the bottom of page 521. Note the provision for glazing round the springing points.

architectural forms of reinforced concrete in these last few years have been at once the cause and the consequence of a widespread orientation towards a genuinely constructional architecture, which has very quickly reached every country and every aspect of construction.

Perhaps, because we are taking part in it ourselves, we do not sufficiently realize how profound is the change between the architectural concept of the first part of this century and of the present day, and how important it is to have freed architecture from a complex of rules and traditions which, however much they corresponded to structural reality at the time of their inception, have gradually lost any significance and become a sterile formalism.

The present moment in architecture is full of promise, but the danger of slipping into structural formalism should never be overlooked; alarming symptoms of it can already be seen in the architectural work illustrated in the periodicals of all countries.

This derives from the fact that too often, through a lack of understanding of its structural and constructional essence, a structure is considered solely on the basis of its external appearance—which people try to adapt to a variety of different problems both as regards dimensions and strength.

The result is always unfortunate. I am absolutely certain that the prime condition of architectural expression in a structure is the correctness and, I might say, the inevitability of its structural design.

Constructional complications, or designs that require structural acrobatics, are always a sign of a false structural conception—even to the untrained eye of the non-technical observer.

A consideration of this danger brings us to what, to my mind, is now the most important problem in architecture: the training of the architect of tomorrow.

To deal worthily with the ever more ambitious architectural projects of the near future the architect must possess—and synthesize in himself—aesthetic sensibility, profound understanding of structural needs, and a precise knowledge of the methods, possibilities and limitations of constructional techniques.

The organization of a course of studies which could in a reasonable number of years

provide such a wide and varied training is certainly a very difficult problem. But if we cannot by suitable training succeed in uniting in the young constructor artistic sensibility, technical wisdom and knowledge of building methods, the hopes of the new architecture will be to a great extent frustrated.

Meanwhile, until such time as the training of the complete architect can be achieved, good results can be obtained through the sincere collaboration of different people, each contributing the specific knowledge lacked by the others.

Architect, engineer and constructor can, in this way, bring about that union of art and science that is necessary to the solution of any constructional problem.

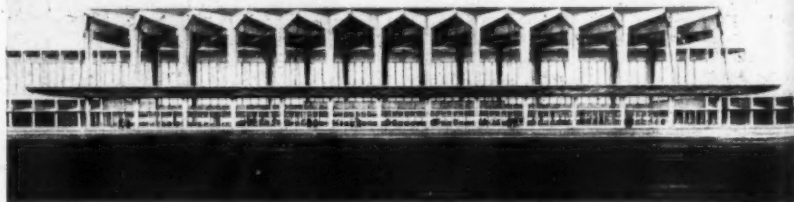
In the last few years I have had the opportunity of collaborating with architects of great capacities and artistic sensibility, in the conception and development of several outstanding projects, and I must say that this collaboration has been carried out with mutual satisfaction and with results which I consider interesting.

I would mention in this connection the UNESCO building in Paris, in which I collaborated with the architects Breuer and Zehruss; the Pirelli offices in Milan, a notable architectural conception by the architects Ponti, Fornaroli, and Rosselli, studied in collaboration with Prof. Danusso, and engineers Valtolina and Dall'Orto; the project for the new Central Station at Naples, carried out in collaboration with the architect Vaccaro.

I have also observed that the contribution of technical-constructional knowledge is only effective if it is brought into collaboration with the architect from the inception of the scheme; as with living creatures, it is very difficult to eliminate in the development stages any initial deficiency or malformation.

It is clear that the whole field of construction, which stretches from the cultural formation of the architect on the one hand to the industrial organization of construction on the other, is in a state of rapid and progressive development which demands a bringing up to date of both ideas and techniques.

All the efforts of those who have at heart the progress of architecture will still be inadequate to define, to study and to solve so many and such complex problems.



The project for a new Central Station at Naples, designed by Nervi in collaboration with the architect, Vaccaro.



# HOUSE

in THE GLADE, WELWYN GARDEN CITY, HERTS

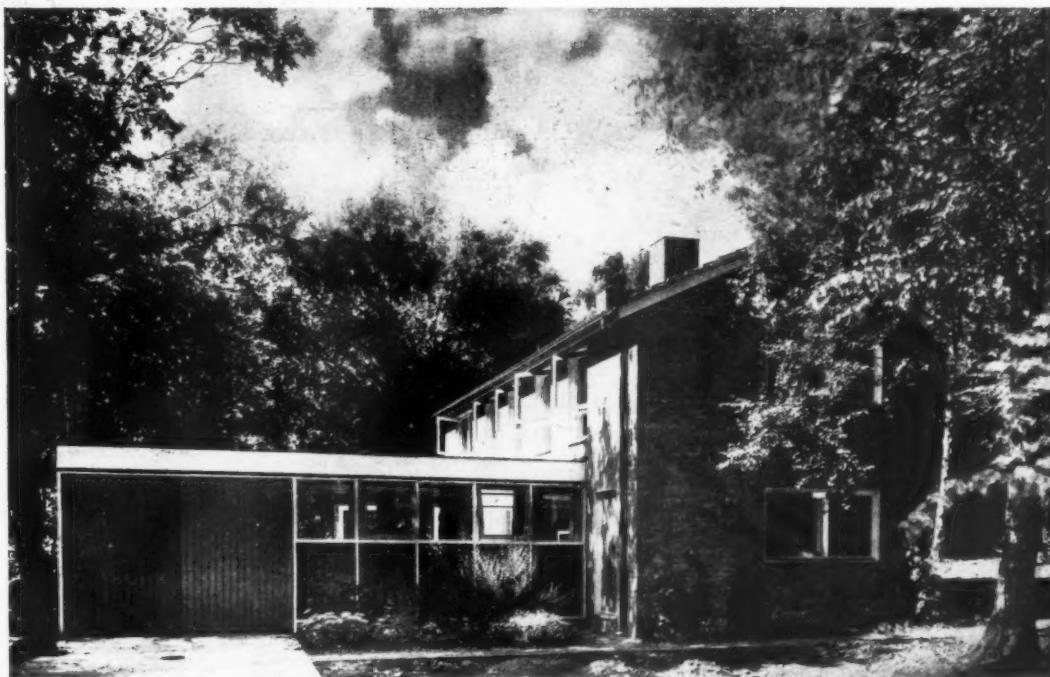
designed by ARCHITECTS' CO-PARTNERSHIP



The west facade.

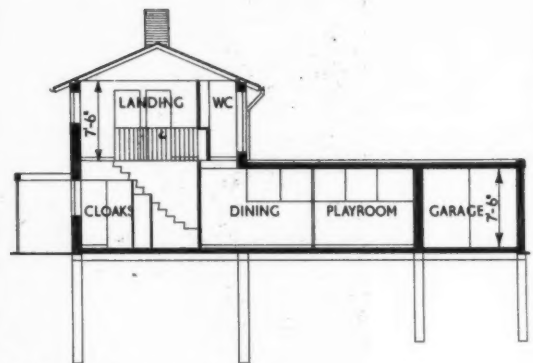
The client for this house at Welwyn Garden City required the maximum amount of living accommodation on the ground floor, which is, in consequence, approximately 30 per cent. larger in area than the bedroom floor above. The floor heating system on the ground floor (see plan on page 525) was chosen as the best solution to planning requirements.

South and west facades, with garage extreme left.



Ground and first floor plans. [Scale:  $\frac{1}{32}'' = 1' 0''$ ]

The site, which is well-wooded, slopes down from east to west; a narrow frontage radiates from north-east to south-west. The house is placed well back on the site to take advantage of the view to the south-west. The floor area is approximately 1,500 sq. ft., excluding the garage. The ground floor accommodation is on two levels; the kitchen, dining area, playroom, entrance hall and garage are on the upper level and the living-room is on the lower level. There is a sliding folding partition between the dining room and the children's room (see bottom photograph on page



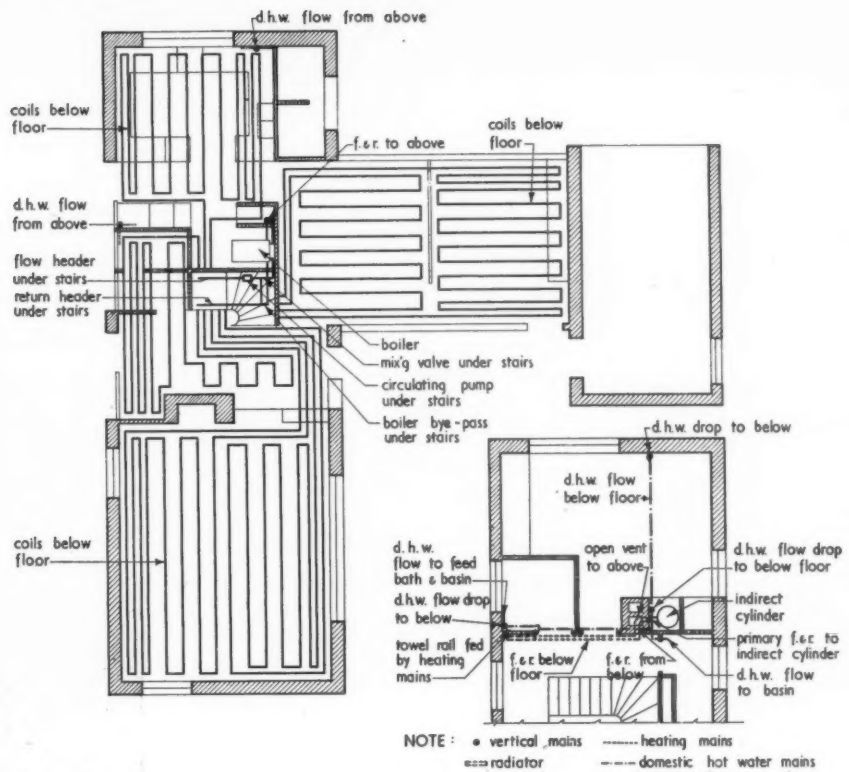
Section A-A. [Scale:  $\frac{1}{8}'' = 1' 0''$ ]  
(see plan on previous page)



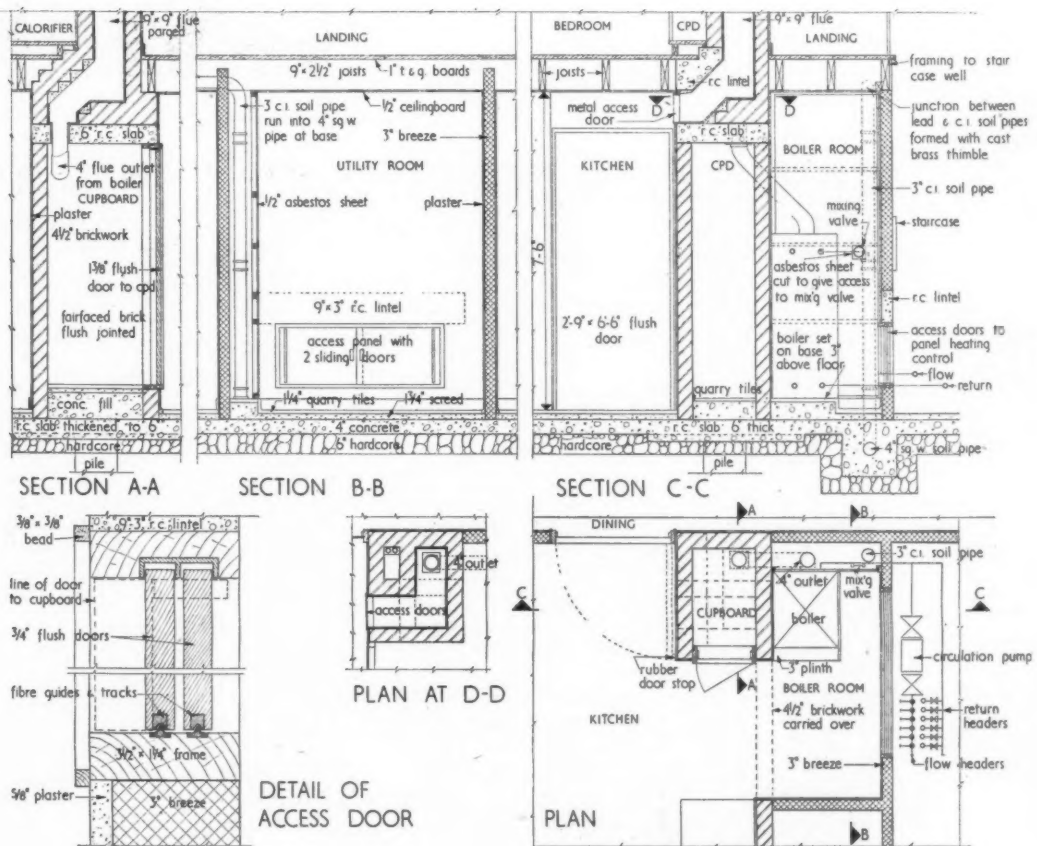
526). Above is a photograph from the living room. The single-storey wing, which contains the dining room, children's room and garage, is seen on the right in the centre photograph. Left: the north facade, showing entrance porch and dust-bin shed. The four bedrooms on the first floor are minimum in area and have low window sills to take advantage of the view over ground which slopes away from the house. External walls are of 11-in. cavity construction with internal skins and partitions of 4-in. or 3-in. clinker blocks. The pitched roof, of light timber trusses at approximately 6-ft. centres, was originally designed for slates, but the use of these was not permitted by the local authority. Interlocking tiles have been used at the low pitch of  $22\frac{1}{2}^\circ$ , and, to avoid water penetration, a layer of roofing felt, supported within aluminium sheets, was fixed on top of the rafters. Any water penetrating under the tiles is drained off through a gap between the fascia and its soffit. The flat roofs are finished in roofing felt on wood-wool slabs, fixed to timber joists. The foundations consist of r.c. perimeter beams

(Continued on page 526)

HOUSE AT WELWYN  
GARDEN CITY



Ground and first floor plans showing heating layout [Scale:  $\frac{1}{8}'' = 1' 0''$ ]



Details of boiler recess [Scale:  $\frac{1}{8}''$  and  $3'' = 1' 0''$ ]

supported on piles approximately 6 ft. deep. All piles are 12-in. diam. and the spread at the base varies from 18-in. to 33-in. diam. according to the superimposed load. Boring was carried out with a special prototype mechanical borer mounted on a tractor, and the foundations were completed in two days. The external walls are faced with second quality London stock bricks. The windows are timber, purpose-made, and are secured by espagnolette bolts recessed into the side of the frame. Floors are finished with 9-in. square hand-made quarry tiles in entrance hall, kitchen, dining and children's rooms, and with pre-fabricated beech strips, laid on battens in sand, in the living room. Panels below the windows in the single-storey wing are of  $\frac{1}{4}$ -in. resin-impregnated plywood, faced with gaboon

and finished in three coats of clear varnish. The floor heating system is served by an automatic magazine-type boiler, burning anthracite. Fuel is fed from the fuel stores into specially-made buckets recessed in the floor under the kitchen work-top. Bedrooms 1 and 2 are heated by wall-panel gas fires. The open fire in the living room has an under-floor air supply and a recessed ashpit. The cost of the heating installation, including boiler and hot water supply, was £410. The small photograph below shows the living room, seen from the steps leading down from the hall. Beneath it is a view of the children's room. Extreme left are the floor-to-ceiling sliding windows facing south. The general contractors were R. T. Bushell & Sons. For sub-contractors see page 544.

#### HOUSE AT WELWYN GARDEN CITY





# HOUSE

in TEMPLE GARDENS, MOOR PARK, HERTS

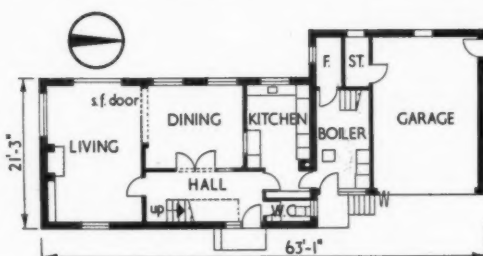
designed by JUNE PARK



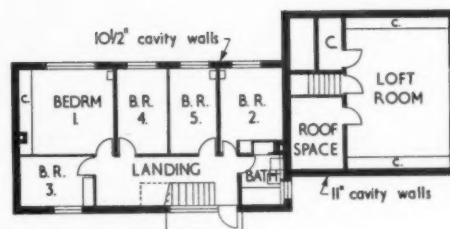
South and east facades.

The site for this house at Moor Park is in a cul-de-sac off the golf course on thickly wooded land, with a slope downwards towards the north. The house was planned when the 1,500 sq. ft. limit was still in force, but the boiler room and loft-room over the garage were not included in this limit. The heating is by hot-water floor-panels under the entire ground floor and by radiators on the first floor.

Main entrance facade from the north-east.



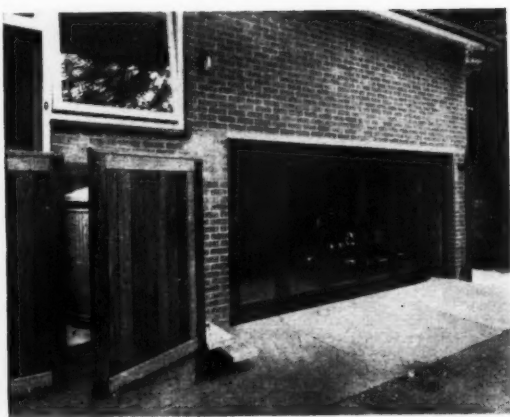
Ground floor plan [Scale:  $\frac{1}{4}$ " = 1' 0"]



First floor plan

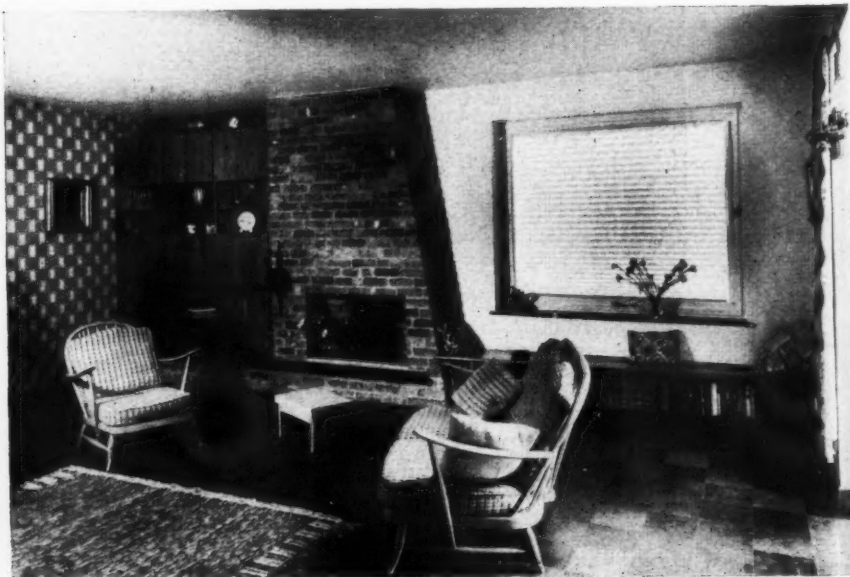


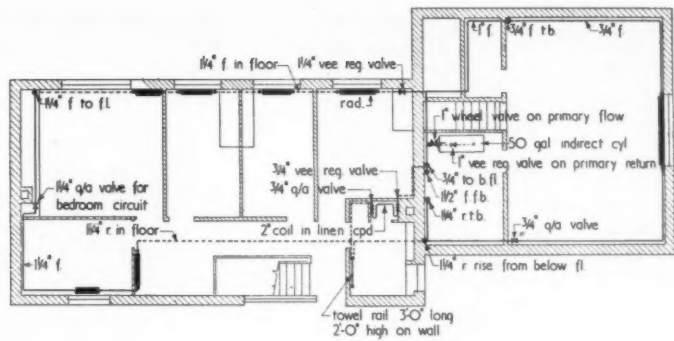
## HOUSE AT MOOR PARK



Above, the garden facade of the house, with windows facing west. On the left is the rear wall of the garage, above which is a large loft room. This room, which is approached by a staircase from the boiler room, is used as a playroom in which the children, isolated from the rest of the house, can make as much noise as they wish. Left, the sliding garage doors, which are glazed in hardwood frames. Also shown are the steps leading to the kitchen and boiler room entrance and also the raised platform where dustbins are kept. Below, the south wall of the living room, showing the only open fireplace in the house, the only south window, and also built-in shelves and cupboards. On the opposite page is a view (left) of the anthracite-burning boiler, which serves the ground floor heating panels and first floor radiators, and also provides domestic hot water. To its right is a photo of the hall and the main staircase, which has treads and handrail of polished mahogany. The external walls are of 10½-in. cavity construction, with an inner skin of clinker blocks. Load-bearing partitions are of brick, except for the partition between bedrooms 1 and 3

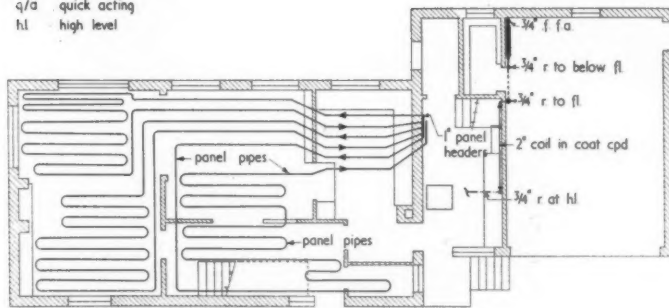
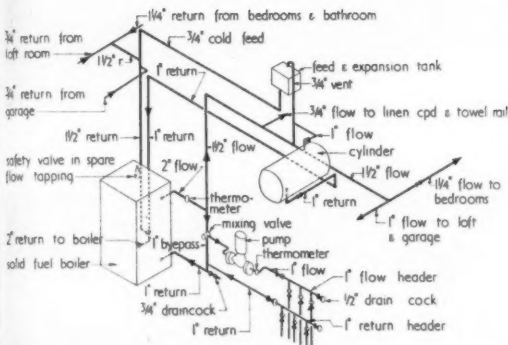
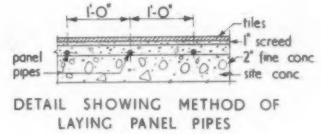
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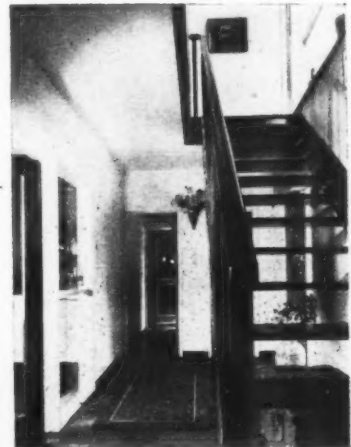
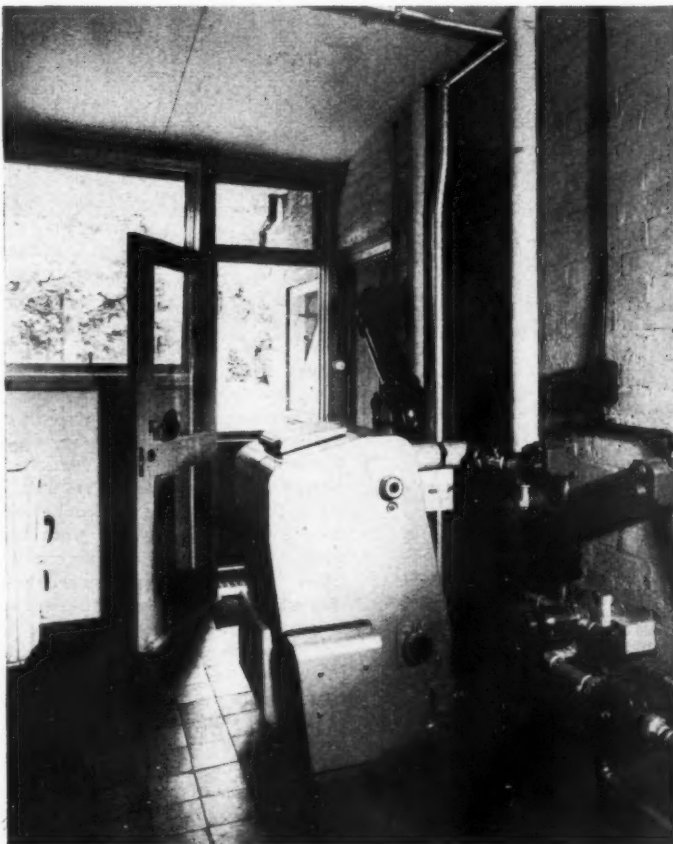
KEY

- f flow
- r return
- f a from above
- f b from below
- f l floor level
- r a to above
- r b to below
- q/a quick acting
- hl high level



Plans showing heating layout. [Scale: 1/8" = 1' 0"]

Isometric diagram of boiler house layout.





# HOUSE AT MOOR PARK



(seen below left), of 2½-in. breeze blocks, and that between bedrooms 4 and 5 (top left), of 2-in. compressed straw slabs and can be easily removed later to form one large bedroom. Bedrooms 3 (above right), 4 and 5 are fitted with bunks. External finishes include multi-red facing bricks, copper for gutters and down-pipes and on the roof on 2-in. compressed straw slabs and timber trusses at 6-ft. centres. The wall between the dining room and the kitchen (seen in the background, top right) is panelled in a heavily-patterned African hardwood in broad vertical boards. Below this panelling are fitted cupboards. Folding doors divide the dining room and living room. The ground floor is finished with 1-in. thick hardwood faced tiles with a sand and plastic base on screed and 6-in. concrete. These tiles are suitable for use over heating panels because they are inert. The first floor consists of imported Swedish boarding with a beech parquet finish on 9-in. by 2-in. timber joists. All windows are double-glazed in timber frames and are mainly of the centre-side-pivot type. Glazed doors also have two thicknesses of glass. The floor of the loft room (above left) is a 6-in. r.c. slab, with ¾-in. screed and is finished with linoleum. The cost of the house was £6,800 including special joinery fittings, bedroom bunks and the heating installation, which cost £590. The general contractors were Goodyer & Co. (Builders) Ltd. For sub-contractors, see page 544.

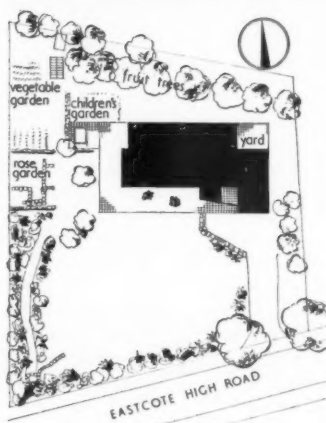


# HOUSE

in EASTCOTE HIGH ROAD, PINNER, MIDDLESEX

designed by N. J. DORE and T. P. WURR

The architect-clients for this house at Pinner required the maximum spaciousness within a limited area of 1,500 sq. ft., and provision for an extension, containing an additional bedroom, bathroom and w.c. An open plan was chosen for the ground floor. Heating on both floors is by warm air circulation.



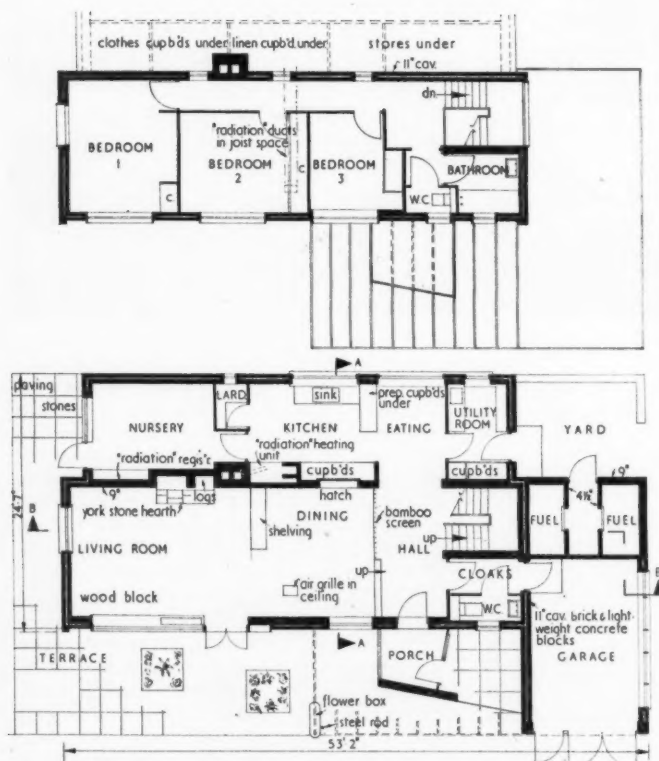
Site plan

The house has been placed well back from the road, towards the north-east corner of the site, to give the living room and nursery maximum sunlight and good views towards the south, and to enable the rooms to open on to the garden. All upstairs rooms also face south on to the garden. The hall, which is at a higher level than the dining-living area, is divided from it by a bamboo screen. As a continuation of the hall there is an alternative space, beside the kitchen, for eating. Provision has been made for an extension over the garage, consisting of a bedroom, bathroom and w.c., which will be reached from the half-landing. (Drainage has already been installed.) A large area of cupboard space—running the whole length of the house, and accessible from the first floor corridor—has been provided in the lean-to roof on the north side. As this storage space is under 5 ft. 6 in. in height, it was allowed as an addition to the floor area of 1,500 sq. ft. The external walls are of cavity construction, with the internal skin and internal partitions of

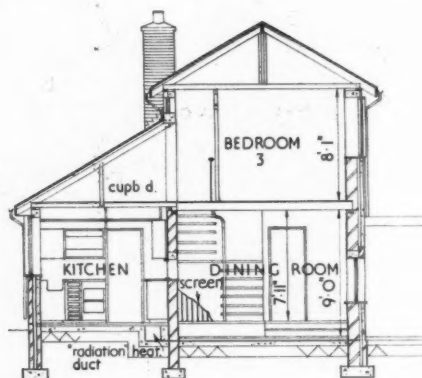


lightweight concrete blocks. The ground floor is of concrete and the upper floor and roof are of timber construction. The staircase (top left, on the opposite page) has mahogany treads cantilevered from 9-in. brickwork and stiffened by a metal balustrade. The box for indoor plants under the stairs can be seen through glass let in to the half-landing. The ground floor on the south facade (photograph on previous page) is faced with bricks on edge to show the frogs, and

colour washed to give textural effect. The first floor is faced with western red cedar boarding and all other external walls are faced with second-hand stocks, as on the west facade, seen in the photograph above. The roof is covered with antique double-Roman clay tiles. The spine wall and staircase well are of selected yellow second-hand stocks; elsewhere wall and ceilings are plastered. The floor finishes are sapele blocks in the living room (bottom, opposite page)



Ground and first floor plans [Scale:  $\frac{1}{16}'' = 1' 0''$ ]



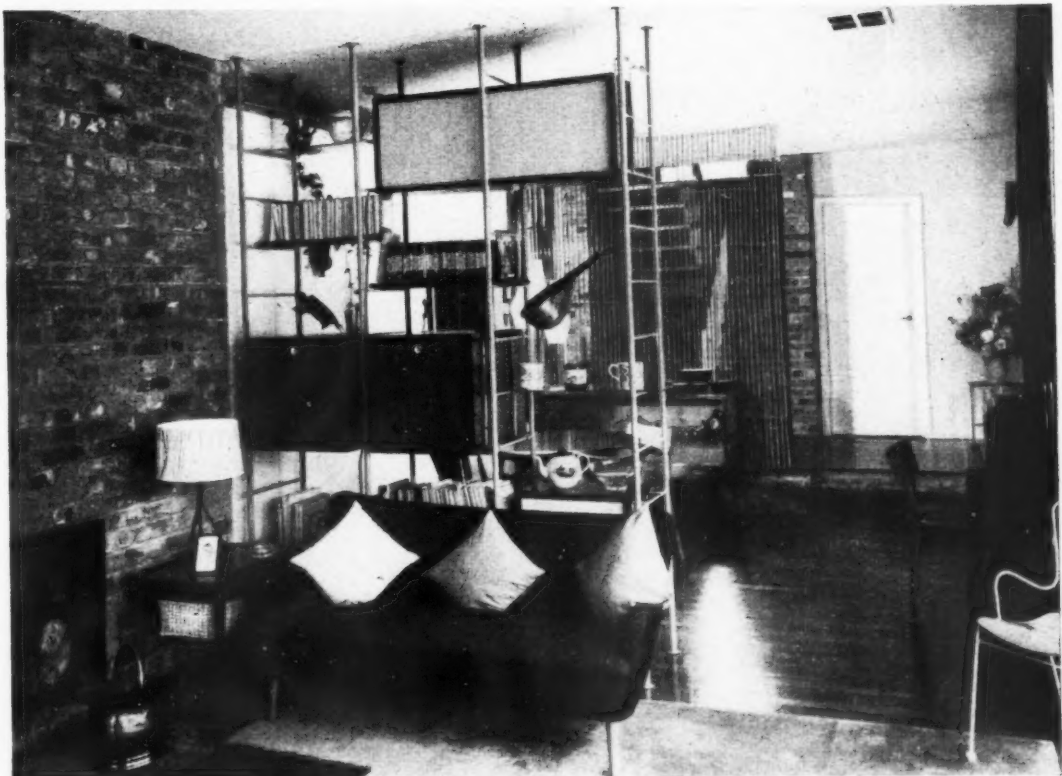
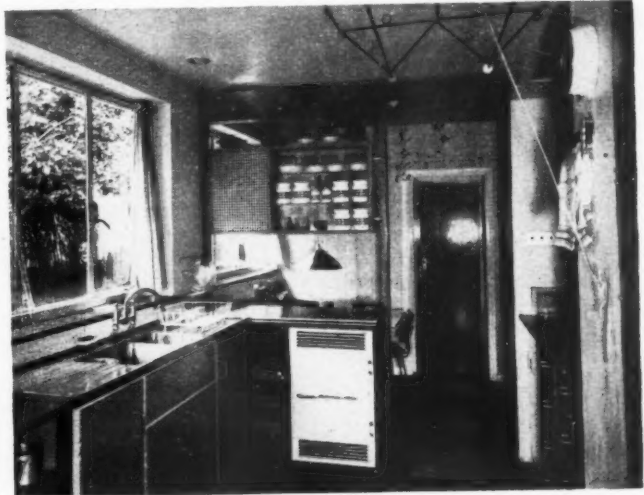
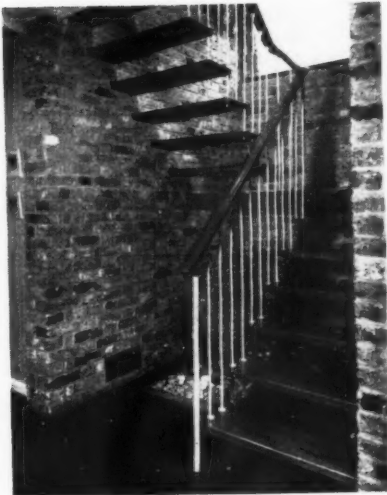
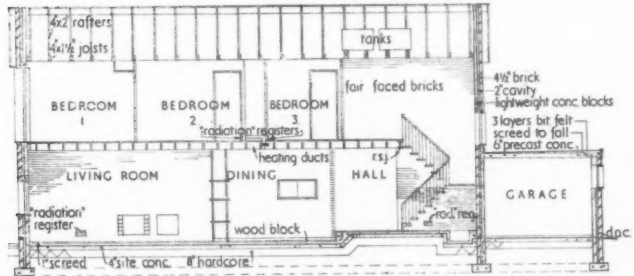
Section A-A. [Scale:  $\frac{1}{2}'' = 1' 0''$ ]

thermoplastic tiles elsewhere on the ground floor, sapele strip on landing and upstairs corridor, deal boarding (close carpeted) in bedrooms 1 and 3 and black linoleum in bedroom 2, bathroom and w.c. The living room fireplace has an edging of modern Dutch tiles and a polished slate surround, similar to the ground floor window sills. Hot water and hot air central heating are provided by a solid fuel whole-house heating unit in the kitchen. There is a gas circulator for summer and occasional use. The kitchen, and in the background the every-day dining space, are seen top right, opposite. The house was constructed between July, 1953, and June, 1954, at a cost of £4,115, including all built-in cupboards and garden works. Built-in cupboards cost £170, hardwood flooring £95, central heating £307,

gas and electricity services, £175, sanitary fittings £85, staircase £200, and ironmongery £40. During the first year of occupation 4 tons of solid fuel were used at a cost of £29 10s. for the heating unit, £4 for the open fire and £1 for the gas circulator (which is similar in principle to an immersion heater). The general contractors were J. & G. Lyon. For sub-contractors, see page 544.

# HOUSE AT PINNER, MIDDLESEX

Section B-B [Scale:  $\frac{1}{16}'' = 1' 0''$ ]



## HOUSE

at FEOCK, TRURO, CORNWALL

designed by TAYLOR and CROWTHER



Main entrance door and hall.

The clients for this house on the Restronguet Peninsula, near Feock, required an inexpensive single-storey dwelling with only two bedrooms, a large amount of storage space and partial central heating. The site, of nearly one acre, slopes steeply towards the west, where there is a private beach, a small landing stage, a boathouse and a workshop. There is a magnificent view westwards overlooking a small tributary of the River Fal.

The east facade and main entrance.



The view to the east is obscured by tall Cornian pines adjoining the road; therefore it was decided to place all ancillary rooms, i.e. kitchen, hall, bathroom and second bedroom on this side of the house. To the west of the garage is a covered parking space. A line of stores links the garage to the house. The reasons for this narrow link was to avoid cutting down an existing line of young cypresses. A pergola has been built on each side of the link, around these cypress trees, as can be seen on the left in the top photograph opposite. The bottom photographs opposite show, left, a close-up of the living room fireplace, which divides this room from the dining room and right, the living room and the dining area, which is behind the fireplace. The openings each side of the fireplace can be closed with curtains made of wood strips. The external walls are of two 4-in. thick skins with a

2-in. cavity. Each skin consists of 18-in. by 9-in. concrete blocks, rendered white externally and plastered internally. Internal walls are of 4-in. load-bearing concrete blocks, plastered both sides. Foundations are mass concrete (1 : 2 : 5 mix) to an average depth of 3 ft., on a sub-soil which is a mixture of rock and clay. The roof is timber and finished with Delabole slates in diminishing courses. Over the garage and link there is a flat roof of timber joists, boarding and built-up felt with a mineral chipping finish. The floor is solid concrete in the living room and hall, finished with wood blocks; columbian pine joists and boarding, sanded and waxed, in the bedrooms, and membraned concrete finished with linoleum tiles on screed in the kitchen. Ceilings are of Western red cedar t. and g. boarding treated with linseed oil in the hall and living area, and plaster board with a skim coat, distempered,

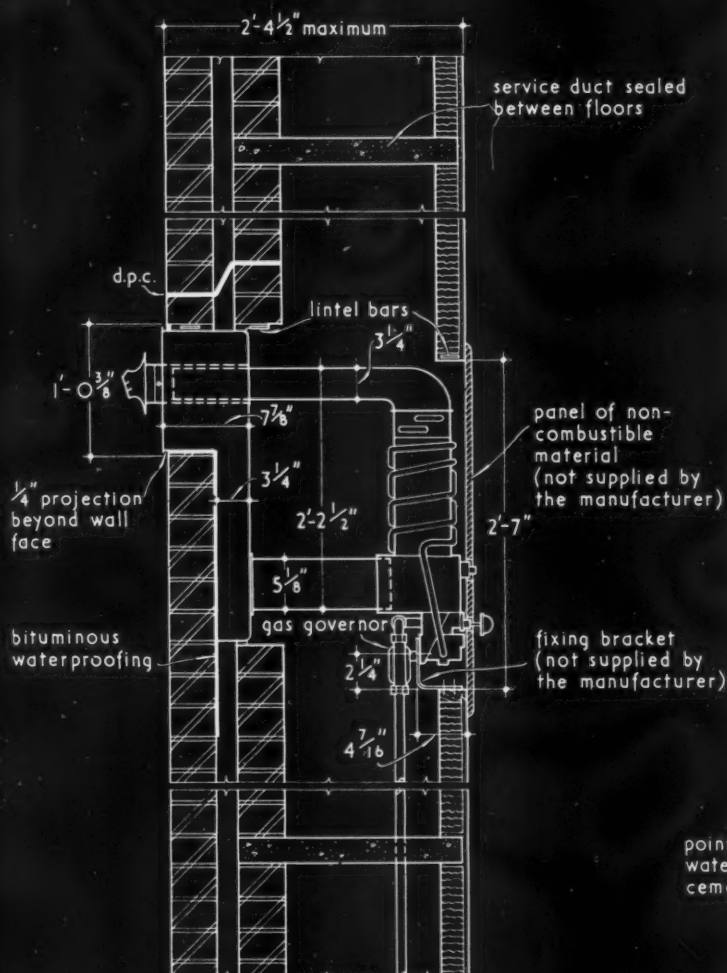


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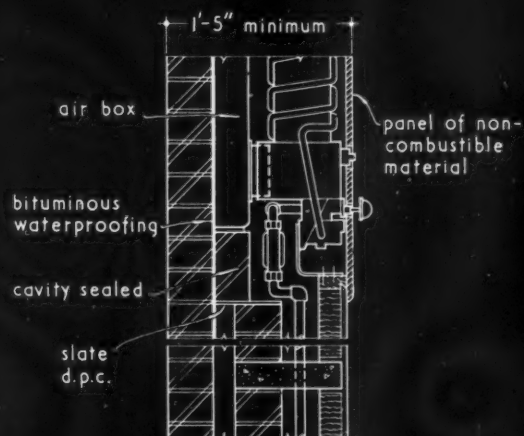
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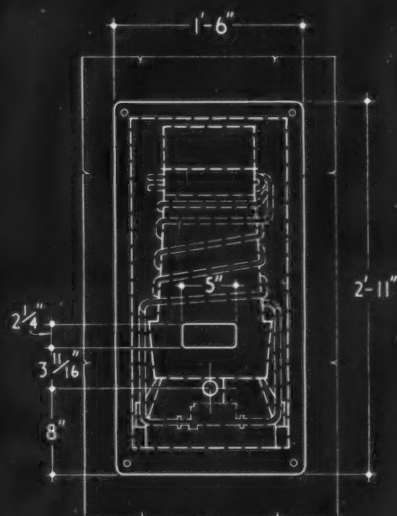




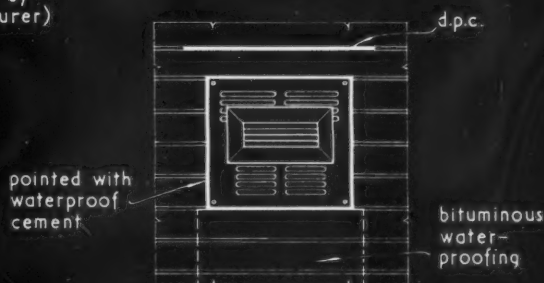
SECTION THROUGH TYPICAL INSTALLATION WITH 11" CAVITY WALL.



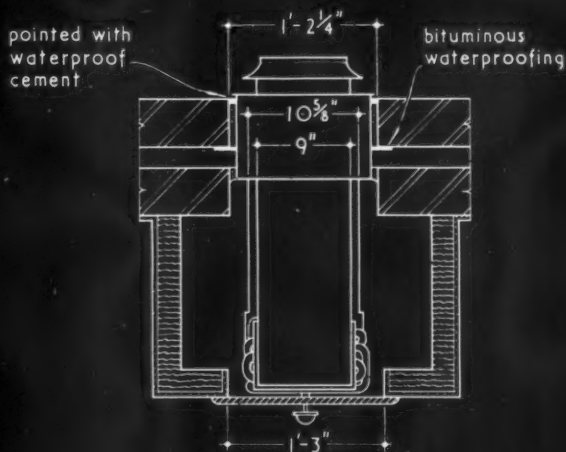
SECTION THROUGH INSTALLATION SHOWING MINIMUM DEPTH FOR DUCT.



INTERNAL ELEVATION.



EXTERNAL ELEVATION.



TYPICAL PLAN.

### 32.C33 ASCOT BALANCED FLUE GAS WATER HEATER TYPE NO. 715/1: FIXING DETAILS

This Sheet gives details of fixing the Ascot balanced flue gas water heater type 715/1 into a service duct or a wall of minimum depth of 1 ft. 5 in. A full description of the heater is given on Sheet 32.C31.

#### Openings in Brickwork

The drawings on the face of the Sheet show the provisions that must be made in a wall where the 715/1 type heater is to be fitted. The internal elevation shows the sizes of the openings and the section indicates the maximum overall depth in which the heater can be fitted. An additional detail shows the minimum overall depth. Where the heater is being installed in new brickwork the asbestos air box, which is a part of the heater assembly, should be built in during the erection of the wall. The extended open end of the air box, to which the terminal plate is fitted, should project  $\frac{1}{4}$  in. beyond the external brick face. In the case of an external rendering, this should be bevelled to meet the air box from a distance of approximately 6 in. all round.

#### Lintels

The Local Authority may require lintels to be fitted above the wall openings, or lintel bars may be used as indicated in the sections on the face of the Sheet.

#### Waterproofing

The external elevation of the wall given on the face of the Sheet shows the extent of the dampcourse and of the bituminous waterproofing which is necessary.

#### Front Panel

The front panel and the necessary fixing screws are

not supplied by the manufacturer. The panel should be made of a non-combustible material and its minimum dimensions are given in the drawing of the internal elevation. Suitable panels of the minimum dimensions can be obtained from G. S. Speaker and Co. Ltd., Eternit House, Stevenage Road, London, S.W.6. Alternatively, front panels can be prepared by the contractor to suit the requirements of individual installations.

The Ascot nameplate is supplied with each appliance for attaching to the front panel.

#### Further Information

The manufacturer maintains a Technical Department and an outside staff who are available to answer questions and advise generally on technical problems dealing with the installation of the 715/1 balanced flue heater in any part of the country.

*Compiled from information supplied by:*

**Ascot Gas Water Heaters Ltd.**

**Head Office and Works:** 255, North Circular Road, Neasden, London, N.W.10.

**Telephone:** Willesden 5121.

**Telegrams:** Gascot, Phone, London.

#### Branch Offices and

**Service Depots:** Belfast, Birmingham, Bournemouth and Glasgow.

**Service Depots:** Bristol, Cambridge, Manchester, Oxford, Southampton, Stoke-on-Trent and Jersey.



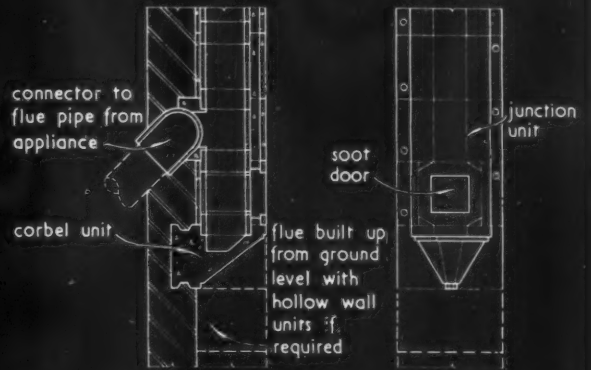
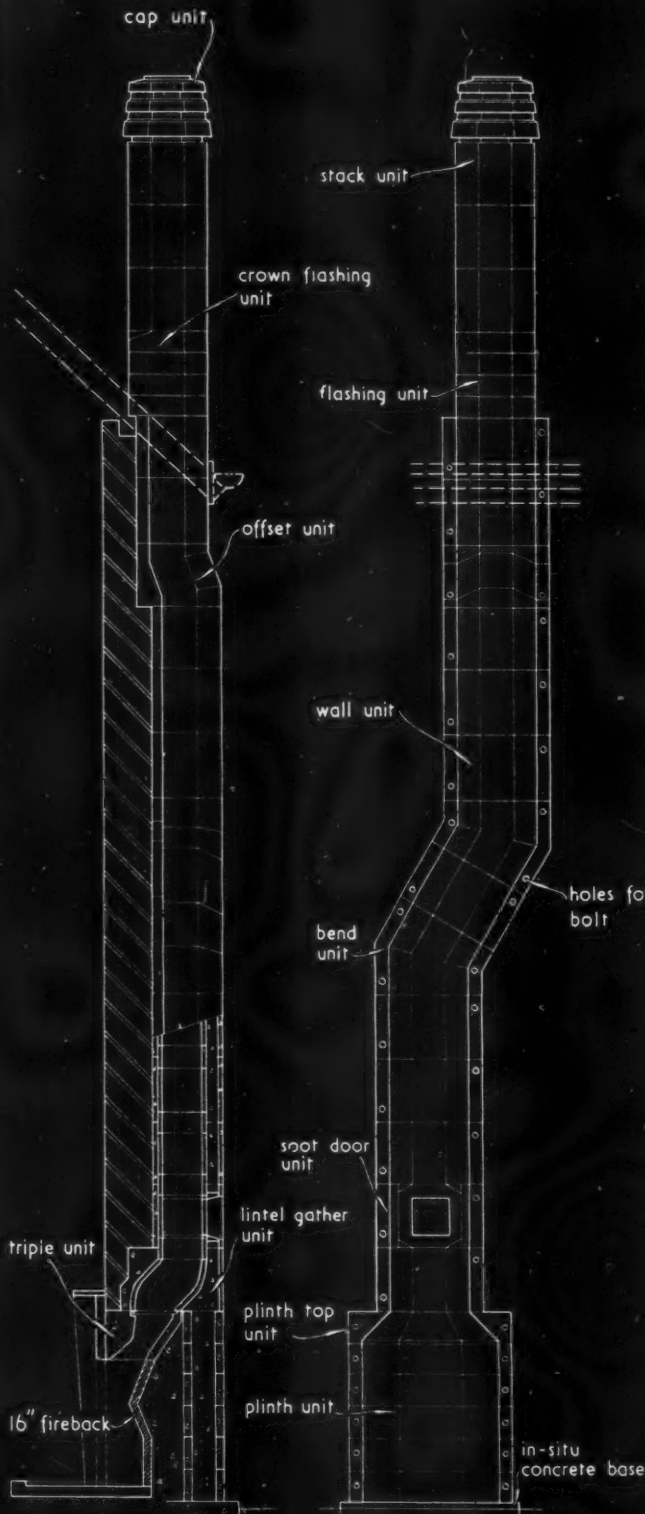




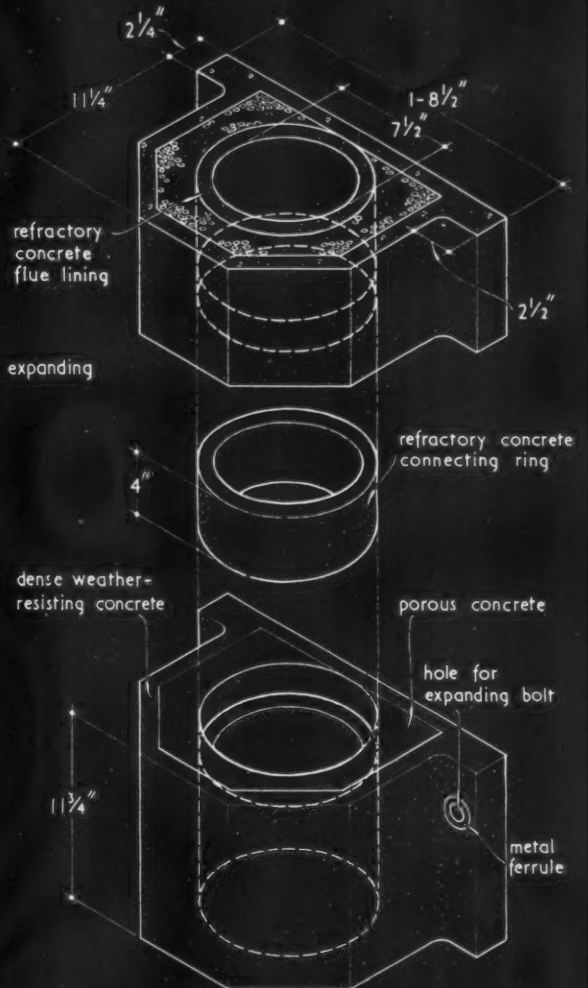
# FLUES | SOLID FUEL

The Architects' Journal Library of Information Sheets 542. Editor: Cotterell Butler, A.R.I.B.A.

30.C4  
30.C4



FLUE USED WITH DOMESTIC BOILER OR SIMILAR APPLIANCE.



SECTION AND ELEVATION OF FLUE FOR USE WITH OPEN FIRE.

METHOD OF JOINING UNITS.

### 30.C4 · TRUE FLUE · PRECAST EXTERNAL FLUES (7½-IN. INTERNAL DIAMETER)

**This Sheet** deals with the True Flue large precast external flue which is designed chiefly for providing additional flues to existing buildings. The drawings on the face of the Sheet show the assembly of the units from which the flue is built up.

#### General

Precast units with an outer skin of dense weather-resisting concrete are used to form the flue. The inner lining of the unit is of refractory concrete and the space between inner and outer skins is filled with lightweight porous concrete, which acts as an insulating material. The refractory lining is stopped short at each end of the unit to enable a connecting ring of the same material to be inserted.

Wall units are secured to the main building structure by expanding bolts and washers. In the case of new buildings the units may be recessed into the brickwork.

#### Units

**Standard wall unit:** The standard unit is 1 ft. 8½ in. overall in width, 1 ft. 1½ in. deep and 11½ in. high. The internal diameter of the flue is 7½ in.

**Soot-door unit:** This is for fitting above the lintel gather unit with an open fire or below the junction unit with boiler or other appliance.

**Junction unit:** Used to connect iron or asbestos-cement flue pipe from appliance to main flue. A swivel-action refractory connecting-piece is incorporated in the unit to ensure correct alignment of the two flues and extends through the wall to give adequate fire protection.

**Corbel unit:** This is let into the wall as an added support to the stack and is recessed to form a condensation trap.

**Triple unit:** This is for use with an open fire and connects the fireback to the lintel gather unit. There are two types: one for building in flush with the wall and one for use with a tile surround 4 in. deep and having a 2-in. return at the fire opening.

**Lintel gather units:** These are for connecting the triple unit to the stack, the number and type used depending on the wall thickness.

**Hollow wall unit:** This consists of an outer skin of dense concrete in every way similar to the standard wall unit but left hollow and filled on the site with weak concrete. It is used to build up from ground level a support for the junction unit where the corbel unit cannot be used.

**Plinth units:** These are used, as shown in the drawing, on the outside of the wall behind an open fire.

**Bend:** For use when it is desired to rake a flue (150 deg. rake). Two units used together give an offset of approximately 7 in. and this may be increased by incorporating standard units (see drawing on face of Sheet).

**Flashing unit:** Used where a flue passes through a roof so that adequate flashing may be tucked into the joints.

**Crown flashing unit:** This is the top flashing member, which is shaped at the back from square to octagonal to receive stack units above.

**Stack units:** For use above roof. Where a greater height than 7 ft. 0 in. is required they should be supported by metal stays.

**Cap unit:** Used for completing flue. Inclined air channels minimize down-draught.

**Offset unit:** This is used to carry the flue back 2½ in. where there is a setback in the wall or, where there is insufficient soffit at eaves level, to obviate interference with rainwater gutter. Two used together give an offset of 4½ in.

#### Fixing

A hole is cut in the wall to permit the flue pipe from the appliance to be connected to the junction unit, and then the correct position for this unit may be ascertained and marked. The corbel unit is then built into position to receive the junction or soot-door unit above. When marking the positions of bolt holes, allowance should be made for a ½-in. joint between units. Circular holes, to take the shanks of the ½-in. expanding bolts supplied with the units, should be drilled with a durium-tipped bit (obtainable from the manufacturer). The bolt should then be inserted and tightened against the washer provided; metal ferrules are cast in the unit to prevent fracture. Shanks of bolts should be flush with the wall face.

Where hollow wall units are to be erected instead of the corbel, they are arranged so that the uppermost one will exactly meet the underside of the junction. Each section is bolted to the wall and filled in turn with weak concrete. Though each section is secured to the wall, it is advisable to provide an in-situ concrete base for the hollow wall units, below ground level. This should be approximately 2 ft. 0 in. by 1 ft. 6 in. and 6 in. thick depending on site conditions.

With an open fire the external wall is cut away to enable the fireback and triple unit to be inserted in the appropriate position for the type of surround to be used. The plinth units are built up on the outside as shown in the drawing on the face of the Sheet, and the space between them and the fireback filled in with loose rubble and lime mortar. The lintel gather unit is next placed in position (all joints being sealed and brickwork made good as the work proceeds) followed by the soot door unit which can be bolted back to the wall.

The first wall unit is then fixed in each case. The connecting ring is placed in the lower unit and mortar laid before the next unit is lowered on to it. It is essential that all joints be properly sealed, including the upper joint in the connecting ring. This procedure is followed for the erection of the remaining units.

Treatment at the eaves is determined by the width of the soffit. Sufficient 4-in. flashing units should be used to enable the flashing to be carried to approximately 6 in. above the highest point of intersection of the roof covering. Flashing units may not be required where the flue is erected against a gable wall or where there is a flat roof. Finally, the crown flashing unit, stack and cap units are placed in position.

#### Finish

The standard finish for the units is light grey, but they may be supplied to tone with existing buildings, if required, at small extra cost.

Compiled from information supplied by :

**True Flue Ltd.**

Address : Convector House, Acacia Road, St. John's Wood, London, N.W.8.

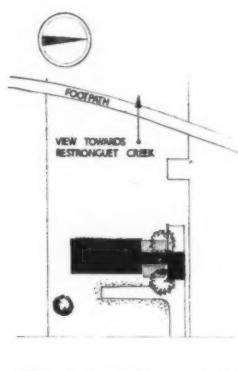
Telephone : Primrose 7161/2.

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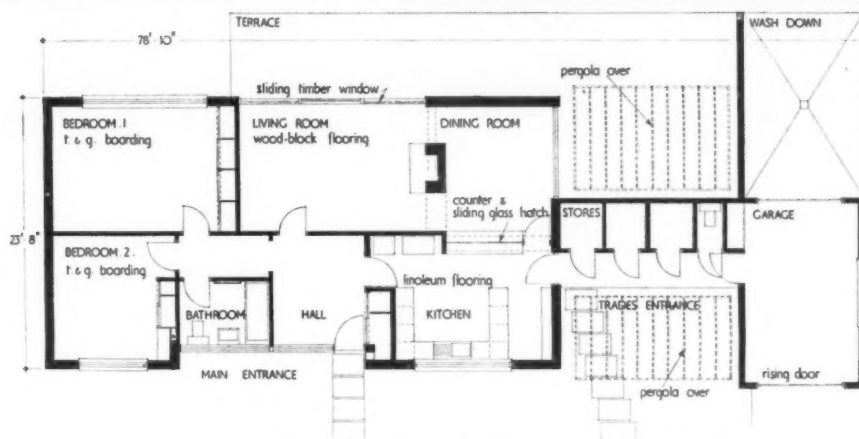
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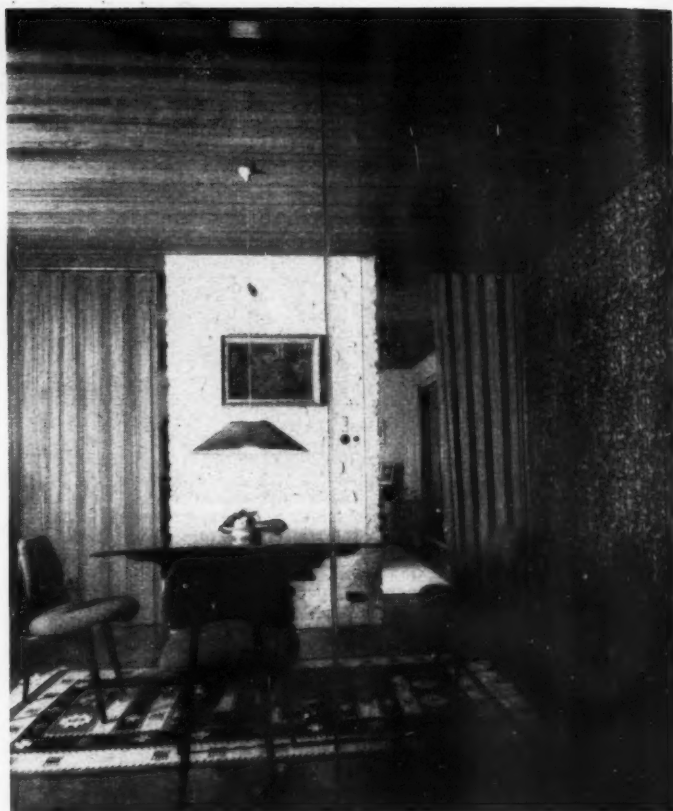
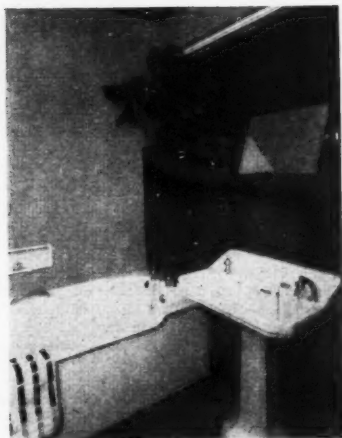
Site plan


Ground floor plan [Scale:  $\frac{1}{16}'' = 1' 0''$ ]

in bedrooms, kitchen and bathroom. Heating and hot water are supplied by a coke-burning boiler, which was chosen as the most economical for the purpose. There is a copper hot water storage cylinder in the roof space,

with a capacity of 35 gallons. For cold water storage there is a 100-gallon tank, also in the roof space. Heating pipes are in galvanised iron and domestic plumbing pipes in copper. Soil waste, in stoneware pipes, is by septic





### HOUSE AT TRURO, CORNWALL



tank and filter disposal as no main sewer is available. The photographs on this page show top left, the kitchen, which has walls and ceiling painted geranium red; fittings painted white, black linoleum floor tiles and a quarry tiled recess on the right, containing the cooker and boiler. Above left, the bathroom, which has a wall on the right faced with heather brown quarry tiles, below a strip window, a ceiling painted geranium red and a cork floor. Above, the dining room seen through the sliding windows which divide the room from the exterior terrace with pergola over. Left is the hall, which has a floor-to-ceiling window beside the front door, of waxed natural mahogany. The drawings were begun in August, 1954, contract signed in October, work began in November and was completed in May, 1955. The tender date was October 2, 1954, and contract was R.I.B.A., lump sum. The area of the main building is 1,152 sq. ft. and of the ancillary buildings, 464 sq. ft. The tender cost of superstructure, installations, finishings and foundations, £2,611, ancillary buildings, £590, external works, £220. The gross total cost was £3,421. Cost per sq. ft. for main building, 45s. 4d. and for ancillaries, 25s. 5d. There was no difference between tender cost and final cost. The general contractors were R. J. Mitchell & Son. For sub-contractors see page 544.

## TECHNICAL SECTION

The news that the JOURNAL's Research Board is to award its first fellowship for a survey of information needed by architects should be welcome to the patient reader of this section. It raises the question not only of where his information is to be found, but what form it must take if it is to be readily assimilated by him. It must be technical enough to be regarded as sound by specialists, and yet sufficiently practical in its conclusions for these to be applicable without further reference by the reader. A model in point, though on a confessedly "easy" subject, is a 17-page leaflet recently republished by the Ministry of Agriculture in their series "Fixed Equipment of the Farm," entitled "Farm Gates."\* It is, of course, intended for farmers, not architects, and for this reason, perhaps, evades the temptation to slur over humble details on the score that readers "know them already." It gives all the points which must be taken into account in design, it gives adequate technical information on materials, and it describes clearly all the types of gate, post, hinge and fastening in use, with critical notes on each. In half-an-hour the reader is in possession of all he needs to know on a subject of unexpected intricacy.

\* HMSO. 9d.

This week's  
special article

### 18 CONSTRUCTION: MISCELLANEOUS efficiency in building



*This week the Guest Editors (Costs) present an article they have commissioned from O. J. Masterman, B.Eng., A.M.I.C.E., A.M.I. Struct.E. (Technical Director, Unit Construction Co.). He discusses mechanical plant, the purpose of work study, the arrangement of drawings and bills of quantity, and new knowledge. The picture of the modern contractor that emerges, if set beside that given in one of the Guest Editor's articles, "The Builder's Control of Cost" (A7, Sept. 1 and 15) suggests the trend of change now beginning in the building industry. O. J. Masterman was formerly on the research staff of MOW and BRS where his work was mainly on the early development of pre-stressing in this country. He will later contribute a second article on co-operation between architect and builder.*

It has become a truism that technical development is occurring at a faster rate than the industry and professions can assimilate it. Perhaps the weakest spot in this is the assimilation of new site methods at the drawing board stage. This article thus discusses some examples of a modern builder's approach—many of which have a bearing upon constructional design.

#### THE INFLUENCE OF MECHANICAL PLANT

During the last five years the sales of

contractor's plant have more than doubled. Taking the home market alone, the factor is above 2½ times. This, of course, represents a change in building methods which is bound to have an impact on design. Machines reduce the amount of manual labour, improve output, speed up work and facilitate the handling of larger pre-made components. They are also valuable, as in concrete mixing and batching, for improving quality. It cannot, however, be taken for granted that a mechanized method is an improvement over

the hand method unless the two have been properly compared, and with costing methods in common use by builders it is by no means as simple as it might seem to make such comparisons. A comparison may show a machine to be clearly advantageous while it is working, but the amount of time when it is not working, but is still costing money, may be overlooked. The Work Study technique provides a reliable assessment of the labour content of any given operation whether performed by men or by machines. This is already proving valuable on building sites and it has the further advantage that before arriving at the assessment it adjusts the method, the manning, the arrangement, etc., of conducting the operation to the maximum efficiency. The writer, in making such comparisons, has found cases where delivering bricks to the point of work on housing sites has been cheaper by hand than by machine, and again, excavation in small packets does not warrant a machine. But by and large machines have come to stay on building sites and are likely to be increasingly used. The most widely used machines are shovels, dozers and scrapers, the concreting equipment and the cranes. Of these groups the machine excavators cannot have much influence on architectural design except for the necessity of providing all information concerning ground levels including areas, outbuildings, paths, roadways, gates, fences and all drainage runs so that the excavating and levelling machines can do all the formation work at one time. They are expensive machines to keep idle or only part-worked.

The concreting machines form a group which has to be carefully combined, according to the kind of work to be done, to obtain highest efficiency. Hand mixing should only be countenanced for very small amounts of unreinforced work. For small to medium quantities of work it still pays to use a mixer with hand loading of the skip and hand barrows to deliver the concrete. The labour content of the entire concreting operation will then range from 3.0 to 3.5 manhours per cubic yard delivering up to about 30 yards on the ground or several floors up (and a short run) by hoist. As soon as the transport of concrete is mechanized the labour requirement falls to about 2.0 to 2.3 manhours. As soon as the amount of concrete required is considerable and steady, not less than about 40 cu. yds. daily, it pays to mechanize completely and the labour requirements can then be as low as 1.5 manhours per cu. yd. and the cost lower than by the other methods after making full allowance for the plant charges. This set-up might comprise a crane and full-batch bucket for delivery, vibrators for compacting, a mechanical scoop or gravity loading of the mixer skip and bulk cement fed in by gravity (Fig. 1). For best output and cost it is important to ensure that the mixer discharges quickly (say 20 seconds), and that the whole batch is removed in one lift. Where the site is too congested for this set-up, ready mixed concrete is an excellent alternative. All important concrete should be weigh-batched, and this, together with

vibration placing, helps greatly to ensure uniform good quality.

A case in which the design provided insufficient concreting to justify an efficient mechanized set-up of this kind may be quoted. Here the architect had divided the concreting work between the general contractor and a nominated subcontractor, and moreover had specified cross-walls in one block to be of concrete and in the other two blocks, to be of brick. This division of work and mixing of constructional materials effectively prevented the use of the most efficient arrangement of concreting plant.

The tower crane stands in rather a special class. Though only recently introduced into this country, there are believed to be about 400 in use today. They have become popular because they are found so very convenient on jobs where they can be used to lift almost anything, and they have a good reach and capacity. More mobile models are already being developed. Studies show that they can be cheaper than anything else for handling concrete in multi-storey work provided there is enough to keep them occupied. They can very comfortably deal with the output from a half-yard mixer, say 70 cu. yds. per day. They can also handle large quantities of bricks and mortar, so much so that they cannot be anything like fully employed on this work alone. With cages (Fig. 2), bricks can be lifted on multi-storey work for a labour expenditure of about 1.5 manhours per 1,000, which is



Fig. 1.—Concreting plant with 21/14 mixer, 20-ton bulk cement silo and double swing weigh batcher. The hoppers are fed by the loading tractor in the background. The  $\frac{3}{4}$  cubic yard bottom and side outlet skip (being filled) takes the full batch of concrete and is hoisted by the tower crane to the placing point.

about half the requirement for hoist and barrows. To make a tower crane pay by the direct work which it does, it is usually necessary to arrange for it to lift a number of different materials so that it can be kept working fairly fully. This needs very careful planning, and is not easy to do, for instance, when concrete floors are combined with brick walls. When it can be achieved it is believed that substantial economies result because the work is done quicker, but there



Fig. 2.—Moving bricks in quantity. The box is detached from the pallet to go back for the next pallet-load.



# *Interior Partitioning?*

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Fig. 3.—A power float with rotating disc which is claimed to do the work of eight plasterers, and which requires a lower water/cement ratio. The screed can be walked over immediately after floating. Photo: M.O.W. Crown copyright.

are few reliable figures yet available on this aspect.

From the design point of view the architect may expect to obtain the benefit of these economies when a tower crane is available if his work is so arranged as to require a steady output of 40 cu. yds. or more of concrete daily, or intermittent periods of such concreting with lifting of other materials and components in between. Brickwork alone is not enough to fill in the gaps between concreting periods, because the crane can lift these materials so much faster than they can be laid. Fairly large pre-fabricated components such as wall slabs, beams and lintels, and roof sections weighing from half a ton to 2 tons each would be suitable and more appropriate than smaller units. To give an indication of the wide range of reach and lifting capacity available in tower cranes today, typical figures for a small and a large crane are shown below.

Tower Cranes: Typical (approx) figures for two common sizes.

Price	Load (tons)	Reach in feet	
		Outwards	Upwards
£3,000	3/5	45	60
	1½	22	90
£7,000	1	75	100
	1½	50	135
	2½	30	150

Mechanized concreting equipment of the kind described above if used with an up-to-date mix design and quality control technique can provide valuable economies if the concrete is specified by strength and not by nominal mix. This is discussed more fully in a later section.

Among the newer machines in the concrete group is the power float (see Fig. 3), a spinning disc for trowelling screeds and granolithic finishes. This, while giving a much larger output than hand-trowelling, as would be expected, has the further important advantages that it only works satisfactorily with dry concretes, which of course are highly desirable for paving work, and

the surface when finished is firm enough to walk on at once.

Machines have a hard time on building sites, but provided they get proper maintenance they are reliable and have an indirect value in setting the pace of operations and in maintaining output. The handling of materials is an important cost in building work; machines can reduce this cost substantially and at the same time permit more flexibility in the design of components.

#### USE OF WORK STUDY ON BUILDING SITES

Reference has already been made to work study and it is of interest to note that a number of influential builders have already formed themselves into a group and set up a series of three training courses planned specifically for the needs of those who will be applying work study on building sites. As this is a subject which has not come much to the architect's notice, it is thought worthwhile to include a brief note here.

This technique, which includes both time study and motion study, is primarily concerned with the movements made by people doing manual work, and has been developed over a period of more than 30 years into a systematic method of measuring performance. The *motion* study part is most important and concentrates on finding out where effort is being wasted and showing how the same work can be done more easily. Work study operatives are trained to observe an operation and divide it into its elements, studying each element separately and then rearranging the operation so as to balance the work of each man in the team and obtain the highest output with the least effort. Operatives will also examine working conditions and improve these wherever possible, as these have an important influence on output.

Having done this, the *time* study is made which measures the *standard time* for doing the revised operation. The time studies are made over and over again on each element of work, so that a true average time is obtained under all conditions. The sum of the element times gives the operation time, in which there are two essentials, the time of the operation and the speed of doing it. Time study operators indicate the speed of work by a rating. A normal rating is defined

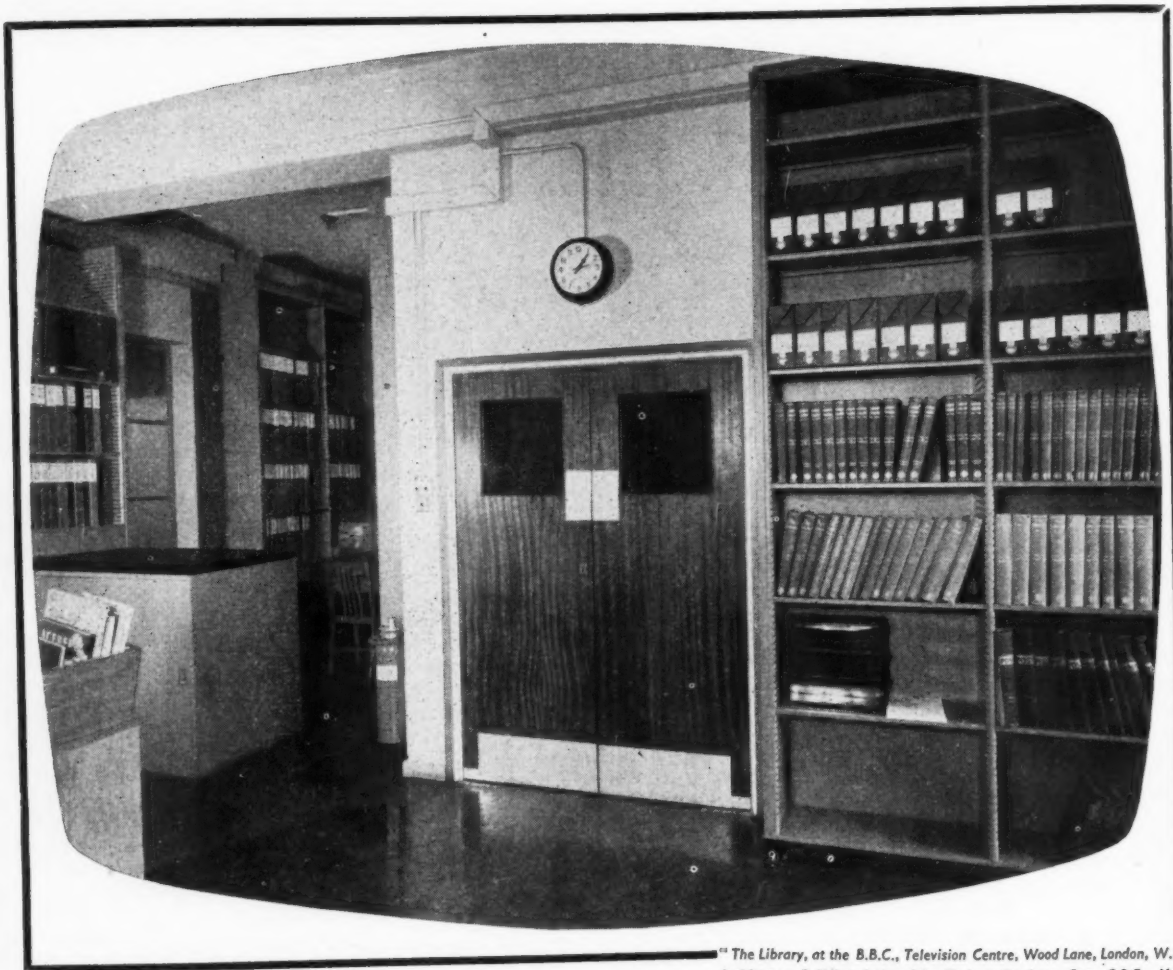
as that at which a man of average skill and normal physique, working without undue fatigue and without wasting time, can continue working indefinitely. Standard time is always calculated at normal rating and is given in hours or minutes as convenient. In arriving at standard time, allowance is made for fatigue, also for stopping and starting, tea breaks, personal needs, etc. Standard times established in this way are acceptable both to management and to the Unions and are of great value for estimating, bonusing, balancing of teams and comparisons between hand and machine methods. Fig. 4 indicates the details of a study taken before and after rearranging a concreting gang. This is a very elementary example and the revised arrangement is still susceptible to considerable improvement by introducing a vibrator and adjusting the number of barrow men, which would require recasting of the gang. It will be seen, however, that with the original gang of seven men, when mixing and pouring 4½ cu. yds. of concrete beam casings each day, by merely taking one man off the mixer and moving him on to the placing, the output was doubled and the man-hours and cost per cubic yard halved. A glance down the two columns headed "Standard Minutes per Operation" reveals the value of work study for correctly balancing a team. The key operation in each case is framed in, and it will be seen that on the left-hand column it is 18.9 minutes. This is the cycle time and is the operation which sets the pace of all the other workers in the gang. It is clear that, before adjusting, the spreader was overworked and was preventing the barrow men and troweller from working at more than half speed, while the three men on the mixer were working at only about quarter speed. The right-hand column shows that all the operations are approximately balanced, the cycle time being 9.5 minutes.

A point of prime importance to note is that performance measurements made by work study take account of the rate at which the work was being done and give the answers in terms of "normal" rating, these answers (known as "standard times") are applicable for similar conditions anywhere. Outputs based on standard times are therefore real and not, as in the case, for instance, of the MOE school building outputs (given in shillings per sq. ft. of floor space)\* merely comparable one with another, but giving no indication whether in fact the higher figures represent full efficiency or simply a better output than the others. With the conditions of full employment that exist today, it is by no means absurd to suggest that the best outputs achieved do not represent full efficiency; only an absolute measure of performance, such as work study attempts to provide, can reveal what full efficiency is.

#### STANDARDIZE AS MUCH AS POSSIBLE

The idea of standardization tends to raise the artistic hackles and even the most fervent exponents of more standardization in building admit to many difficulties. Standardizing that results in monotony of appearance is





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BEFORE STUDY			OPERATION (Concreting Beam Casings with 10/7 Mixer and Barrows)	AFTER STUDY		
Standard Mins. per Batch.	No. of Men.	Standard Mins. per Operation.		Standard Mins. per Operation.	No. of Men.	Standard Mins. per Batch.
4.76			<b>Load Mixer:</b>			4.76
4.76			1. Shovel aggregate to gauge box and tip to mixer skip.			4.76
1.38			2. Repeat No. 1 above.			1.38
1.29			3. Shovel sand to gauge box and tip to mixer skip.			1.29
12.19	2	6.1	4. Procure and empty 1 bag of cement to mixer skip.			
			<b>Mixer Driver:</b>			
0.46			1. Raise mixer skip.			0.46
1.72			2. Mix contents, add water as necessary (lower skip in cycle).			1.72
1.43			3. Empty to 5 hand barrows	7.9	2	15.80
3.61	1	3.6				
			<b>Barrowmen:</b>			
1.15			1. Receive contents to barrow.			1.15
5.75			2. Push barrow loaded (60 ft.)			5.75
7.45			3. Empty direct or await empty by spreader.			7.45
4.10			4. Return empty barrows (5) and position ready.	9.4	2	18.65
18.65	2	9.4				
			<b>Spreaders:</b>			
7.36			1. Receive contents of barrow, scrape barrow clean, or shovel contents to shutter (barrowman waiting).			7.36
11.50			2. Rod to shuttering as speci- fied.	9.5	2	18.66
18.66	1	18.9				
			<b>Trowelling off:</b>			
8.97	1	9.0	1. Trowel to finish.	9.0	1	8.97
7			<b>Total men in gang.</b>	7		
4.5			<b>Output per day. cu-yds.</b>	9.0		
12.7			<b>Manhours per cu-yd.</b>	6.3		

Fig. 4. Work Study on concreting of beam casings. The left-hand column shows one operation, placing, taking much longer than the others (18.9 min). In the right-hand column, one man has been transferred from mixer to placing so that each operation now takes approximately the same time, halving the overall cycle time and doubling the output.

undesirable, but there is a reasonable degree of (internal) standardization which is wholly beneficial: in fact, it is hardly too much to say that its absence in some common components is senseless. Joinery items, especially doors and lintels, are examples. Surely it is high time that door sizes were brought within a range of standard dimensions in work other than housing? This would simplify detailing and ordering and reduce costs. It should certainly help to avoid those cases already mentioned where a routine phraseology in the bill leaves details high and wide until the time when an extra has to be requested to meet unforeseen requirements of detail. Here is a typical example:—*Extract from Bill of Quantities:* "109 ft. super of 1½ in. block board (British made) waterproof resin bonded door faced on both sides with and including 26 gauge aluminium sheeting."

On this description joinery suppliers quoted 17s. 11d. per ft. super, but upon receipt of the architect's details, requested a price of 25s. per ft. super.

Lintels are not much seen and as the reinforcement tends, in any case, to be more often rule-of-thumb than exactly designed, a set of standard sizes should help everyone and cheapen the product. Here is a recent example to illustrate the cost of random dimensioning compared with a reasonable degree of standardizing. The two contracts were carried out consecutively by the same contractor and the houses in each contract were of the same general standard of quality,

those in Contract B having a floor area of about 900 sq. ft. and those in Contract A about 800 sq. ft.

	Contract A, 135 houses	Contract B, 40 houses
Number of basic types of house .. ..	4	9
Number of types of lintel Cost of making lintels ..	19 £1,640	69 £815
Average cost of lintels per house .. ..	£12 3s.	£20 7s.

Allowing for the difference in house sizes there is still a 50 per cent. increase in cost of lintels on the contract with 69 different types.

#### ARRANGEMENT OF THE BILLS AND DRAWINGS

A glance at the contents page of the Standard Method of Measurement shows the normal sequence of building work from which builders would not wish to depart for normal constructions. Special and highly prefabricated constructions may require a radical change of order with the frame and roof going up first as in the lift-slab method. Cross-wall constructions with light panel claddings come intermediately, in that the floors and cross-walls must go in together, but the outer walls may be fitted at any time, and this construction may be specially suitable for a tower crane and a changed operations sequence. It does not seem pos-

sible to offer any simple rules from builders' experience which would help the architect at the design stage to avoid disturbing the normal building sequence in a way that would be costly. Rather is this another instance where the builder, if called in at this time and shown the proposed construction, may be able to suggest ways in which time or money can be saved on the erection work.

As regards the arrangement of the Bill of Quantities, the point has already been made, with examples, that the writing of bills is not keeping pace with current building practice, and this gives rise to delays and extras. Moreover, the normal bill is neither arranged in operational sequence nor in a convenient way to enable the builder to price the items quickly. The question of rearranging the order of the bill items is too large and complicated to be dealt with here, and would certainly merit conferences between the parties concerned, and at the same time the smaller items, which have got out of step, could be dealt with, such as the work of screeding which is done by plasterers but is billed under the concretor, and of tiling which is now a separate trade but is billed under the plasterer. If such a conference were held it would also provide an opportunity for considering whether the bill might also be set out in such a way as to assist the builder to price it. When it is remembered that under our present system of competitive tendering any number from about three to 20 builders may be asked to price the same bill, it is clear what a great amount of work is wasted if the operation is more lengthy and complicated than necessary. As customarily set out, the bill requires a great deal of dissecting and reassembling of items before the builder can get it into a suitable form for obtaining prices, and this must be done before the estimator can sit down and begin to price the bill. It is one of the principal reasons why more time is needed for tendering.

#### SEPARATION OF TRADES

When it comes to the architect's drawings, it is a much simpler matter to propose something which would be really helpful to the builder without putting much extra work on the architect. This is to put the specialist trades on to separate drawings. The normal practice of putting them all together makes the drawings confusing and difficult to read, whereas if a separate layout were provided for each specialist service or construction, measuring, pricing and construction work would be simplified and many sources of mistakes eliminated.

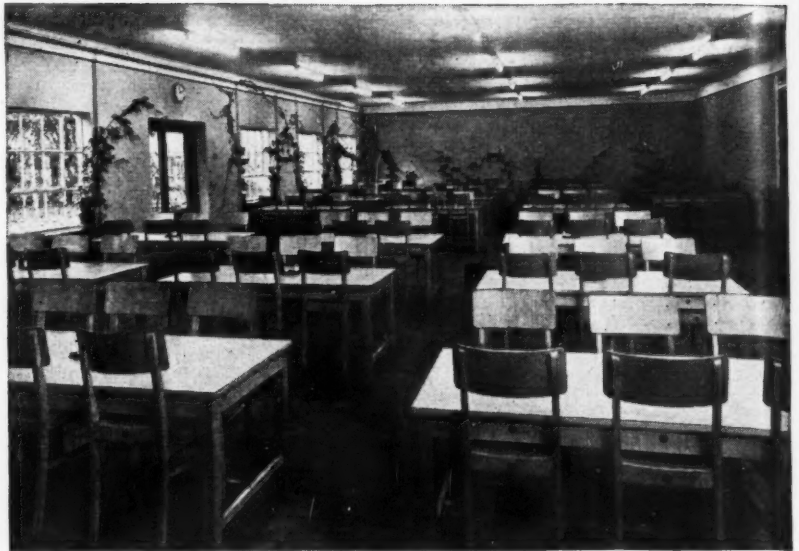
It is felt that the last proposal, to show services on separate drawings, would greatly help in avoiding the cutting of holes and chases after structural work has been completed. Is it not time that the habit of burying pipes and conduits in concrete and wood-work should be abandoned and proper ducts or casings provided to house these services? Sooner or later the time arrives when both pipes and electrical runs require to be examined or replaced and this would be facilitated by such action. The separating of

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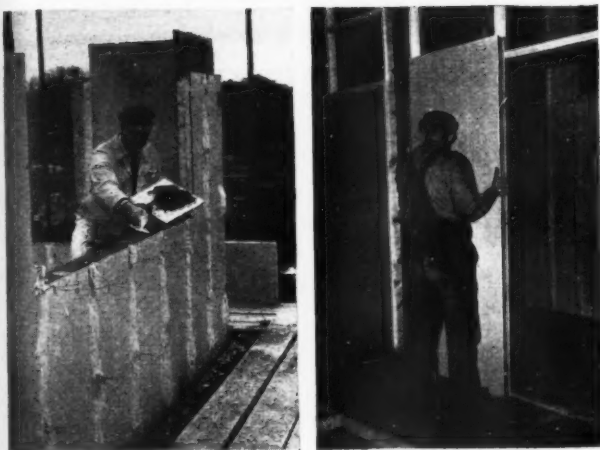


Fig. 5. Full height wall panels. Left: pre-cast plaster panel inner skin of a cavity wall. Right: plasterboard with honeycomb core. Walling of this kind is quicker to erect and easier to co-ordinate with other trades.

the trades on to different drawings should make it easier to see how this can best be done and in those cases where a hole or cutting must be made, the position would be clear at the outset and could be provided when the structural work was being done. As an addendum to this suggestion, it might be noted that, although, following the normal sequence of trades on a job, the builder will invariably have trades overlapping one another so as to ensure continuity of work, it will save time and money if these trades can, as far as possible, finish off their work at one visit and not have to keep coming back. As an example, tiled eills require the return of the bricklayers, and plumbing which passes through the walls and floors involves the return of several trades for making good. Small quantities of work by one trade are bound, in any case, to be expensive due to the interruption of other work and the disproportionate cost of preparation and clearing up afterwards.

While, in general terms, the mixing of wet and dry constructions is undesirable it is difficult to be specific and most cases would have to be decided on their merits. Where a whole trade can be eliminated, as for instance the plastering, this would be advantageous not only because of the shortage of skilled tradesmen but also because the substitution of a dry technique saves time and mess. This accounts for the growing use of precast and fibrous plaster panels and casings, and of numerous panels and sheetings for wall linings which require no finishing. (Fig. 5). Development is moving more and more in this direction not only for the claddings, so as to avoid all wet processes, but also for framings, as is seen in the growing use of precast and prestressed beams and columns which are factory made for assembly at the site. Designs which adopt these new dry techniques should gain by the shorter building time and cleaner operations and clearly a mixing of the two techniques is to be avoided. A recent design, for instance, which provided for light prefabricated partitions where the external walls were of

normal plastered brickwork was unfortunate not only because the advantages of time and simplicity gained on the dry partitions were lost on the exterior walls, but also because the finishes on the interior and exterior walls could not be matched. On the other hand, an unexpected result occurred in a block of flats constructed with brick cross-walls supporting concrete floors. Here the stairways were in concrete, and in each stair well was contained a refuse chute and meter cupboard, which the architect had designed in concrete no doubt thinking that they would be run in with the stairs. However, as the cupboards and chutes were arranged to support some of the flooring they had to be poured before the floors could be laid. If they had been designed in brickwork they could have been run up with the cross-walls, thereby saving a ten-day delay at each floor level.

Although good design would normally try to avoid mixing prefabricated and in situ work, an instance may be cited where from the point of view of convenience and economy of construction this would be acceptable. Where a tower crane is available for multi-storey construction, in situ concrete cross-walls and floors combined with prefabricated panel cladding would be economic, because the crane, with suitable concreting equipment, can deal with all these components and keep itself employed continuously, which is vital for its efficient operation.

#### USE OF NEW KNOWLEDGE

It is thought that, in the interests of economy, architects when designing might be more prompt in making use of new knowledge. Research is very active in the building sphere and new methods and processes and materials are constantly appearing. It is understandable that architects will be chary of new constructions until they have been proved, but the Building Research Station has been at pains to provide the necessary proof in a number of recent instances. In other cases, co-operative research

is going on with full-scale trials on building sites.

For housing and small buildings founded on shrinkage clay, short-bored piles and ground beams are cheaper than strip footings because of the depth to which the latter must be taken; and the machinery for boring is quickly available (Fig. 6). The cracks in brickwork founded on such clays at too shallow a depth can be large and disfiguring and cannot be put right without rebuilding the affected wall. The boring machines which are simple to use, have now been developed for under-reaming so as to provide a pad footed pile with a correspondingly larger bearing capacity. Details are given in B.R.S. Digest No. 42.

Single-stack drainage has already been mentioned, and here again full-scale trials have been conducted over a number of years from which the necessary design requirements have been published. This method of plumbing has been proved satisfactory in five-storey flats where the cost savings, compared with the conventional piping system, have come out at 40%. When to this are added the improvement in appearance of the building, and convenience for repair work and avoidance of frost trouble by taking the stack down the inside of the building in ducts, it is clear that this is an important advance in plumbing. The Building Research Station, in its latest Annual Report, states that the single-stack system is as good as, and in some respects better than, the older methods.

Worthwhile savings on brickwork can be had by eliminating the lime in the normal 1:1:6 cement/lime/sand mortar mix and substituting one of the new plasticisers which gives the smooth workability and fattiness required and brings the mortar out some 7s. to 10s. cheaper per cubic yard. Again, it has been shown that in brickwork for dwellings and, in fact, in cases where the bricks are not required to carry high stress, the bricks can be laid frog down, which gives about 10% saving on mortar costs. It is expected that plasticised renderings will soon be recommended in which saving of cost will be combined with avoidance of crazing trouble, as compared with the more common rendering specifications.



Fig. 6. Mobile borer for short bored piles on shrinkable clay sites. The latest types under-ream the borehole providing an expanded foot on the pile.





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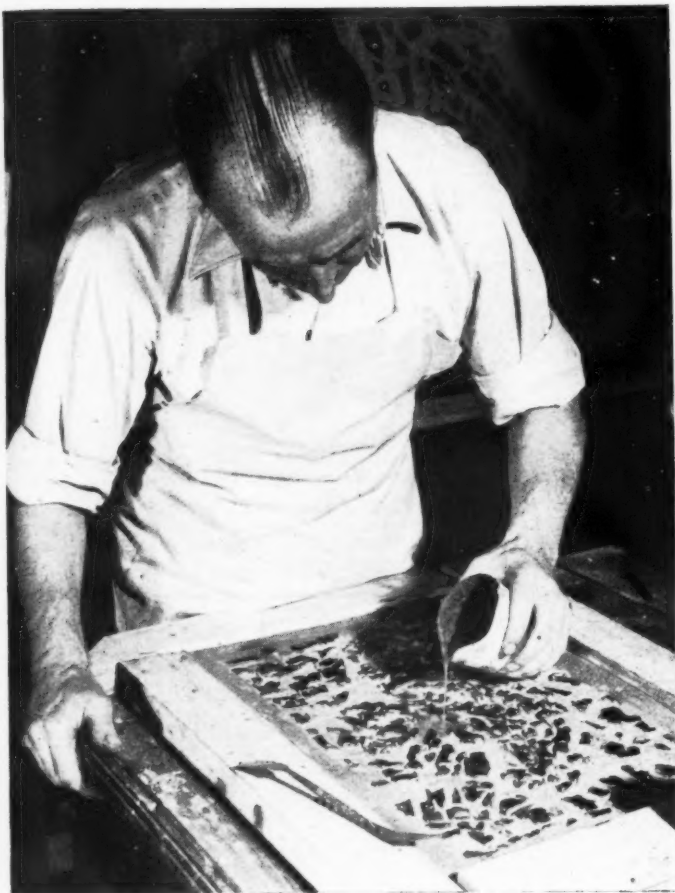


## A NEW STAINED GLASS TECHNIQUE

*We illustrate on this page a new technique for making stained glass which has been developed in France and is now being practised by James Powell and Sons Ltd. at the Whitefriars Studios, Wealdstone. 1-in. thick slab glass cut to shape and chipped on the back into prismatic form is fixed face downwards in a tray. A m.s. wire framework which follows the*



*main lines of the design is then laid over the glass and is secured at mid-thickness to serve as reinforcement. Liquid cement containing a waterproof filler is poured between the lights (left), and a waterproofing compound is applied to the outside of the window when the cement is set. The window (above) shows the glass to the best advantage and though the glass itself is relatively costly, the technique is less time-consuming than the traditional method and in the long run should prove less expensive.*



In reinforced concrete constructions there are many advantages in exercising proper quality control, but it is not yet commonly realised that if such control is used quite substantial savings in costs by reduction of the cement content can be secured if the concrete is specified by strength instead of by one of the usual nominal mixes such as 1:2:4. This advantage is only available to builders who have the technical personnel to exercise proper quality control and to make an optimum mix design based on the aggregates available. Control is, of course, desirable in any case to maintain a uniform quality at the specified level. Figures of the savings obtained by proper mix design were quoted by the Ministry of Works in the technical press last December, after trials had been made on numerous jobs over a period of more than two years. Full details were published of eight jobs, and in these the cement saving averaged  $1\frac{1}{2}$  cwt. per

cu. yd. of concrete, which is equivalent to 9s. saved on every cu. yd. placed. The Ministry stated further that with these designed mixes, for which vibrators are used in the placing, the concretes obtained are denser, less liable to frost damage, and less liable to cracking and crazing due to shrinkage.

Among the smaller pre-made components the precast concrete gutter unit is worthy of mention. Although more expensive than cast iron in first cost, these are found to be cheaper overall because they save time in building and with their large section permit a reduction in the number of down pipes and the amount of drainage work. They are more stable and permanent than metal gutters, give a better appearance and substantially reduce maintenance costs.

## CONCLUSION

This article has attempted to show something

of the approach and methods of a modern contractor. A later article will discuss architect-builder co-operation, and suggest the kind of advice that a builder, given the opportunity, might give to the architect.



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## 24.Z3 REFERENCE BACK

Readers are asked to note the following amendment. Face of Sheet, second detail, headed "With Standard Metal Window and Frame (showing 11 in. cavity wall)"—the size of the wood fillet was incorrectly given as  $1\frac{1}{8}$  in. by  $\frac{3}{4}$  in.: this should read  $1\frac{5}{8}$  in. by  $\frac{3}{4}$  in.

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## Buildings Illustrated

*House at 4, The Glade, Welwyn Garden City, Hertfordshire.* (Pages 523-526.) Architects: Architects' Co-Partnership. General Contractors: R. T. Bushell & Sons. Sub-contractors: heating, H. Deacon Ltd.; bricks, Pratt Ltd.; slate, Bow Slate & Enamel Co. Ltd.; roof tiling, The Marley Tile Company Ltd.; felt roofing, The Northern Asphalt Company Ltd.; beech strip flooring, Masters & Andren Ltd.; ironmongery, Alfred G. Roberts Ltd.; sliding door gear, E. Hill Aldam & Co. Ltd. magazine boiler, Earlymill Ltd.; electrical installation, Eastern Electricity Board; gas installation and appliances, Eastern Gas Board; fire, W. N. Froy & Sons; flush doors, Jayanbee Joinery Ltd.; sanitary fittings, Adamsez Ltd.; reconstructed stone sills, Atlas Stone Company Ltd.

*House in Temple Gardens, Moor Park, Hertfordshire.* (Pages 527-530.) Architect, June Park, A.R.I.B.A. General Contractors, Goodyer & Co. (Builders) Ltd.; Sub-contractors: copper roof, F. Braby & Co. Ltd.; heating, G. N. Haden & Sons Ltd.; strawboard, Stramit Boards Ltd.; doors, windows and joinery, Linden Doors Ltd.; ironmongery, A. G. Roberts and Tomo Trading Co.; floor tiles, Aero Research Ltd.; electricity, A. E. Birks & Sons Ltd.; sanitary fittings, Stitsons Sanitary Fittings Ltd.; boards, Masters and Andren Ltd.; balcony rail, Clark Hunt & Co. Ltd.

*House in Eastcote High Road, Pinner, Middlesex.* (Pages 531-533.) Architects, N. J. Dore, A.R.I.B.A., and T. P. Wurr, A.R.I.B.A. General Contractors, Messrs. J. & G. Lyon. Sub-contractors: heating, Radiation Group Sales Ltd.; sanitary fittings, B. Finch & Co. Ltd.; ironmongery, Steddall & Co. Ltd.; paint, Hadfields (Merton) Ltd.; hardwood floors, Bennett's Wood Flooring (Tungit) Co. Ltd.; felt roofing, William Briggs & Sons Ltd.;

electricity, Eastern Electricity Board; staircase, Holttum & Green Ltd.; thermoplastic tiles, Semtex Ltd.; slate sills, Bow Slate & Enamel Co. Ltd.

*House at Restronguet, Feock, Truro, Cornwall.* (Pages 534-536.) Architects, J. Taylor and J. B. Crowther, B.A.R.C.H., A./A.R.I.B.A. General Contractors, R. J. Mitchell & Son. Sub-contractors: concrete blocks, Richards & Rundle Ltd; stone, R. A. Jonas & Sons; quarry tiles, Wheatleys; special roofings, Ruberoid Co. Ltd.; plyglass, Wiggers & Son; wood block flooring, Jewsons Ltd.; patent flooring, Semtex Ltd.; central heating and plumbing, W. J. Martin; grates Baxendale Ltd.; boilers, Allied Ironfounders Ltd.; electric wiring, South Western Electricity Board; door furniture, James Gibbons; casements, The Crittall Manufacturing Co. Ltd.; sanitary fittings, Mallett & Son; sliding windows, P. G. Allday; venetian blinds, Sunway Blinds; garage doors, Westland Engineering Co.; wallpapers, John Line & Sons; plastic fabrics, Jas. Williamson; shrubs and trees, Gills Nurseries; paint, Walpamur Co. Ltd.

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Robert W. K. C. Rogerson, A.R.I.B.A. (Glas.), has commenced practice at 121, Bath Street, Glasgow, C.2, and will be pleased to receive trade catalogues and samples.

The office of William Blair, B.A.R.C.H.(LVPL), A.R.I.B.A., is now at Burton House, 83, Burton Road, Derby, telephone number Derby 48622 (unchanged).

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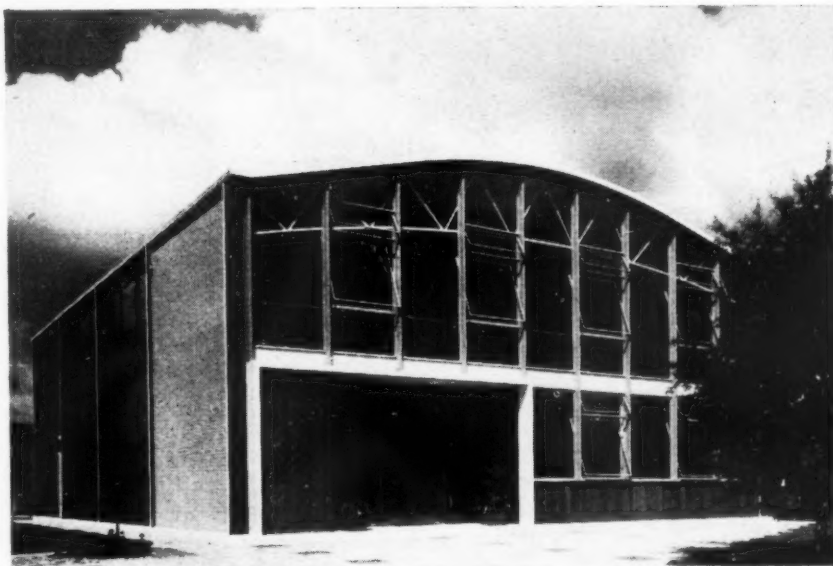
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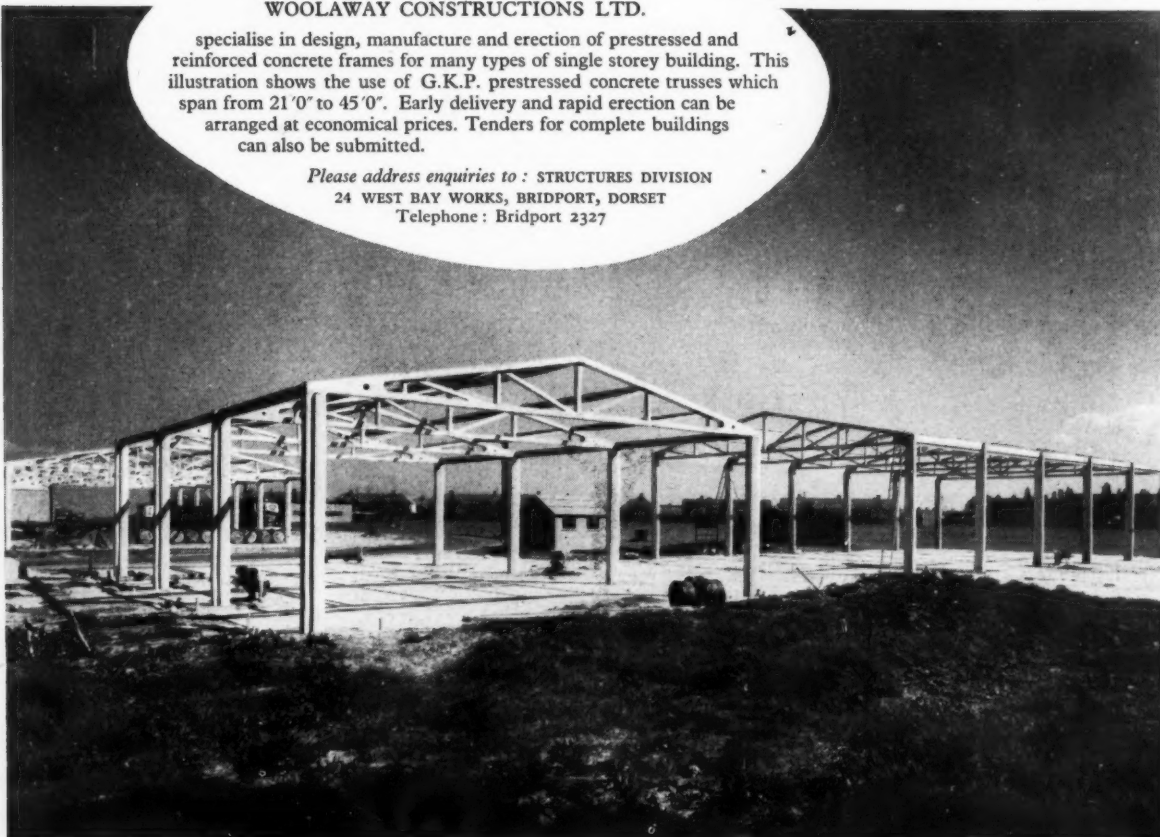


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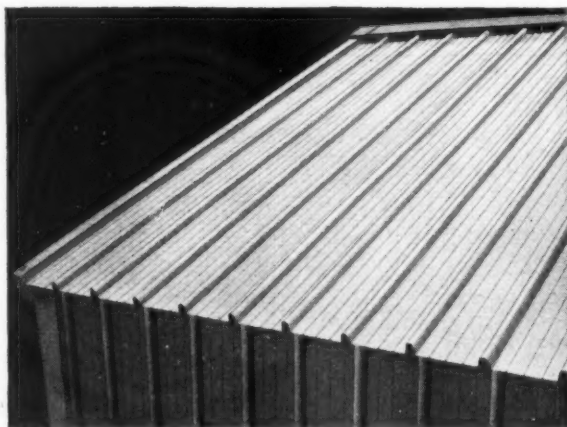


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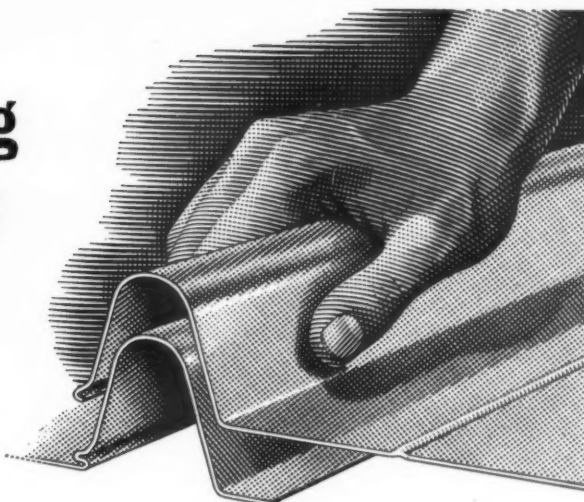
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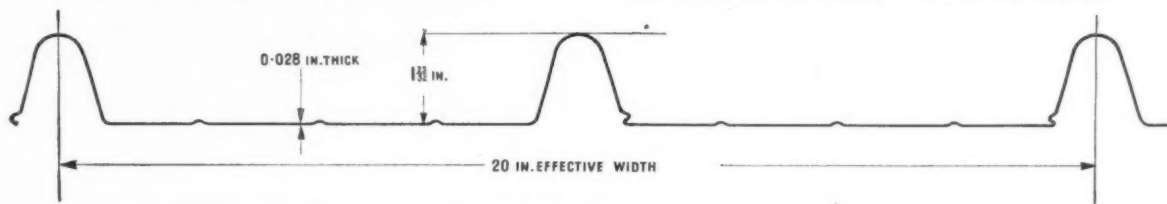
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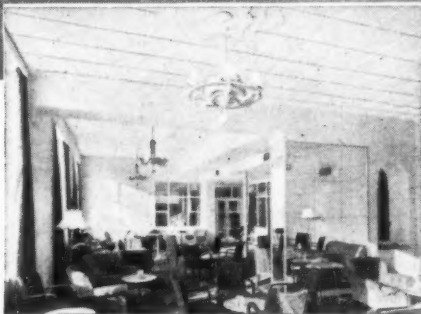
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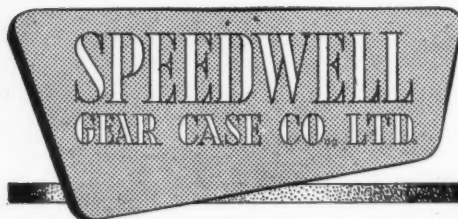
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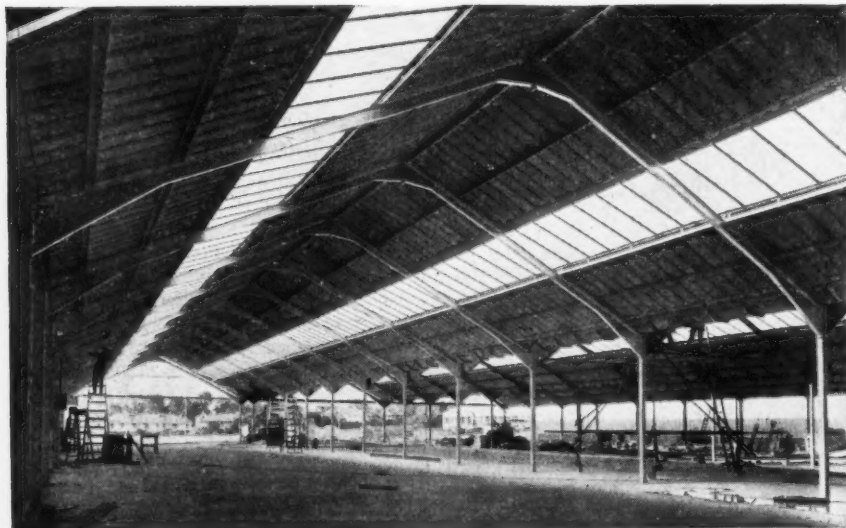
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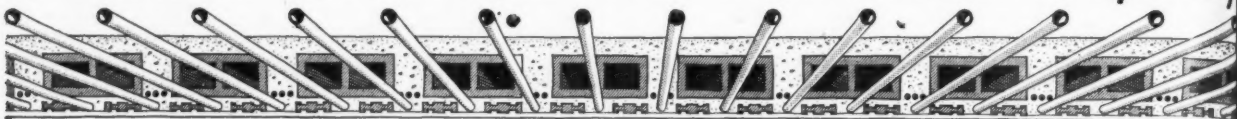


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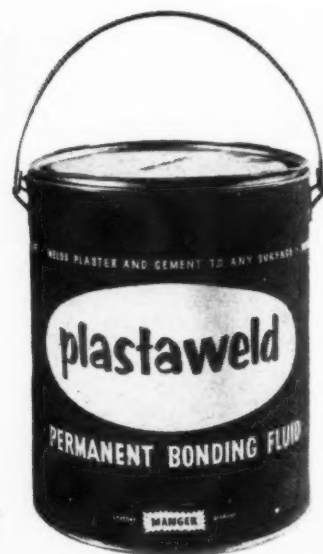
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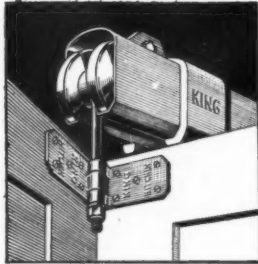
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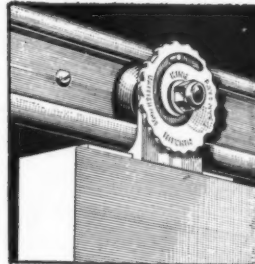
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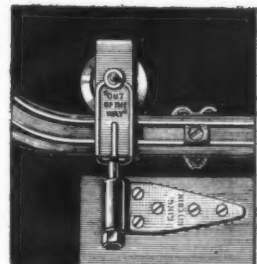
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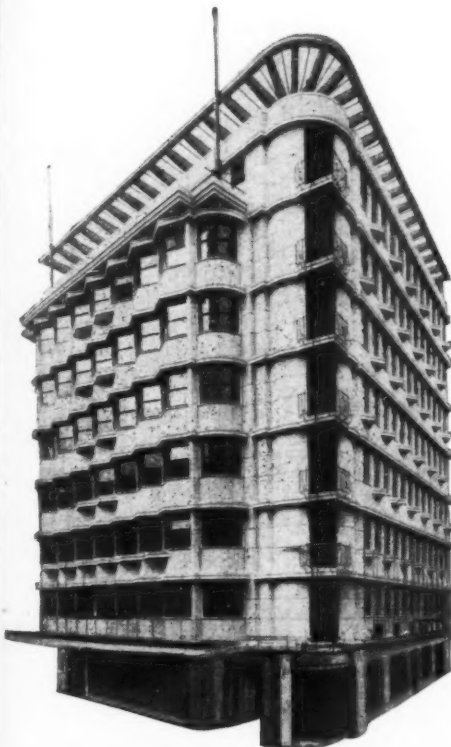
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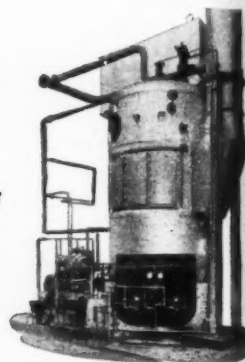
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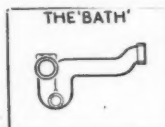
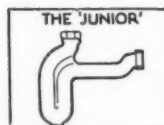
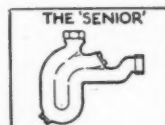
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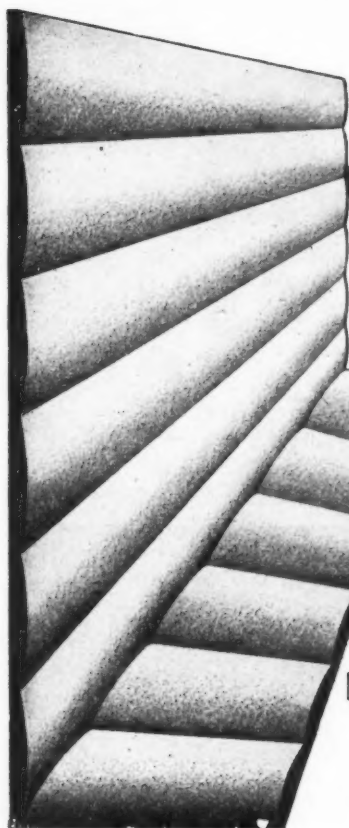


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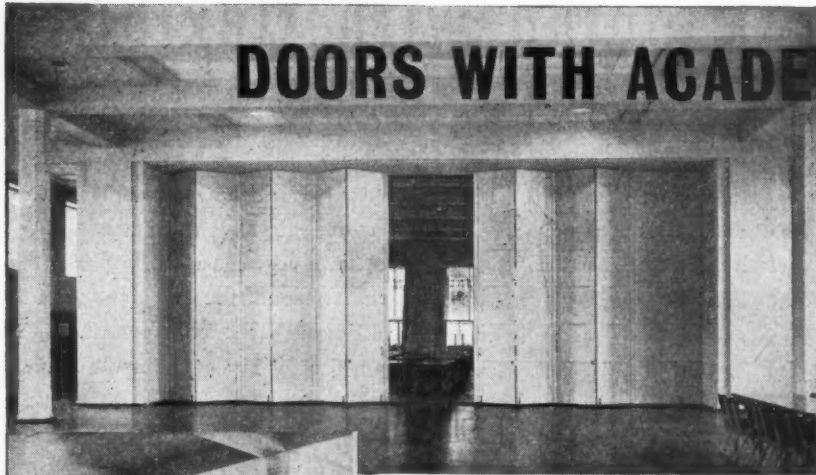
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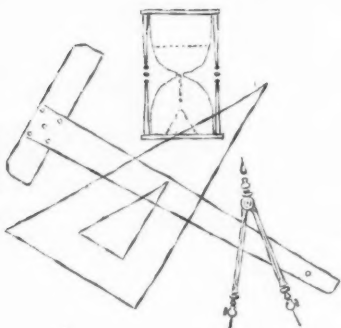
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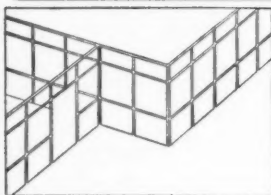
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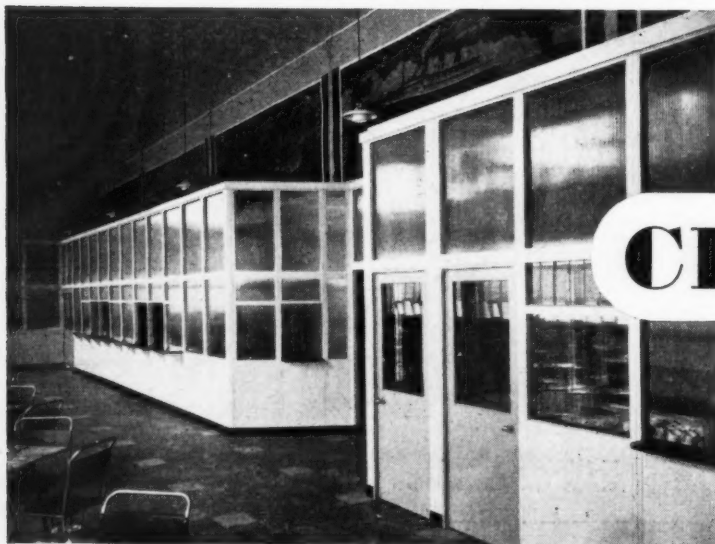


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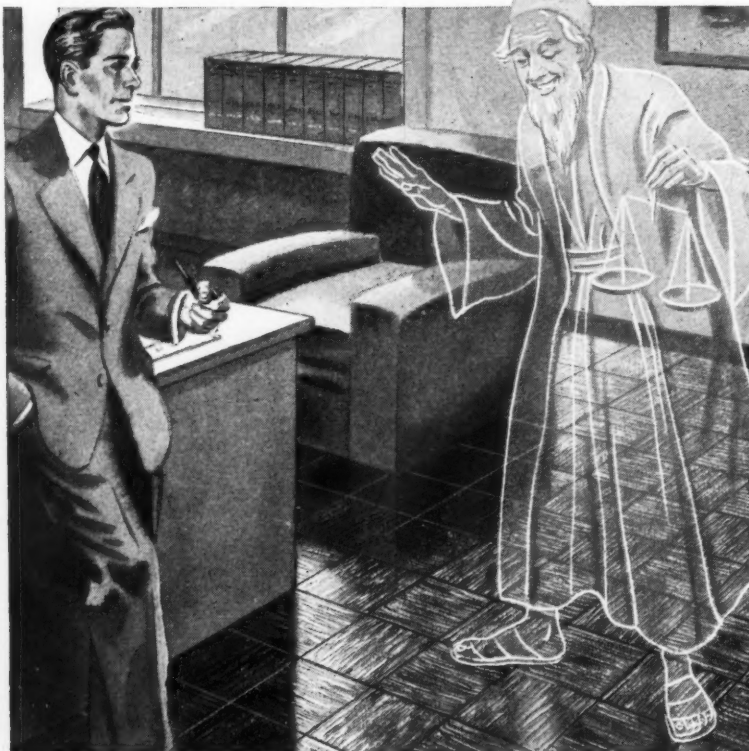
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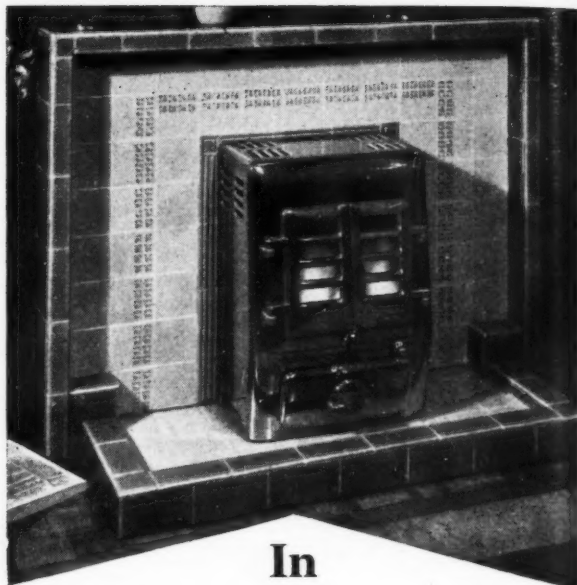
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This month we use our space for a summary of information for architects and consultants. It might seem useful enough to be cut out and put in your reference file. (Please use the request slip\* for immediate needs.)

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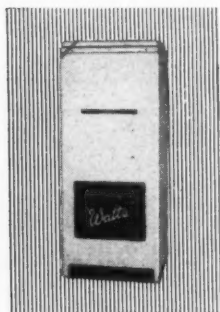
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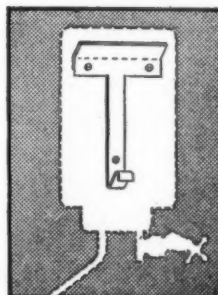
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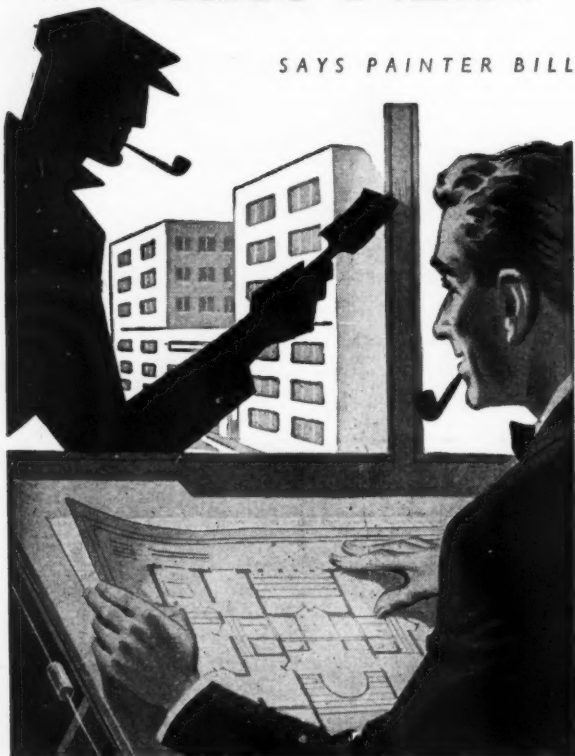
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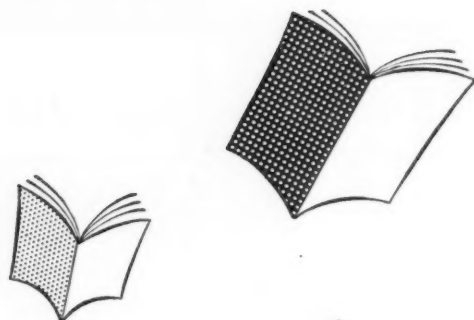
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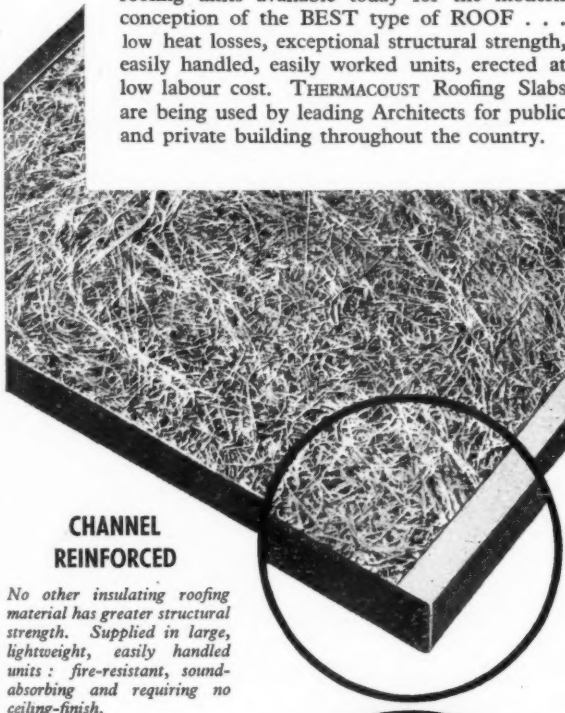
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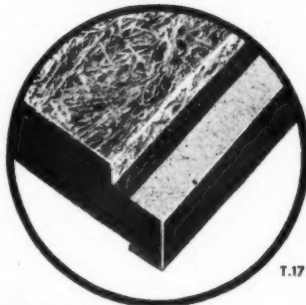


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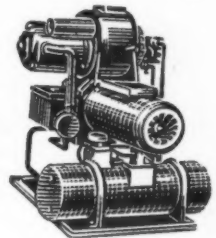
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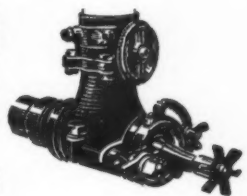


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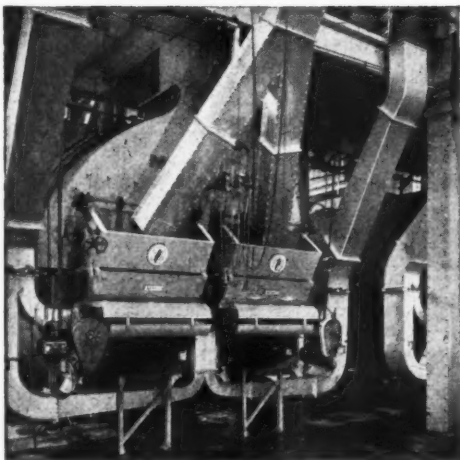
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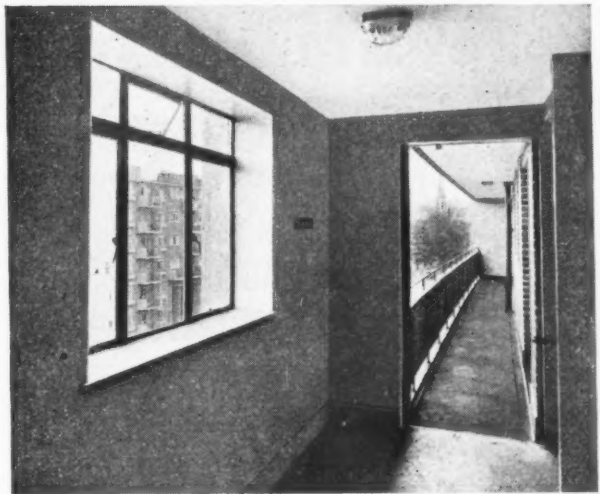


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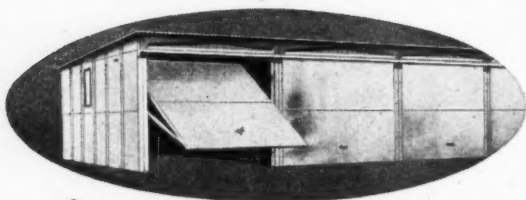
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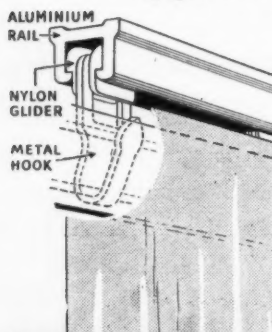
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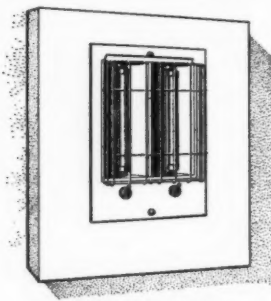
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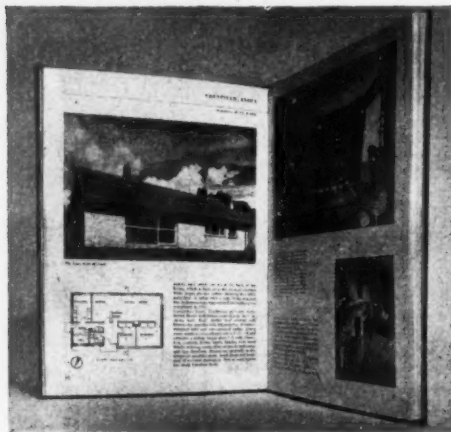
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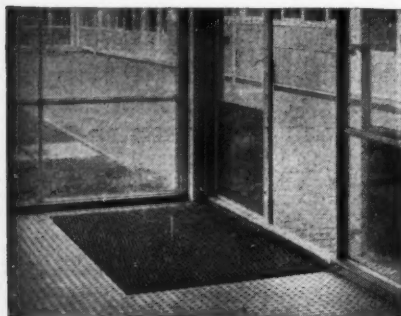
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THE ARCHITECTURAL PRESS*



## CLASSIFIED ADVERTISEMENTS

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

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

## Public and Official Announcements

25s. per inch; each additional line, 2s.

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she or the employment is excepted from the provisions of the Notification of Vacancies Order, 1952.

### LONDON COUNTY COUNCIL. ARCHITECT'S DEPARTMENT.

Vacancies for ARCHITECTS, Grade III (up to £245), and ARCHITECTURAL ASSISTANTS (up to £283), for widespread construction programme, which includes houses, blocks of flats, schools of all types, and various public and industrial buildings. Application forms and particulars from Architect (AR/EK/A/2), The County Hall, S.E.1. (1189) 2766

### BOROUGH OF WIMBLEDON

#### BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT.

Applications are invited for the following appointments on the established staff:—

(a) ARCHITECTURAL ASSISTANT, Grade—Special.

(b) ARCHITECTURAL ASSISTANT, Grade—A.P.T. I.

Salary for post (a) £650 to £775 per annum, and for post (b) £500 to £580 per annum, London Weighing additional. Applicants for post (a) must be registered Architects and should be members of the R.I.B.A. and for post (b) should have attended a full time course of Architecture, and have passed the R.I.B.A. Intermediate Examination or its equivalent. Experience in municipal architectural work would be an advantage.

The appointments are subject to the National Scheme of Conditions of Service, the provisions of the Local Government Superannuation Acts and to satisfactory medical reports.

Applications endorsed "Architectural Assistant—Special Grade" or "Architectural Assistant—A.P.T.I." stating age, qualifications, all former Local Government Service present and previous appointments and experience, length of notice required to terminate present appointment and the names of three referees, must be forwarded to the Borough Engineer and Surveyor by 29th October, 1955.

Candidates must disclose to the undersigned if, to their knowledge, they are related to any member or senior officer of the Council. Canvassing disqualifies.

FRANCIS J. O'DOWD,  
Town Clerk.

Town Hall,  
Wimbledon, S.W.19. 3199

### BOROUGH OF LEYTON

(In the County of Essex)

#### LEYTON COMMITTEE FOR EDUCATION. APPOINTMENT OF ARCHITECTURAL ASSISTANTS

Applications are invited for the following permanent appointments at salaries in accordance with the National Scales indicated:—

(a) ARCHITECTURAL ASSISTANT, A.P.T. Grade III (£630—£755 per annum).

(b) JUNIOR ARCHITECTURAL ASSISTANT, A.P.T. Grade I (£530—£610 per annum).

The above salaries are inclusive of London Weighing (£30) which is reduced according to scale where age is less than 26. The successful applicants will be employed by the Essex County Council, and will work in the School Architect's Section of the Borough Engineer and Surveyor's Department, Town Hall, Leyton, London, E.10.

Alternate Saturday mornings free of duty and canteen facilities available.

Details and forms of application from the Borough Education Officer, Kirkdale Road, Leytonstone, London, E.11, to whom they should be returned by Friday, 4th November, 1955.

D. J. OSBORNE,  
Town Clerk.

Town Hall,  
Leyton, E.10. 3170

### METROPOLITAN BOROUGH OF

#### WANDSWORTH

#### SENIOR ASSISTANT ARCHITECT.

Applications invited for this established appointment in grade A.P.T. VII (£930—£1,130).

Applicants must be associates of the R.I.B.A. and have had experience in the design and planning of housing estates, particularly multi-storey blocks of flats and/or other framed buildings, and in the supervision of their erection. Experience in local authority work is desirable. Applicants must also be experienced in the control of drawing office staff and should possess the qualities of leadership.

Application forms obtainable from the Borough Engineer, Surveyor and Architect must reach me by 25th October, 1955.

B. H. JERMAN,  
Town Clerk.  
3146

### WARWICKSHIRE COUNTY COUNCIL.

#### ARCHITECT'S DEPARTMENT.

Applications are invited for the following appointments:—

(a) SENIOR ASSISTANT ARCHITECTS GRADE APT. V. Salary scale £750 to £900.

(b) ASSISTANT ARCHITECTS GRADE APT. IV. Salary scale £675 to £825.

(c) ARCHITECTURAL ASSISTANTS GRADE APT. II. Salary scale £560 to £640.

(d) QUANTITY SURVEYING ASSISTANT GRADE APT. II-III. Salary scale £560 to £725.

(e) JUNIOR QUANTITY SURVEYING ASSISTANT GRADE APT. I-II. Salary scale £500 to £540.

Applicants for (a) and (b) must be registered Architects. The commencing salary can be within the grades, according to ability and experience. All appointments are subject to the conditions of the Local Government Superannuation Acts 1937-53.

Applications are to be made on forms which should be obtained from G. R. BARNSELY, F.R.I.B.A., County Architect, Shire Hall, Warwick.

L. EDGAR STEPHENS,  
Clerk of the Council.

Shire Hall,  
Warwick.  
6th October, 1955. 3212

### BIRMINGHAM REGIONAL HOSPITAL

ARCHITECTURAL STAFF APPOINTMENTS.  
(Donald A. Goldfinch, ERD., FRIBA., Dip.TP—Architect to the Board)

(a) SENIOR ASSISTANT ENGINEER (heating and ventilation) £920 × £30(5) × £25(1) — £1,095. Duties include design, preparation of plans, specifications and technical reports; supervision of new installations of heating and ventilation, boiler house plants and other hospital services. AMI.Mech.E. essential, AMIH. & V.I.E. desirable.

(b) ASSISTANT ARCHITECTS (2)—£640 × £25(4) × £30(4) × £35(2) — £930 according to age and experience. Applicants must be registered architects having passed requisite examinations. Experience of hospital planning and construction an advantage. Sound knowledge specifications essential.

(c) ASSISTANT QUANTITY SURVEYORS (2)—£640 × £25(4) × £30(4) × £35(2) — £930. Final RICS or IQS or LAAS and experience in taking off and preparing bills of quantities and settling final accounts essential.

(d) ASSISTANT ENGINEERS (2)—£640 × £25(4) × £30(4) × £35(2) — £930 according to age and experience. AMI.H.V.E. desirable.

(e) ARCHITECTURAL ASSISTANTS (2) (required for large new hospital project)—£480 × £20(7) × £25(2) — £670. Point of entry according to experience—maximum £560. Inter-RIBA essential.

(f) JUNIORS (2 architectural, 1 engineering)—Male (aged 16) maximum £400 (aged 25), Female £165 (aged 16) maximum £330 (aged 25) (salary under revision equal pay to be implemented). Successful candidates expected to study for professional examinations. All appointments supernumerary. Apply naming three referees to Secretary, 10, Augustus Road, Birmingham, 15, by 28th October, 1955. 3216

### BOROUGH OF GRANTHAM.

#### CHIEF ASSISTANT ARCHITECT.

Applications are invited for the above appointment in the Department of the Borough Engineer and Surveyor at a salary within Grade V (£750—£900).

Applicants must be Registered Architects with good general experience, and be capable of preparing and supervising all building schemes (principally housing) undertaken by the Corporation.

Housing accommodation will be available to the successful candidate, if required.

The appointment is subject to the National Scheme of Conditions of Service, the Local Government Superannuation Acts, the passing of a medical examination, and is terminable by one month's notice on either side.

Applications, stating age, qualifications, training and experience, previous and present positions, together with the names of two referees, should be received by the Borough Engineer and Surveyor, Guildhall, Grantham, not later than Tuesday, 1st November, 1955.

JOHN F. GUILF,  
Town Clerk.

Guildhall,  
Grantham,  
5th October, 1955. 3215

MINISTRY OF WORKS require ARCHITECTURAL ASSISTANTS for drawing offices in London, Edinburgh and various provincial offices, with at least three years' training, experience in an architect's office and of Inter. R.I.B.A. standard. London salary £463 to £725 p.a., elsewhere slightly less. Starting pay according to age and experience, prospects of promotion and permanency. State age, details of training and experience, to Chief Architect, Ministry of Works, A27 (F), Abell House, John Islip Street, London, S.W.1. 3168

THE LONDON HOSPITAL, Whitechapel, E.1, requires CHIEF ASSISTANT ARCHITECT. Salary £850—£950 per annum. Applications, stating age, experience, etc., to the House Governor. 2922

### SURREY COUNTY COUNCIL.

Applications invited for appointment of ASSISTANT QUANTITY SURVEYOR Grade IV, £675 × £30—£825 p.a., plus London allowance. Should be Associate Member R.I.C.S.

Full details and present salary, with three copy testimonials to County Architect, County Hall, Kingston, as soon as possible. 3167

### BOROUGH OF MANSFIELD. APPOINTMENT OF THIRD ARCHITECTURAL ASSISTANT.

Applications are invited for the above appointment in the Borough Engineer and Surveyor's Department. The salary will be in accordance with the special grade for qualified assistants (£650—£775) of the National Joint Council's Scale and the following conditions:—

1. N.J.C. Conditions of Service.  
2. Local Government Superannuation Acts, for which purpose the selected candidate will be required to pass a medical examination.

3. Residence within the Borough.  
Applicants should have passed the Final Examination of the R.I.B.A. or equivalent examination.

A house on service tenancy agreement is available.

Applications stating age, qualifications, present appointment and salary, previous appointments and experience, together with the names and addresses of not more than three referees should be sent to the Borough Engineer and Surveyor, Carr Bank, Mansfield and should be endorsed "Third Architectural Assistant." The closing date is 24th October, 1955.

A. C. SHEPHERD,  
Town Clerk.

Carr Bank,  
Mansfield. 3155

### BRACKNELL DEVELOPMENT CORPORATION.

Applications are invited from Corporate Members of the R.I.B.A. for the post ASSISTANT ARCHITECT Grade IV—salary £710 × £40(6) × £10(1) — £960.

Superannuation schemes, medical examination. Housing available in due course. Apply by 28th October, 1955, giving age, education and qualifications, experience and appointments held (with dates and salaries) and names of two referees to the General Manager, (A.A.) Bracknell Development Corporation, Farley Hall, Bracknell, Berks. 3214

### UNIVERSITY OF OXFORD.

Applications are invited for the following appointments:—

(a) ARCHITECTURAL ASSISTANTS of Intermediate to Final standard, capable of carrying out jobs from survey to final account under supervision. Salary £550—£675.

(b) ARCHITECTURAL ASSISTANTS of about Intermediate standard with some knowledge of modern building construction. Salary £450. Varied and interesting work. Generous leave. Apply for further particulars, stating age, experience, and training, to the Surveyor to the University, 5, South Parks Road, Oxford. 3162

### COUNTY OF LEICESTER.

(a) SENIOR ASSISTANT ARCHITECTS (£750—£900).

(b) SENIOR ASSISTANT ARCHITECTS (£675—£825).

(c) ASSISTANT ARCHITECTS (£650—£775).

(d) ARCHITECTURAL ASSISTANTS (£560—£640).

(e) ASSISTANT HEATING ENGINEER (£650—£775).

(f) ASSISTANT QUANTITY SURVEYOR (£675—£825).

Candidates for (a) and (b) must be Registered Architects, experienced in design and construction of modern buildings and capable of carrying through projects from inception to completion; for (c) must be Registered Architects, experienced in preparation of working drawings from sketches and capable of taking charge of smaller contracts; for (d) must be of Intermediate standard, with some experience; for (e) must be capable of designing heating schemes, A.M.I.H.V.E. preferred; for (f) be qualified, experienced in preparation of bills of quantities, specifications, and settling final accounts. A.R.I.C.S. preferred. Apply on form obtainable from County Architect, 123, London Road, Leicester. 3294

### GOVERNMENT OF SARAWAK.

#### SENIOR ASSISTANT ARCHITECT, PUBLIC WORKS DEPARTMENT.

To assist with the Development building programme, and to deputise for the Government Architect in his absence on tour or on leave.

Appointment is on contract for 36 months' resident service, at a salary of £1,918 per annum. Gratuity of £37 10s. for each three months of resident service is payable on satisfactory completion of contract.

Furnished quarters provided at a low rental. Free return passages for officer, his wife, and up to three children. Leave is granted at the rate of 4 or 5 days for each month of resident service.

Candidates should be A.R.I.B.A. and have had at least 7 years' practical experience after qualifying. They should have a knowledge of the design of housing, hospitals, police and other public buildings. An aptitude for reinforced concrete design would be an advantage.

Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience, and quoting reference No. BCD 112/24/012. Closing date for the receipt of initial applications: 12th November, 1955. 3300

CENTRAL ELECTRICITY AUTHORITY  
EASTERN DIVISION.

Applications are invited for the following superannuable post in the Great Yarmouth, Norfolk, district:—

## ASSISTANT SITE ENGINEER.

Salary range in accordance with N.J.B. Agreement (£750—£1,090 per annum). The commencing salary depending upon experience and qualifications.

The successful applicant will be required to supervise Civil Engineering and Building Works in connection with a new Generating Station, and must have had experience in this class of work.

Forms of application may be obtained from the Controller, Central Electricity Authority, Eastern Division, Northmet House, Southgate, N.14, and returned not later than 12th November, 1955.

W. N. C. CLINCH,

Controller.  
3392

## COUNTY COUNCIL OF ESSEX.

## COUNTY PLANNING DEPARTMENT.

Applications invited for posts of DRAUGHTSMAN (Male or Female), Misc., Grades II-IV (£375—£545), at Broomfield, Chelmsford, Epping and Romford. Applicants must be 21 or over and should be neat and expeditious draughtsmen, able to produce, under supervision, all types of planning maps. Post superannuable. Medical examination. Applications in own handwriting to County Planning Adviser, Broomfield Place, Broomfield, Chelmsford, as soon as possible. Canvassing disqualifies.

3247

CITY OF BIRMINGHAM PUBLIC WORKS  
DEPARTMENT.

Applications are invited for the following posts in the Town Planning Section:—

(a) PLANNING ASSISTANT. Salary Grade A.P.T. II (£560—£640 p.a.).

(b) PLANNING ASSISTANT. Salary Grade A.P.T. I (£500—£580 p.a.).

Commencing salary in accordance with qualifications and experience.

Applicants should have passed the Intermediate Examination of the Town Planning Institute or hold a Higher National Certificate.

The successful candidate for post (a) will be required to deal with planning applications submitted under the Town and Country Planning Act, 1947, and detailed drawings submitted under the Building Bye-Laws, and for post (b) should have a knowledge of ordnance survey sheets and be a good draughtsman.

The appointments are permanent, superannuable, subject to a medical examination, and terminable by one month's notice on either side. Applications, endorsed with the heading of the post applied for, stating qualifications, age, and experience, together with the names of two persons to whom reference may be made, should reach the undersigned not later than 29th October, 1955.

Canvassing disqualifies.

HERBERT J. MANZONI,

City Engineer and Surveyor.  
Civic Centre, Birmingham, 1. 3302

## COUNTY BOROUGH OF BOLTON.

BOROUGH ARCHITECT'S DEPARTMENT.  
Applications are invited for the following appointments in the Department of the Borough Architect:—Mr. K. Martin Baxter, T.D., Dip.T.P.(Manc.), A.R.I.B.A., A.M.T.P.I.:—

(a) QUANTITY SURVEYOR. Commencing salary according to qualifications and experience within A.P.T. Grade V, of the N.J.C. Scales (£750—£900 per annum). Applicants should be Associates of the Royal Institution of Chartered Surveyors.

(b) BUILDING AND STRUCTURAL ENGINEER. Commencing salary according to qualifications and experience within A.P.T. Grade IV/V, of N.J.C. Scales (£675—£900 per annum). Applicants should be Members of the Institution of Structural Engineers. The person appointed will directly advise the Borough Architect on the structural elements of building, and should be capable of undertaking the design and supervision of erection of all types of structure.

The appointments are superannuable and subject to passing medical examination.

Applications, giving names of two persons to whom reference may be made, should be received by me not later than 1st November, 1955.

PHILIP S. RENISON,

Town Clerk.  
Town Hall, Bolton. 3306BOROUGH OF BRENTFORD AND CHISWICK.  
APPOINTMENT OF

## ARCHITECTURAL DRAUGHTSMAN.

Applications are invited for the above appointment in the Borough Engineer and Surveyor's Department, at a salary in accordance with Miscellaneous Div., Grade IV, i.e., £465—£545 per annum, plus London weighting allowance.

Applicants should be competent draughtsmen. The appointment offers excellent opportunities for gaining architectural training and experience.

A MODERN FLAT CAN BE RENTED BY THE SUCCESSFUL APPLICANT.

Applications, stating age, qualifications and experience, together with the names of two persons to whom reference can be made, should be forwarded to the Borough Engineer and Surveyor, Town Hall, Chiswick, W.4, not later than Wednesday, 26th October, 1955.

W. F. J. CHURCH,

Town Clerk.  
Town Hall, Chiswick, W.4. 3307

## AYCLIFFE DEVELOPMENT CORPORATION.

Applications are invited for the following appointments:—

(i) ASSISTANT QUANTITY SURVEYOR, A.P.T. V (£750—£900).

(ii) QUANTITY SURVEYING ASSISTANT, A.P.T. I (£500—£580).

Applicants for (i) should be A.R.I.C.S. or Final standard, with experience in the preparation of bills of quantities, estimates, and the settlement of final accounts.

Applicants for (ii) should be up to Intermediate R.I.C.S. standard.

Appointments subject to N.H.C. Conditions, superannuation, and medical examination.

Applications, stating age, qualifications and experience, together with names of two referees, to arrive not later than Friday, 28th October, 1955.

A. V. WILLIAMS,

General Manager.  
Newton Aycliffe, Co. Durham. 3248

## BOROUGH OF LEYTON.

(Non-County Borough in the County of Essex: Population 103,200; R.V. £784,110.)

Applications are invited for the appointment of:—

GENERAL ARCHITECTURAL ASSISTANT. Established post. Grade A.P.T. III-IV (£600—£825 p.a.), plus London weighting allowance, according to age, which at 26 is at a maximum of £30. The commencing salary will be fixed at a point in the scale according to the qualifications and experience of the successful applicant.

This appointment is primarily in connection with the proposed re-development schemes in the Borough, and candidates must have had good experience in the design and construction of houses, flats and Municipal buildings.

Alternate Saturday mornings are free of duty and canteen facilities available.

Details of the appointment and form of application may be obtained from Mr. H. D. Peake, M.Sc.(Eng.), Borough Engineer and Surveyor, Town Hall, Leyton, E.10, to whom they should be returned not later than Friday, 28th October, 1955.

D. J. OSBORNE,

Town Clerk.  
Town Hall, Leyton, E.10. 3246BRACKNELL DEVELOPMENT  
CORPORATION.

Applications are invited for the following posts: JUNIOR ARCHITECTURAL ASSISTANT—within Grade VIII, £330—£530 per annum.

JUNIOR ARCHITECTURAL DRAUGHTSMAN—within Grade IXA, £370—£470 per annum.

In both cases commencing salary to be according to age and experience.

Superannuation schemes, Medical examination, Housing available in due course. Apply by 3rd November, 1955, giving age, education and qualifications; experience and appointments held (with dates and salaries) and two referees, to General Manager (J.A.A.), Bracknell Development Corporation, Farley Hall, Bracknell, Berks. 3321

## COUNTY OF HUNTINGDON.

## COUNTY ARCHITECT'S DEPARTMENT.

Applications are invited for the following appointments:—

(a) A SENIOR ARCHITECTURAL ASSISTANT, APT VI (£825—£1,000).

(b) SENIOR ARCHITECTURAL ASSISTANTS, APT IV-V (£675—£900).

(c) ARCHITECTURAL ASSISTANTS, APT II-III (£560—£725).

Appointments could be made within these grades subject to qualifications and experience.

Further details and application forms may be obtained from S. M. Holloway, A.R.B.A., County Architect, County Buildings, Huntingdon, to whom completed application forms should be forwarded by 7th November, 1955.

A. C. AYLRWARD,

Clerk of the County Council.  
County Buildings,  
Huntingdon.  
20th October, 1955. 3320

## BOROUGH OF EDMONTON.

QUANTITY SURVEYING ASSISTANTS required for Borough Architect's Department.

A.P.T. V (£750×£30—£900).

A.P.T. IV (£675×£30—£825).

Both grades plus London weighting £10—£30, according to age.

Duties will include work on multi-storey flats. Alternate Saturdays free. Canteen facilities.

Applications on forms from Town Clerk, Town Hall, Edmonton, must be delivered by 28th October. 3305

## BOROUGH OF STAFFORD.

## APPOINTMENT OF ARCHITECTURAL

## ASSISTANT, GRADE I.

Applications are invited for the appointment of an Architectural Assistant on the permanent staff at a salary of £500 per annum, rising to £580.

Previous Municipal experience not essential. Financial assistance given for studies and examination.

HOUSING ACCOMMODATION WILL BE MADE AVAILABLE TO THE SUCCESSFUL APPLICANT IF REQUIRED.

Full particulars and forms of application can be obtained on writing to Mr. T. H. Higson, B.Sc., A.M.I.C.E., Borough Surveyor, Mount Street, Stafford, to whom the completed application should be returned not later than Wednesday, 2nd November, 1955.

12th October, 1955.

3295

## GOVERNMENT OF CYPRUS.

## ASSISTANT DIRECTOR OF PLANNING AND HOUSING.

To be the principal assistant to the Director of Planning and Housing in the preparation and administration of Town and Country Planning Schemes and Government Housing Schemes, and to deputise for the Director where necessary.

Appointment is on contract for a period of two years in the first instance, at a fixed salary of £1,400 per annum, plus an overseas allowance of £210 per annum and a variable cost-of-living allowance, at present at the rate of 24 per cent of basic salary. A gratuity of £150 per annum is payable on satisfactory completion of contract.

Government quarters are provided, if available, at a rental of 6 per cent, of basic salary if furnished; or 4½ per cent. if unfurnished; or an allowance is granted in lieu. Free passages are provided for the officer, his wife and children, not exceeding four persons besides himself. Leave is granted at the rate of 31 days for each completed month of resident service.

Candidates should be A.M.T.P.I. and should also possess a secondary recognised qualification in Estate Management, Architecture or Engineering, and have had at least 7 years' experience with a local Government authority or the central Government in the United Kingdom or in a Commonwealth country.

Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, stating briefly age, qualifications and experience, and quoting reference No. BCD 62/17/02. Closing date for receipt of applications: 22nd November, 1955. 3242

## CITY OF SHEFFIELD.

## CITY ENGINEER &amp; SURVEYOR'S

## DEPARTMENT.

## SENIOR PLANNING ASSISTANT,

## GRADE APT V.

Applications are invited for the position of Senior Planning Assistant, Grade APT V (£750—£900), on the staff of the City Engineer and Surveyor and Town Planning Officer (H. Foster, M.I.C.E., M.I.Mun.E.).

Qualifications: A.M.T.P.I., or A.M.I.C.E., or A.R.I.B.A., or A.R.I.C.S., or Engineering Degree, or A.M.I.Mun.E. Preference would be given to candidates with Planning and Architectural experience.

Superannuable post, N.J.C. Conditions of Service, Medical Examination.

Applications, stating age, education and training, qualifications, experience, present and past appointments (with dates and salaries), and quoting the names of two referees, should be submitted to the undersigned by the 27th October, 1955.

JOHN HEYS,

Town Clerk.  
Town Hall,  
Sheffield, 1. 3324

## CITY AND COUNTY OF KINGSTON UPON HULL.

## CITY ARCHITECT'S DEPARTMENT.

Applications are invited for the following posts:—(a) ASSISTANT ARCHITECTS, Grade V, £750—£900 per annum; (b) ARCHITECTURAL ASSISTANTS, Grade Special Classes of Officers within salary range £500—£775 per annum, according to qualifications.

Candidates for post (a) should preferably be A.R.I.B.A., with experience in design and construction of Modern Schools and Public Buildings. Candidates for post (b) should be students R.I.B.A. or have passed Parts I and II of the Final Examination.

Housing accommodation will be available for successful married candidates.

Forms of application may be obtained from the undersigned, to whom they should be returned not later than 2nd November, 1955.

ANDREW RANKINE, O.B.E., A.R.I.B.A.,

City Architect.  
Guildhall, Kingston upon Hull. 3336

## EASTERN REGIONAL HOSPITAL BOARD.

## SCOTLAND.

Applications are invited for the following appointments:—

(a) ASSISTANT ARCHITECT. Salary £640—£930.

(b) ASSISTANT QUANTITY SURVEYOR. Salary £640—£930.

Applicants for post (a) must be qualified Registered Architects, and for post (b) must be Corporate Members of the R.I.C.S., with experience of the Scottish Mode of Measurement.

The starting salaries may be above the minimum of the scale, according to age and experience at full professional standard.

Applications, stating age, qualifications, experience, and the names and addresses of three referees, should be sent to the Secretary, Eastern Regional Hospital Board, "Blacknocks," 430, Blackness Road, Dundee, within 14 days from the date of this advertisement.

7th October, 1955. 3338

## LONDON COUNTY COUNCIL.

Hammersmith School of Building and Arts and Crafts, ASSISTANT Grade B, for Plasterwork, to take charge of the Plastering Section in the Building Trades Department and to teach subject to level of Final Examination of City and Guilds. Industrial experience is essential and some teaching experience preferred. Burnham F.E. salary scale £561 × £25—£868, individual minimum and maximum according to age qualifications and experience. Application forms from Secretary at School, Lime Grove, W.12, returnable by 5th November. (1637) 3239



# CITY OF CARDIFF. APPOINTMENT OF ASSISTANT ARCHITECTURAL ASSISTANT.

Applications are invited for the following appointment in the City Surveyor's Department. **ARCHITECTURAL ASSISTANT (EDUCATION)**, A.P.T., Grade II (£560-£640 per annum). Candidates should possess the minimum qualifications and experience prescribed by the National Joint Council for Local Authorities' Administrative, Professional, Technical and Clerical Services for posts in the above-mentioned Grade.

General Conditions of Appointment may be obtained from the undersigned. The Council will assist in providing housing accommodation for a period for the successful applicant.

Applications, accompanied by the names and addresses of three referees, and endorsed "Architectural Assistant (Education), A.P.T., Grade II," must be delivered to me not later than the 29th October, 1955.

S. TAPPER-JONES,  
Town Clerk.

City Hall, Cardiff.  
October, 1955. 3304

# BOROUGH OF FINCHLEY. HOUSING AND TOWN PLANNING DEPARTMENT.

## ARCHITECTURAL ASSISTANTS.

Salary A.P.T., Grade II (£560-£620-£640), plus London weighting.

Subject to satisfactory service the duration of the posts will be approximately two years. Candidates should have passed the R.I.B.A. Intermediate Examination. Preference will be given to those with practical office experience in housing work.

The National Scheme of Conditions of Service and the Local Government Superannuation Acts apply, and medical examination required.

Applications, stating age and full particulars of qualifications and experience, with names of two referees, to the Borough Housing and Town Planning Officer, The Avenue, Finchley, N.3, by first post on Thursday, the 27th October, 1955.

R. M. FRANKLIN,  
Town Clerk.

Municipal Offices, Finchley, N.3. 3270

# COUNTY BOROUGH OF BOOTLE.

Applications are invited for the following appointments:

1 and 2. **ASSISTANT ARCHITECT APT IV** £675-£825 per annum. Two appointments to be made in this grade.

3. **ASSISTANT ARCHITECT APT III** £600-£725 per annum.

4. **TEMPORARY ASSISTANT ARCHITECT APT IV** £675-£825 per annum. This appointment will be for a minimum of three years. Salaries for the above 4 posts will be fixed within the respective grades according to qualifications and experience and preference will be given to applicants with experience in the design and construction of schools.

5. **ARCHITECTURAL ASSISTANT APT I** £500-£580 per annum.

6. **ENGINEERING ASSISTANT APT II** (£560-£640 per annum).

7. **TEMPORARY CLERK OF WORKS (Housing)** for a period not exceeding two years. APT I (£500-£580 per annum).

Application Forms, obtainable from Borough Surveyor, Town Hall, Bootle, 20, are returnable by Friday, 4th November, 1955.

HAROLD PARTINGTON,  
Town Clerk.

3322

# BATH CITY COUNCIL. CITY PLANNING AND ARCHITECTURAL DEPARTMENT.

Applications are invited for:—

(a) **GENERAL ARCHITECTURAL ASSISTANT**. £650, rising to £775 per annum. Applicants should have passed Parts I and II of the R.I.B.A. Final or Special Final Examination or their equivalent at one of the recognised Schools of Architecture, and have had at least 5 years' experience (including the period spent in theoretical training).

(b) **ESTIMATOR AND GENERAL TECHNICAL ASSISTANT**. Salary in accordance with revised scale A.P.T., Grade II (£560-£640). The appointment is permanent and pensionable. Applicants should state their experience in estimating, measurement of works in progress, dilapidation schedules, and improvement grants; a knowledge of the preparation of Bills of Quantities will be an advantage.

These appointments are subject to the Scheme of Conditions of Service for the National Joint Council for Local Authorities' Administrative, Technical and Clerical Services and the Local Government Superannuation Acts, 1937-1953. The successful candidates will be required to pass a medical examination.

The Council is prepared to provide housing accommodation, if required, to the successful applicants.

Applications, giving details of age, experience and qualifications, together with the names and addresses of three referees, should be addressed to the City Planning Officer and Architect, 7, North Parade Buildings, Bath. The last day for the receipt of applications is Monday, 7th November, 1955.

JARED E. DIXON,  
Town Clerk.

Guildhall, Bath. 3269

# BOROUGH OF LOWESTOFT. APPOINTMENT OF SENIOR ARCHITECTURAL ASSISTANT.

Applications are invited for the permanent appointment of a Senior Architectural Assistant in the Borough Engineer and Surveyor's Department. Salary A.P.T., III (£600-£725 per annum).

Applicants for the appointment must be capable of preparing designs and detailed drawings, and preference will be given to applicants who are in possession of a recognised technical qualification.

Housing accommodation will be made available for the successful candidate, if required.

The appointment will be subject to the provisions of the Local Government Superannuation Acts, 1937 to 1953, the passing of a medical examination, to one month's notice on either side, and to the provisions of the National Conditions of Service.

Applications, stating age, qualifications, present and past appointments and details of experience, together with the names and addresses of two persons who are prepared to testify to the applicant's ability and experience, must reach the Town Clerk, Town Hall, Lowestoft, not later than 12 noon on Tuesday, 1st November, 1955.

Candidates for the appointment shall, when making application, disclose whether they are related to any member of, or the holder of, any senior office under the Corporation.

Canvassing in any form will disqualify.

F. B. NUNNEY,  
Town Clerk.

Town Hall, Lowestoft.  
6th October, 1955. 3264

# BOROUGH OF HAMILTON. CHIEF ASSISTANT ARCHITECT.

Applications are invited for the above post from Associates of the Royal Institute of British Architects (or equivalent qualification), with experience in post-war housing and civic building design, etc. The post is superannuable, and the salary A.P.T., VII (£790-£865), with placing according to qualifications and experience. The successful applicant will be given the tenancy of a house if required.

Applications, containing full particulars of age, qualifications and experience, together with the names of three referees, should be lodged with the undersigned not later than 27th October, 1955.

Canvassing, either directly or indirectly, will be a disqualification.

JAMES KELLY,  
Town Clerk.

The Town House, Hamilton.  
10th October, 1955. 3266

# LANCASHIRE COUNTY COUNCIL.

There are vacancies for recently qualified **ASSISTANT ARCHITECTS** in the office of the County Architect (G. Noel Hill, F.R.I.B.A., M.T.P.I.), where the work is dealt with from the purchase of the site to the furnishing of the building, and the Architect has experience of regular contacts with members of other professions on the staff—Land Surveyors, Engineers and Quantity Surveyors.

Post "A." £650-£775. To work in a Group on large school projects.

Post "B." £650-£775. To work in a Group on a variety of County buildings; this provides a general experience.

**APPOINTMENTS ABOVE THE MINIMUM OF THE GRADE MAY BE RECOMMENDED.**

Application forms, obtainable from the County Architect, P.O. Box 26, County Hall, Preston, to be returned by Monday, 7th November, 1955, quoting Ref. A/AJ. 3260

# BASILDON DEVELOPMENT CORPORATION.

(a) **ASSISTANT ARCHITECTS** (£845-£960).

(b) **ASSISTANT ARCHITECTS** (£715-£845).

Experience contemporary house design, preparation working drawings, and supervision large housing contracts, and professional qualification in Architecture required.

A building programme of £3,000,000 a year gives an exceptional opportunity to progressive and enthusiastic architects.

Posts superannuable; housing available for renting.

Applications on special form (obtainable from Chief Architect) to General Manager, Gifford House, Bardon, Essex, by Friday, 4th November, 1955. 3299

# BOROUGH OF DAGENHAM. ARCHITECTURAL ASSISTANTS.

Applications are invited for the appointment of Architectural Assistants, Grade A.P.T., IV, and A.P.T., II.

The salary of the Grade IV appointments is £675 to £825 per annum, plus £30 London weighting at age 26 or over. Applicants must be Registered Architects and hold A.R.I.B.A. or similar qualification. **HOUSING ACCOMMODATION MAY BE MADE AVAILABLE.**

The salary of the Grade II appointment is £560 to £640 per annum, plus London weighting of £20 at age 21-25 years, and £30 at age 26 and over. Applicants must hold Intermediate R.I.B.A. or similar qualification.

Experience in Housing or Educational work an advantage.

Forms of application and further details from the Borough Surveyor.

Closing date: 28th October, 1955.

KEITH LAUDER,  
Town Clerk.

Civic Centre, Dagenham. 3221

**HACKNEY BOROUGH COUNCIL** have under consideration the appointment of **ASSISTANT ARCHITECTS** and **ARCHITECTURAL ASSISTANTS** for an extensive programme of new housing, public baths, libraries, and other public buildings. Any appointments which may be made will be within Grades A.P.T., I (£500-£580) and A.P.T., VI (£825-£1,000), in addition to which a London weighting allowance of £10-£30, according to age, will be paid. The grade and commencing salary of successful candidates will be fixed according to training, qualifications, and experience. Application form obtainable from the Town Clerk, Town Hall, London, E.8, returnable by 19th November, 1955. 3313

# NEW SOUTH WALES, AUSTRALIA.

Permanent appointments in the New South Wales Government Service are available to:

## ARCHITECTS.

## ARCHITECTURAL DRAUGHTSMEN.

Salary: Commencing salary according to qualifications and experience, between £A970 per annum and £A1,424, with promotion to considerably higher salaries. Superannuation.

Qualifications: University Degree, Technical College Diploma, or equivalent.

Location: Sydney or country district offices in New South Wales.

Fares to Sydney: Appointee's contribution to fare is £10 sterling per adult.

Application form and further information may be obtained from the New South Wales Government Offices, 56/57, Strand, London, W.C.2. 3256

# BOROUGH OF NEWCASTLE UNDER LYME. BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT.

Applications are invited for the following appointments:—

(a) **ASSISTANT ARCHITECT**, Grade A.P.T., III (£600-£725).

(b) **ASSISTANT QUANTITY SURVEYOR**, Grade A.P.T., III (£600-£725).

Applicants for post (a) must have passed the R.I.B.A. Intermediate Examination.

Applicants for post (b) are required for taking off in connection with new schools and housing contracts.

Commencing salaries will be in accordance with qualifications and experience.

Favourable consideration by the Council to the provision of housing accommodation will be given if required.

Application Forms and Conditions of Appointment may be obtained from the Borough Engineer and Surveyor, Lancaster Buildings, High Street, Newcastle, Staffs., and may be returned to him not later than Friday, 28th October, 1955.

C. J. MORTON,  
Town Clerk.

District Bank House, High Street,  
Newcastle, Staffs. 3231

# BOROUGH OF RICHMOND (SURREY).

Applications are invited for the following appointments on the established staff of the Borough Engineer and Surveyor:—

(a) Two fully qualified **ASSISTANT ARCHITECTS**, A.P.T., Grade IV (£675-£825, plus appropriate London weighting).

(b) One **ARCHITECTURAL DRAUGHTSMAN**. Applicants to state salary required.

(c) One **JUNIOR ENGINEERING ASSISTANT**, A.P.T., Grade II (£560-£640), plus appropriate London weighting.

Applications, naming two referees, to be delivered to the Borough Engineer and Surveyor, Hotham House, Heron Court, Richmond, Surrey, by 1st November, 1955.

Canvassing will disqualify. Relationship, if any, to members of the Council or senior officers, must be stated. No assistance with housing.

CLIFFORD HEYWORTH,  
Town Clerk.

Town Hall, Richmond, Surrey. 3222

# DERBYSHIRE COUNTY COUNCIL.

## COUNTY ARCHITECT'S DEPARTMENT.

Vacancies for **ARCHITECTS** exist on the under-mentioned scales:—

(a) £825 x £35 to £1,000 per annum (Grade VI).

(b) £750 x £30 to £900 per annum (Grade V).

(c) £675 x £30 to £825 per annum (Grade IV).

(d) £650 x £25 to £775 per annum (Special Grade).

(e) £560 x £20 to £640 per annum (Grade II).

(f) £500 x £20 to £580 per annum (Grade I).

Attractive work is available in all sections of the Department.

National Joint Council Conditions of Service. Pensionable posts. Canvassing disqualifies.

Further details and application forms from The County Architect, County Offices, St. Mary's Gate, Derby—returnable by 9th November, 1955. 3282

# STATES OF GUERNSEY.

## PUBLIC WORKS DEPARTMENT.

Applications are invited for the permanent and pensionable post of **ARCHITECTURAL ASSISTANT**, at a salary of £754 per annum, rising by four annual increments to £848.

Applicants must be Associate Members of the Royal Institute of British Architects, and capable of preparing working and detailed drawings and specifications and supervising work.

Particulars of pension arrangements are obtainable on application.

Applications, stating age, qualifications, experience, present and previous appointments and salary together with copies of two recent testimonials, should be delivered to the States Supervisor, States Office, Guernsey, Channel Islands, not later than Monday, 7th November, 1955. 3284

# CITY OF LEICESTER. CITY ENGINEERS AND SURVEYOR'S DEPT. MAINTENANCE SECTION.

Applications are invited for the appointment of MAINTENANCE ASSISTANTS in the City Surveyor's Department, in Grade A.P.T., V (£750-£900 per annum).

Candidates should be Members of the R.I.B.A., R.I.C.S., or equivalent.

The appointments will be subject to the provision of the Local Government Superannuation Act, 1937.

Applicants should have a good knowledge of and be fully experienced in the maintenance of public buildings, preparation of plans, specifications, estimating and schedules, etc. Previous Local Government experience would be an advantage.

The successful candidate will be required to pass a medical examination.

Applications, stating age, qualifications, training and experience, together with the names of not less than two persons to whom reference may be made, should reach the undersigned not later than Monday, 31st October, 1955.

The Council are unable to assist with housing accommodation.

**JOHN L. BECKETT, M.Inst.C.E.,**  
City Surveyor.  
Town Hall, Leicester. 3229

# BOROUGH OF MORECAMBE AND HEYSHAM. ASSISTANT QUANTITY SURVEYOR.

Applications are invited for the above temporary post. Salary A.P.T. II (£560-£640). Application forms from the Borough Engineer, Town Hall, are returnable by 9 a.m., 2nd November, 1955.

**ROGER ROSE,**  
Town Clerk.  
3288

# BASILDON DEVELOPMENT CORPORATION. ASSISTANT PLANNER, salary £715 to £845, to assist in the implementation of Master Plan.

Experience in planning design and statistical analysis, and Associate Membership 'T.P.I.' required. Post superannuable; housing available for renting.

Applications on special form (obtainable from the Chief Architect) to General Manager, Gifford House, Basildon, Essex, by Friday, 4th November, 1955. 3280

# COUNTY BOROUGH OF SOUTHAMPTON. BOROUGH ARCHITECT'S DEPARTMENT.

Applications are invited for the position of GROUP ARCHITECT, A.P.T., Grade VI (£825-£1,000 p.a.), to take charge of one of the three architectural sections in the department. Candidates should be Associate Members of the R.I.B.A. and should state their housing needs.

Forms from Borough Architect, Civic Centre, Southampton, Closing date 31st October, 1955. 3293

# METROPOLITAN BOROUGH OF HOLBORN. BOROUGH ARCHITECT'S DEPARTMENT.

JUNIOR ASSISTANT ARCHITECT required. Varied work, including Libraries, Baths and Housing. R.I.B.A. Intermediate or equivalent. Salary A.P.T. III (£600-£725 plus London weighting). Application with two referees to Town Clerk, Town Hall, High Holborn, W.C.1, by 1st November, 1955. 3319

# POPULAR BOROUGH COUNCIL invite applications for permanent appointment of PRINCIPAL ASSISTANT ARCHITECT, APT. V (£750-£900, plus "weighting").

Applicants must have passed R.I.B.A. Final. Application forms obtainable from Borough Engineer and Surveyor, Poplar Town Hall, Bow Road, E.3. Closing date—7th November, 1955. 3323

# BOROUGH OF WREXHAM. APPOINTMENT OF SENIOR QUANTITY SURVEYOR.

Salary A.P.T. IV (£675-£825). Applications are invited for the above appointment, candidates to supply details of qualification, experience, and names of two referees. Housing accommodation available.

Further particulars from the Borough Surveyor, "Boddyfyrd," 31, Chester Street, Wrexham. Closing date: 31st November, 1955. Applications to the undersigned. 3314

# PHILIP J. WALTERS, Town Clerk.

# EASINGTON RURAL DISTRICT COUNCIL. ENGINEER'S DEPARTMENT.

ARCHITECTURAL ASSISTANT, Grade A.P.T., III (£600-£725).

Applications are invited for the above-mentioned appointment.

Applicants (1) must have had previous Municipal experience, and have been trained in the office of a Municipal Engineer, Architect or Surveyor; (2) must be experienced in Municipal Housing and General Architectural Work. Preference will be given to those holding the Intermediate Certificate of the R.I.B.A. or equivalent.

This appointment is subject to the National Joint Council's Scheme of Conditions of Service and the Local Government Superannuation Acts.

Form of Application may be obtained from the undersigned, and must be returned, accompanied by copy of not more than two recent testimonials, to reach the undersigned by not later than 5th November, 1955.

**J. W. GRAY,**  
Clerk of the Council.  
Council Offices, Easington, Co. Durham. 3329

# COUNTY BOROUGH OF BURNLEY. Applications are invited for the following appointments in the Borough Engineer and Surveyor's Department:—

(a) QUANTITY SURVEYING ASSISTANT, Grade I (£500 × £20-£580), or Grade II (560 × £20-£640).

(b) JUNIOR ARCHITECTURAL ASSISTANT, Grade I (£500 × £20-£580), or Grade II (£560 × £20-£640).

(c) TEMPORARY CLERK OF WORKS, Miscellaneous Division, Grade V (£530 × £15-£590).

Applicants for appointment (a) should have a sound knowledge of Building Construction and experience in the preparation of Bills of Quantities and Measurement of Work is essential. The Grade and commencing salary will be fixed in accordance with experience and qualifications.

Applicants for appointment (b) must be suitably qualified, and the Grade and commencing salary will be fixed in accordance with experience and qualifications.

Applicants for appointment (c) should preferably have had previous experience in a similar capacity on building contracts. The appointment is a Temporary one and will be subject to a month's notice on either side.

Forms of Application and Conditions of Service may be obtained from the Borough Engineer, 22/24, Nicholas Street, Burnley, to whom applications must be returned not later than first post Saturday, 5th November, 1955.

**C. V. THORNLEY,**  
Town Clerk.  
3326

# BOROUGH OF ROWLEY REGIS. APPOINTMENT OF CHIEF ARCHITECTURAL ASSISTANT.

Applications are invited from suitably qualified persons for the above appointment in the Building Department, at a salary within A.P.T., Grade IV (£675-£825).

Applicants should be experienced in housing and other architectural works normally undertaken by a Local Authority, and experience of a direct labour building organisation would be an advantage.

The appointment will be subject to the provisions of the Council's Conditions of Service and the Local Government Superannuation Acts.

**HOUSING ACCOMMODATION WILL BE OFFERED, IF REQUIRED.**

Applications, stating age, qualifications and experience, together with copies of two recent testimonials, should be sent to the undersigned not later than Tuesday, the 1st November, 1955.

**JOHN HILTON,**  
Town Clerk.  
Municipal Buildings, Old Hill, Staffs. 3327

# STAFFORDSHIRE COUNTY COUNCIL. COUNTY PLANNING AND DEVELOPMENT DEPARTMENT.

Applications are invited for the appointment of a PLANNING ASSISTANT on A.P.T., Grades I-II (£500-£640 per annum), in the Central Area Planning Office at Stafford.

Applicants for the appointment should have had training in an Architect's, Engineer's, Surveyor's or Planning Office, and preference will be given to those who have passed the Intermediate Examination of the Town Planning Institute or its equivalent.

Applicants should give details of age, education and training qualifications, present and previous appointments and experience, and the names of two persons to whom reference can be made.

Applications, in which relationship to any member or senior officer of the County Council must be disclosed, should be sent to D. W. Riley, County Planning and Development Officer, 41a, Eastgate Street, Stafford, not later than 26th October, 1955.

**T. H. EVANS,**  
Clerk of the County Council.  
3330

# CITY AND COUNTY OF BRISTOL. APPOINTMENT OF PLANNING ASSISTANT.

Applications invited for appointment of Planning Assistant in City Engineer and Planning Officer's Department. Salary in accordance with Special Grade (£650-£775) if successful applicant has passed Final Examination of Town Planning or other appropriate Institute, and has necessary experience or Grade A.P.T. II (£560-£640) if he has passed Intermediate Examination of such Institute.

Applicants should have had good general planning experience, including preparation and administration of a Development Plan and control of development.

Applications, giving age, qualifications, present and previous appointments, and full details of experience, together with names of two referees, should be sent to City Engineer and Planning Officer, 470, Bath Road, Brislington, Bristol, 4, by 1st November, 1955. 3328

# Architectural Appointments Vacant

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

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-69 inclusive unless he or she or the employment is accepted from the provisions of the Notification of Vacancies Order, 1952.

**MISHA BLACK** requires ARCHITECTURAL ASSISTANTS to join Design Research Unit. Work would include the design of buildings, interiors, exhibitions. Salary £550 to £750. Apply in writing to Design Research Unit, 37, Part Street, W.1. 2962

ASSISTANT required in busy practice in West End, in early twenties, about Intermediate R.I.B.A. Standard. Excellent opportunities for gaining all round experience. Box 1942.

THE LONDON HOSPITAL, Whitechapel, E.1. requires CHIEF ASSISTANT ARCHITECT, Salary £850-£950 per annum. Applications, stating age, experience, etc., to the House Governor. 2923

SENIOR ASSISTANT required, to take charge of medium size jobs. Must have good office experience. Salary in the region of £800 p.a. Five-day week. Morris de Metz, F.R.I.B.A., 1, Ludgate Hill, E.C.4. Tel. No. CITY 4086. 3021

SENIOR SHOPFITTING DRAUGHTSMAN required by leading London Shopfitters. Salary £800 to £1,000, plus bonus and pension scheme. Box 3018.

RONALD WARD & PARTNERS require several capable ARCHITECTURAL ASSISTANTS, with contemporary outlook and willing to use own initiative. Salary range £400 to £380. Interesting and varied work, home and abroad. Congenial working conditions. Apply 29, Chesham Place, Belgrave Square, S.W.1. Telephone: Belgrave 3361. 2136

JUNIOR ASSISTANT, competent to make measured surveys and prepare working drawings, required by Wallis & Smith, Chartered Architects, Basingstoke. Apply by letter, stating salary required. 2533

ARCHITECTURAL ASSISTANTS, Senior and Junior required, preferably with London practice experience, office and factory buildings. Write, giving particulars of experience, etc., to Messrs. Bates & Sinning, 89, Chancery Lane, W.C.2. 2504

THE London Hospital, Whitechapel, E.1. requires JUNIOR ARCHITECTURAL ASSISTANT. Salary £440 to £650 p.a. according to experience, plus London weighting. Post superannuable. Applications stating age, present salary and brief particulars of experience to be sent to the House Governor. Accommodation is available in Kensington if successful candidate is a woman. 2677

ARCHITECTURAL ASSISTANT required in busy London Office with varied practice. Good salary and prospects for suitable applicant. 5-day week. Write giving particulars of age, qualifications, experience, etc., to Box 736, c/o 7, Coptic St., W.C.1. 2926

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

ASSISTANT ARCHITECTS, WORKER-UP, AND SHOP FITTING DRAUGHTSMAN. Applications are invited from suitably qualified persons. Salary on a scale £485-£545 inclusive of L.W., with placing according to age, qualifications and experience. The posts are superannuable, subject to medical examination. Five-day week in operation. Applications stating age, experience, qualifications and salary required to—W. J. Reed, F.R.I.B.A., Chief Architect, Co-operative Wholesale Society Ltd., 99, Leman Street, London, E.1. 2924

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

APPLICATIONS are invited for the following appointments in a newly formed Branch Office. Interesting and varied commercial and industrial projects.

(A) SENIOR ASSISTANT ARCHITECT with experience in store and shop design.

(B) ASSISTANT ARCHITECTS capable of preparing working drawings and details from preliminary sketches.

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. 2962

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

APPLICATIONS are invited for the following appointments:—

(A) SENIOR ASSISTANT ARCHITECTS with experience of work in commercial and industrial projects.

(B) ASSISTANT ARCHITECTS capable of preparing working drawings from preliminary details.

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. 2861

ARCHITECTURAL ASSISTANTS required in West End office, qualified or Intermediate standard. Varied and interesting work. Five-day week. Salary range £600-£800. 2999

ARCHITECTURAL ASSISTANTS urgently required for detailed planning work. Intermediate and Junior. Salary according to experience. Please apply to L. O. L. Hannen & John H. Markham, 7 Victoria Street, Westminster, S.W.1. Tel. Abbey 5861. 3115

ADAMS, HOLDEN & PEARSON require ARCHITECTURAL ASSISTANTS immediately. Write, giving particulars of experience and salary required, to 38, Gordon Square, W.C.1. 3141



**ARCHITECTURAL ASSISTANT** required by High Class Joinery Manufacturers and Shop-fitters specialising in Bank and Office fittings, laboratories and snuffitting in general. Assistant capable of surveying, designing and carrying out complete schemes. Permanency for suitable man, with good prospects. Apply in writing, stating experience and salary required. The Leicester Cabinet Co. Ltd., Batten Street, Leicester. 3089

**ARCHITECT'S ASSISTANT** required (intermediate standard). Telephone Whitehall 1624. 3092

**A.R.I.B.A.** required by leading Sydney, Australia, firm of Architects. Age 22-40. Commencing salary £41,309 p.a. passage paid. For interview in London, reply to Box 3041. 3092

**TWO JUNIOR ARCHITECTURAL ASSISTANTS** urgently required for work on Industrial, Commercial and Housing projects. Please make applications by letter to Chas. W. Fox, F.R.I.B.A., 22, Parkway, Welwyn Garden City, Hertfordshire. 3133

**LONDON Brewery Architect's Department** requires **JUNIOR ASSISTANTS** (aged 20-30). Write, stating age, particulars of experience, and salary required, Box 3134. 3134

**JUNIOR ASSISTANTS** urgently required by Architects and Landscape Consultants, practising Nottingham and Chesterfield. Varied contemporary work. Time off for studies. Salary according to ability. Apply John Dudding & Partners, 30, Clarendon Street, Nottingham. 3117

**BUILDING SURVEYOR** required by London Brewery Co., capable of preparing drawings and specifications for alteration work, maintenance of properties, schedules of dilapidations. Pension scheme after probationary period. Write, giving details of age, experience, and salary required, Box 3135. 3135

**RILEY & GLANFIELD** require Male **ASSISTANT**. Maximum salary £750 p.a., voluntary overtime paid time and a half. Work: Church, industrial, housing and public house. Telephone: CHA. 7328. 3118

**ARCHITECTURAL ASSISTANT (Male)** required for small but busy office in the Isle of Ely (Cams.). Interesting and varied work, mainly domestic and agricultural. Permanent and excellent prospects. Car driver preferred. State age, qualifications, experience, and salary required, to Box 3159. 3159

**CLIFFORD TEE & GALE, F.R.I.B.A.**, require **ASSISTANT ARCHITECT**. Salary according to experience. Interesting industrial schemes. Five-day week. Pension scheme. Apply by letter to 43, Frederick Road, Birmingham, 15, or telephone Edgbaston 3676. 3119

**JUNIOR ARCHITECTURAL ASSISTANT** required. Intermediate standard, for busy practice in London West End. Opportunities for advancement and use of initiative. Five-day week. Apply E. H. Davie, A.R.I.B.A., A.M.T.P.I. Staff Architect, Hillier Parker May & Rowden, 77, Grosvenor Street, London, W.1 (Mayfair 7666). 3120

**EDINBURGH**—Senior and Intermediate **ASSISTANTS** required. Write, giving particulars of experience and salary required, to Messrs. David Carr & Stuart Mathew, 14, Lynedoch Place, Edinburgh, 3. 3123

**NORTH-EAST MIDLANDS**—**ASSISTANT** required in private office. Qualified or Intermediate standard required, and in 20's. Domestic, Industrial, Pubwork. Good prospects. State experience, salary, etc., to Box 3125. 3125

**ARCHITECTURAL ASSISTANT** required, with minimum qualification of Intermediate R.I.B.A. Preference will be given to applicants having some experience in the design of industrial buildings and housing. Write, stating age and full particulars, to A. E. Cresswell, A.R.I.B.A., 40, Claremont Road, Cricklewood, London, N.W.2. 3207

**GRENFELL BAINES & HARGREAVES**—To work on several large interesting projects special opportunity for **ASSISTANT ARCHITECTS**. Minimum 5 years' office experience after graduation. Basic salary and guaranteed bonus £1,000 per annum, plus overtime at basic rates, for minimum of one year following three months' trial period. Possibility of permanence, with established superannuation scheme. Apply 12, Guildhall Street, Preston. 3177

**ARCHITECTURAL ASSISTANT** (male or female) required in Architect's Department of London Brewery Company. Must be good draughtsman. Write, stating age, experience, salary required, Box 3184. 3184

**J. D. & B. Y. TETLOW, A.R.I.B.A.**, M.A.M.T.P.I., 1, The Priory, Lichfield, have vacancies for **ASSISTANT ARCHITECTS**, preferably school-trained with two years' experience. Planning qualification an advantage. Young and busy practice ranging from dog kennels to factories, and from Hull to Torquay. Salary £650-£750. 3205

**VACANCY** occurs in city architect's office for capable qualified **ASSISTANT** and **ASSISTANT** Intermediate standard. Salaries in accordance with experience. Box 3193. 3193

**ARCHITECTURAL ASSISTANT**, Intermediate R.I.B.A., or recently qualified; office experience essential; some knowledge of quantities, urgently required for country practice, North of Scotland. Salary £450-£500 per annum. Box 3289. 3289

**ASSISTANT ARCHITECT AND ARCHITECTURAL ASSISTANT** required. Write stating experience, etc., to Richard Brown, 123, Victoria Road, Darlington. 3195

**INTERMEDIATE STANDARD ASSISTANTS** required. Interesting contemporary work. Five day week. £550 per annum. Good draughtsmanship essential. Write or telephone for appointment Edward D. Mills, F.R.I.B.A., 15, Carlisle Street, London, W.1. Gerrard 8306-6. 3197

**ARCHITECTURAL ASSISTANTS** required, from 2nd Year to Intermediate Standard R.I.B.A. for Housing and Estate work in West End Office. Salary £300 to £450 p.a. according to qualifications and experience. Good prospects for advancement. Apply Mr. Young, Percy Bilton Ltd., 113, Park Street, London, W.1. Mayfair 6240. 3218

**THE Architects' Journal Research Board** invites applications for a **FELLOWSHIP** which will enable the holder to work on the following: Information for the architect: what does he need and where will it come from. The value of the Fellowship, which is tenable for a year, or some less period by arrangement, is £1,000, plus certain expenses. The holder for 1956 will work full-time at the Architectural Association, London, under the direction of a Research Board consisting of architects engaged in research and practice. He will be expected to visit various research establishments and architects' offices. The Fellowship is open to anyone in the English-speaking world who has completed a course qualifying him (or her) for registration as an architect, and has had three or more years' practical experience after qualifying. The study itself is concerned only with British architectural practice. Further details and application forms are obtainable from the Secretary, Research Board, The Architects' Journal, 9, Queen Anne's Gate, London, S.W.1. Last date for the receipt of applications is November 14, 1955. 909

**EAST ANGLIAN** Architect has vacancy (with prospects) for qualified **SENIOR ASSISTANT**. Details of experience and salary required to Box 3325. 3325

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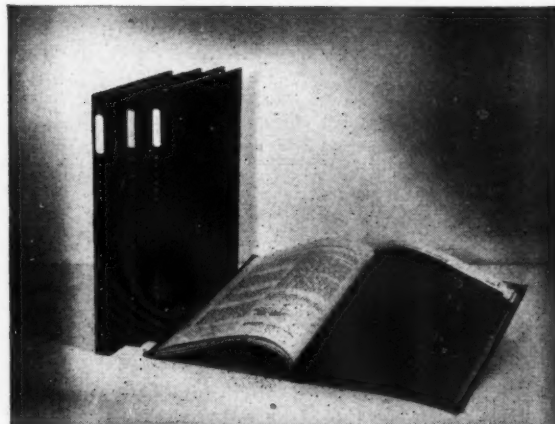
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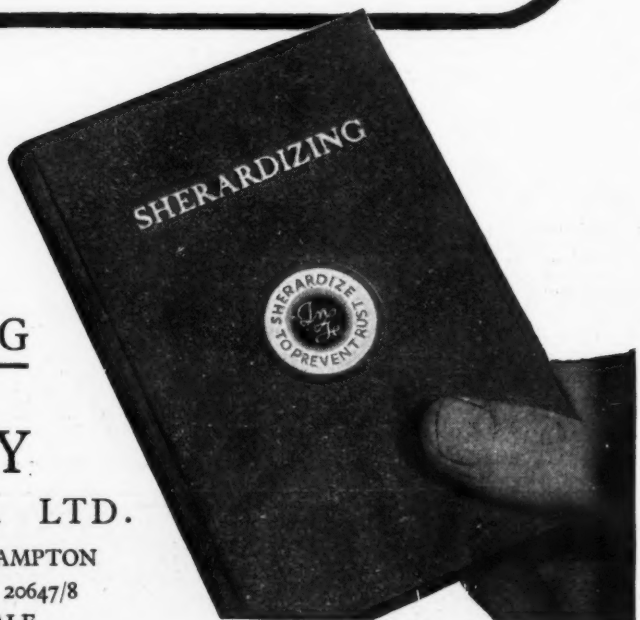
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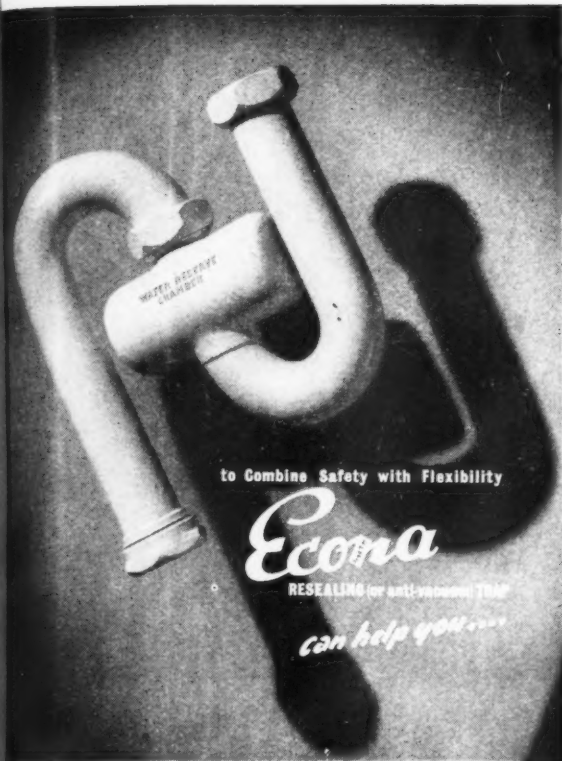
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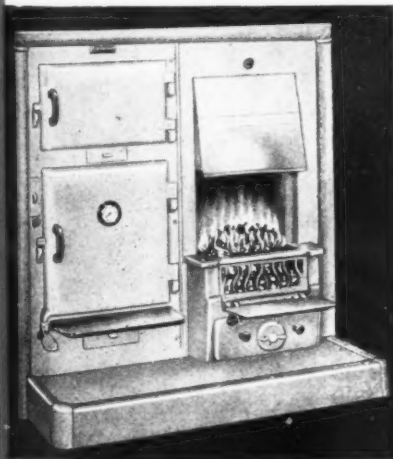
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