

THE ARCHITECTS' JOURNAL

FINE ARTS



Standard contents

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

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Wanted and Vacant

No. 3409]

[Vol. 132

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★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their full address and telephone numbers. The glossary is published in two parts—A to I one week, I 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.: J.H.Holden, College of Art, Cavendish Street, Manchester 15 | |
| ABS | Architects' Benevolent Society. 66, Portland Place, W.1. | Langham 5533 |
| ABT | Association of Building Technicians. 156, Waterloo Road, S.E.1. | Waterloo 5427 |
| ACGB | Arts Council of Great Britain. 4, St. James's Square, S.W.1. | Whitehall 9737 |
| ADA | Aluminium Development Association. 33, Grosvenor Street, W.1. | Mayfair 7501/8 |
| ARCUK | Architects' Registration Council. 68, Portland Place, W.1. | Langham 5861 |
| BAE | Board of Architectural Education. 66, Portland Place, W.1. | Langham 5721 |
| BC | Building Centre, 26, Store Street, Tottenham Court Road, W.C.1. | Museum 5400 |
| BCC | British Colour Council. 13, Portman Square, W.1. | Welbeck 4185 |
| BCCF | British Cast Concrete Federation. 105, Uxbridge Road, Ealing, W.5. | Ealing 9621 |
| BCIRA | British Cast Iron Research Association. Alvechurch, Birmingham | Redditch 716 |
| BDA | British Door Association. 10, The Boltons, S.W.10. | Fremantle 8494 |
| BE | Building Exhibition. 11, Manchester Square, W.1. | Hunter 1951 |
| BEDA | British Electrical Development Association, 2 Savoy Hill, W.C.2. | Temple Bar 9434 |
| BIA | British Ironfounders' Association. 145, Vincent Street, Glasgow, C.2. | Glasgow Central 2891 |
| BID | Building Industries Distributors. 52, High Holborn, W.C.1. | Chancery 7772 |
| BINC | Building Industries National Council. 11, Weymouth Street, W.1. | Langham 2785 |
| BOT | Board of Trade. Whitehall Gardens, Horseguards Avenue, Whitehall, S.W.1. | Trafalgar 8855 |
| BRS | Building Research Station. Bucknalls Lane, Watford. | Garston 4040 |
| BSA | Building Societies Association. 14, Park Street, W.1. | Mayfair 0515 |
| BSI | British Standards Institution. British Standards House, 2, Park St., W.1. | Mayfair 9000 |
| CABAS | City and Borough Architects Society. C/o S. A. G. Cook, A.R.I.B.A., Borough Architect and Director of Housing, Town Hall, High Holborn, W.C.1. | Holborn 3411 |
| CAS | County Architects' Society. C/o S. Vincent Goodman, F.R.I.B.A., Shire Hall, Bedford. | Bedford 67444 |
| CCA | Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1. | Belgravia 6661 |
| CDA | Copper Development Association. 55, South Audley Street, W.1. | Grosvenor 8811 |
| 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.1. | 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 |
| DIA | Design and Industries Association. 13, Suffolk Street, 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 Associations of Specialists and Sub-Contractors, 14, Bryanston Street, W.1. | Welbeck 1781 |
| FBBDO | Fibre Building Board Development Organization Ltd. (Fidor), Stafford House, Norfolk Street, W.C.2. | Covent Garden 3008 |
| FBI | Federation of British Industries. 21 Tothill Street, S.W.1. | Whitehall 6711 |
| FC | Forestry Commission. 25, Savile Row, W.1. | Regent 0221 |
| 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. 33, John Street, W.C.1. Tel.: Chancery 7583 (6 lines) | |
| FPC | The Federation of Painting Contractors, St. Stephen's House, S.W.1. | Whitehall 3902 |
| FRHB | Federation of Registered House Builders. 82, New Cavendish Street, W.1. | Langham 4341 |
| GPDA | Gypsum Plasterboard Development Association. 11, Ironmonger Lane, E.C.2. | Monarch 8888 |
| GC | Gas Council. 1, Grosvenor Place, S.W.1. | Belgravia 4321 |
| GG | Georgian Group. 2, Chester Street, S.W.1. | Belgravia 3081 |
| HC | Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1. | Whitehall 2881 |
| LAAS | Incorporated Association of Architects and Surveyors, 29, Belgrave Square, S.W.1. | Belgravia 3755 |
| ICA | Institute of Contemporary Arts. 17-18, Dover Street, Piccadilly, W.1. | Grosvenor 6186 |
| ICE | Institution of Civil Engineers. 1, Great George Street, S.W.1. | Whitehall 4577 |
| IEE | Institution of Electrical Engineers. Savoy Place, Victoria Embankment, W.C.2. | Covent Garden 1871 |
| IES | Illuminating Engineering Society. 32, Victoria Street, S.W.1. | Abbey 5215 |
| IGE | Institution of Gas Engineers. 17, Grosvenor Crescent, S.W.1. | Sloane 8266 |
| IHVE | Institution of Heating and Ventilating Engineers. 49, Cadogan Square, S.W.1. | Sloane 1601/3158 |
| IIBDID | Incorporated Institute of British Decorators and Interior Designers. 37, Soho Square, W.1. | Gerrard 5056 |

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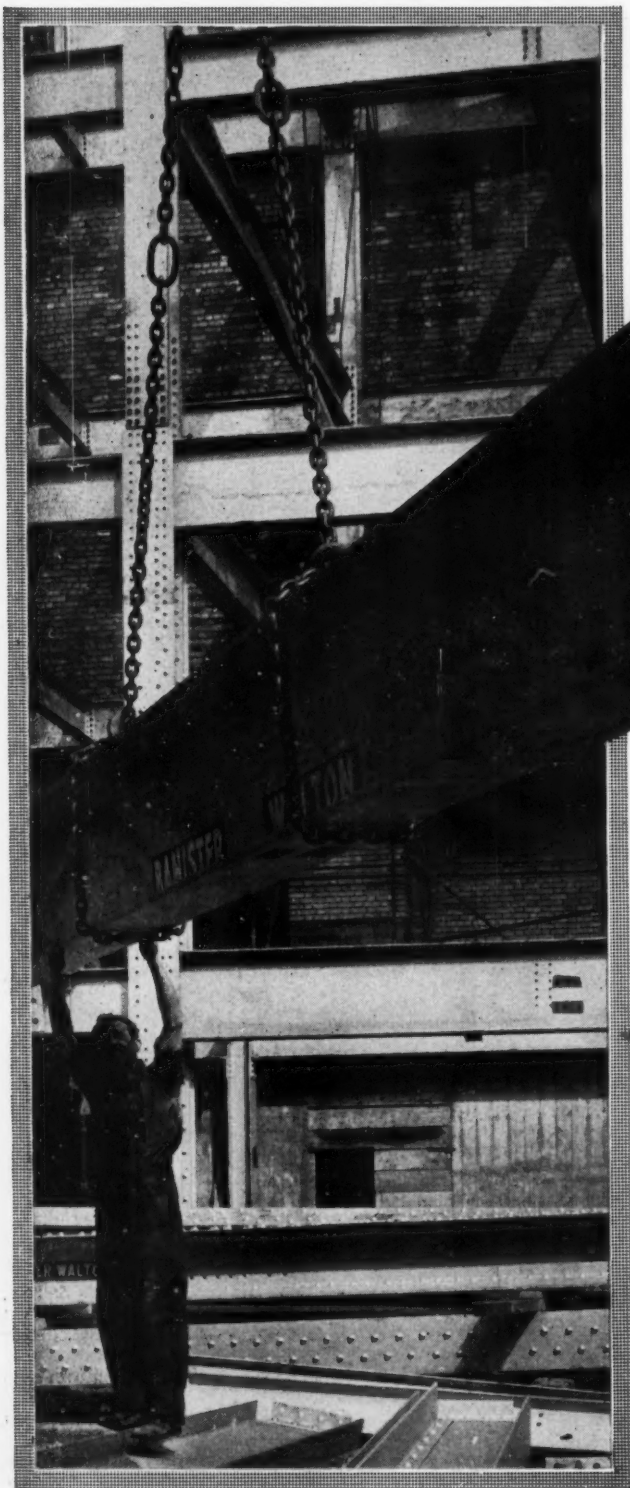
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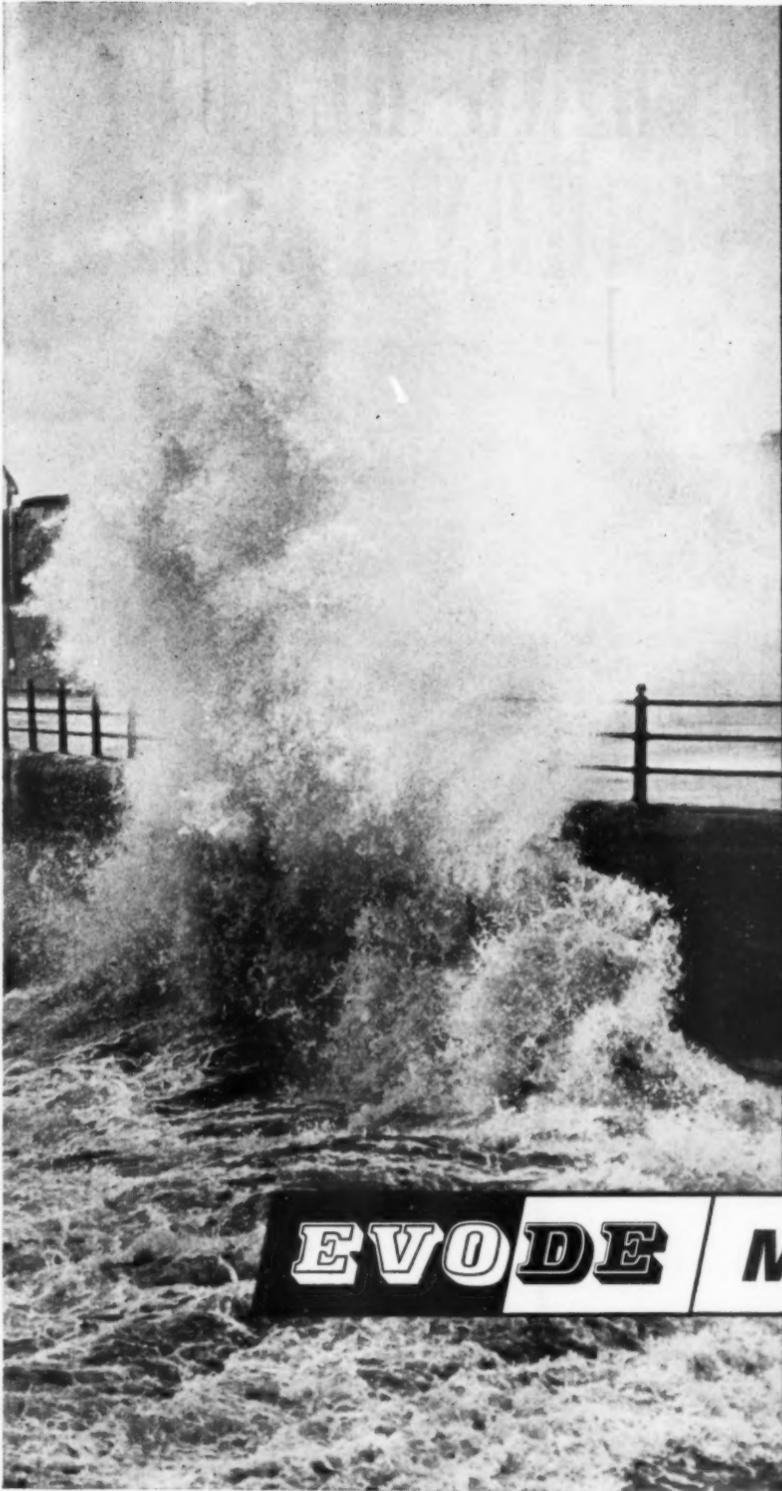


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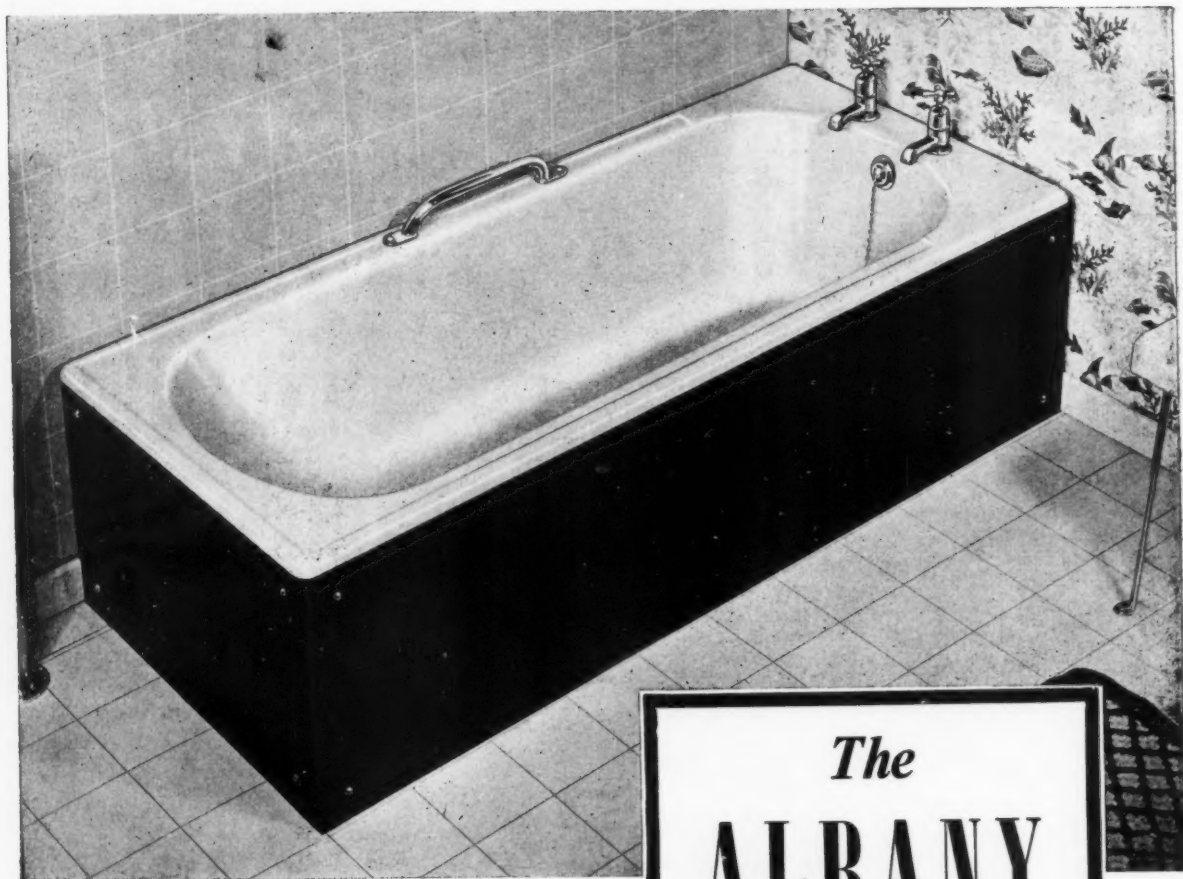
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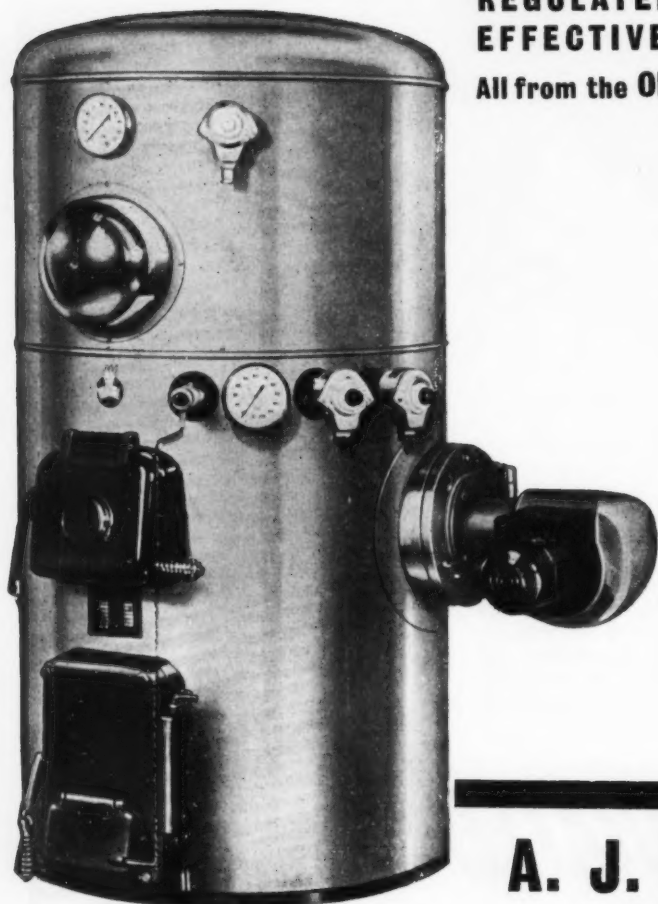
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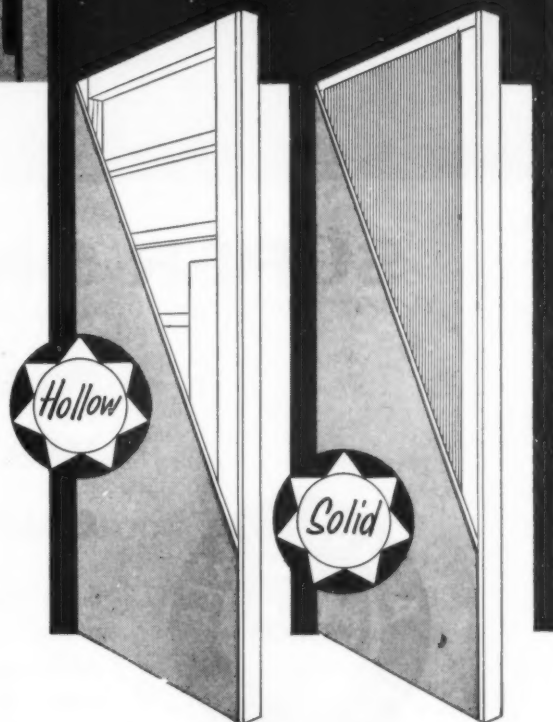
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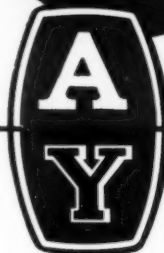
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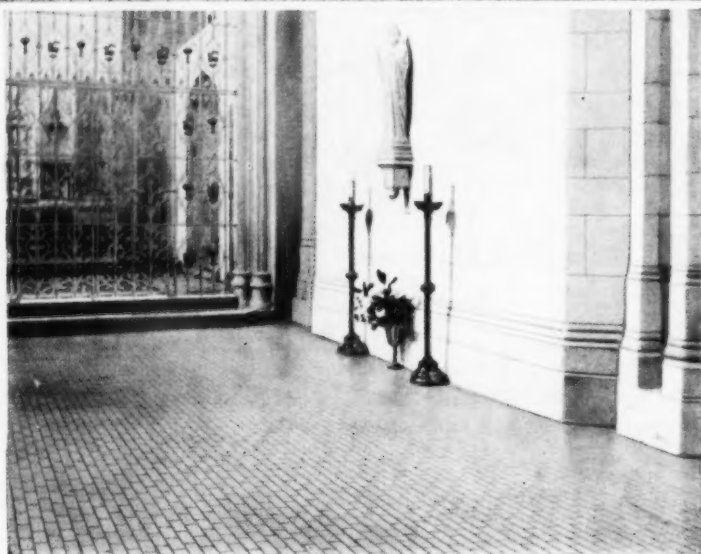
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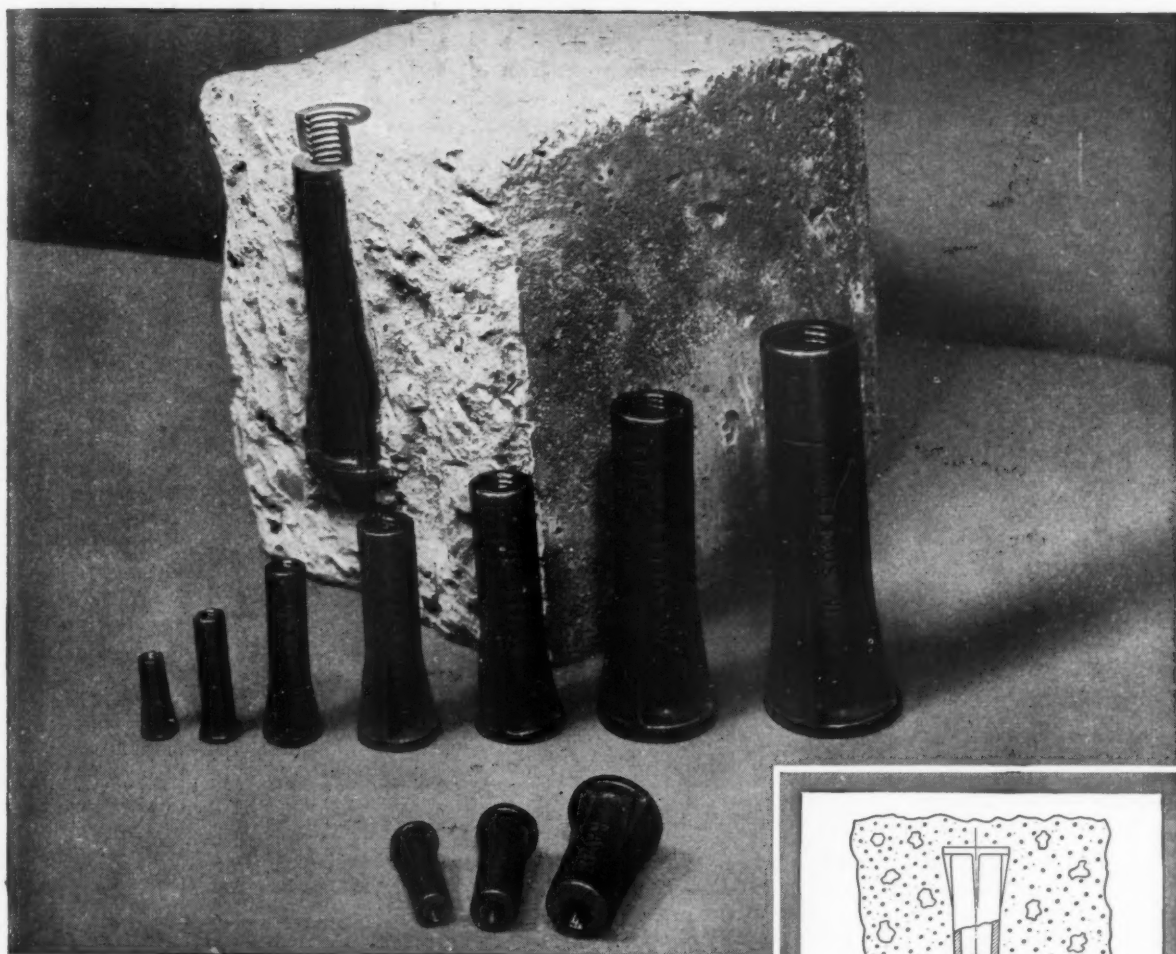
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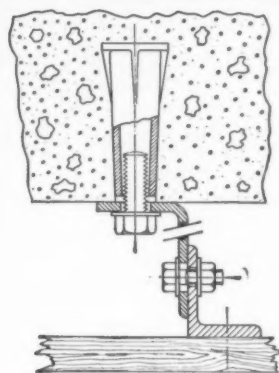
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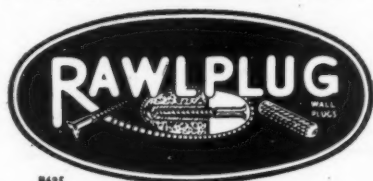
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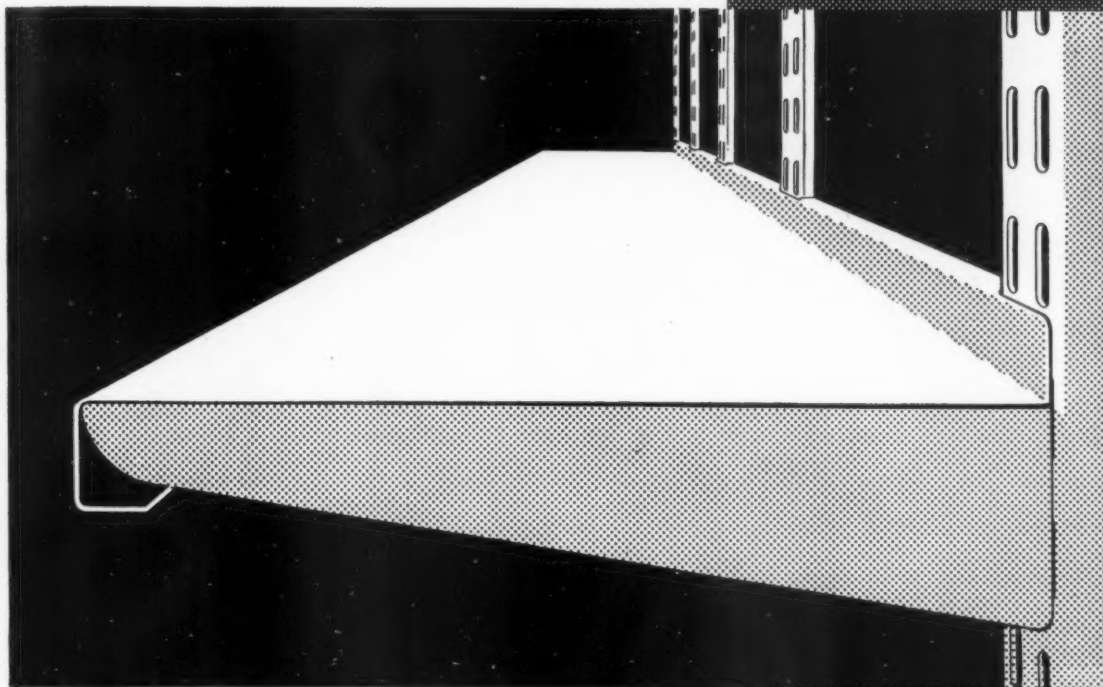


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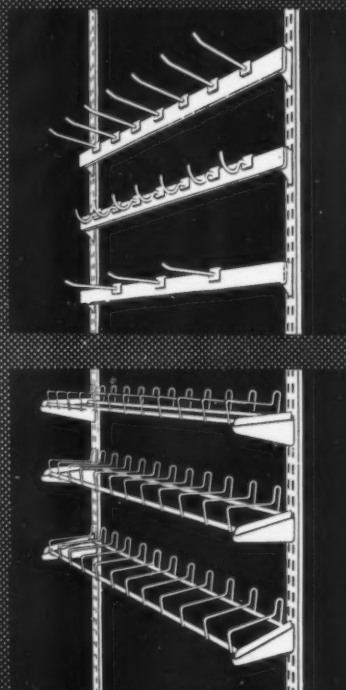
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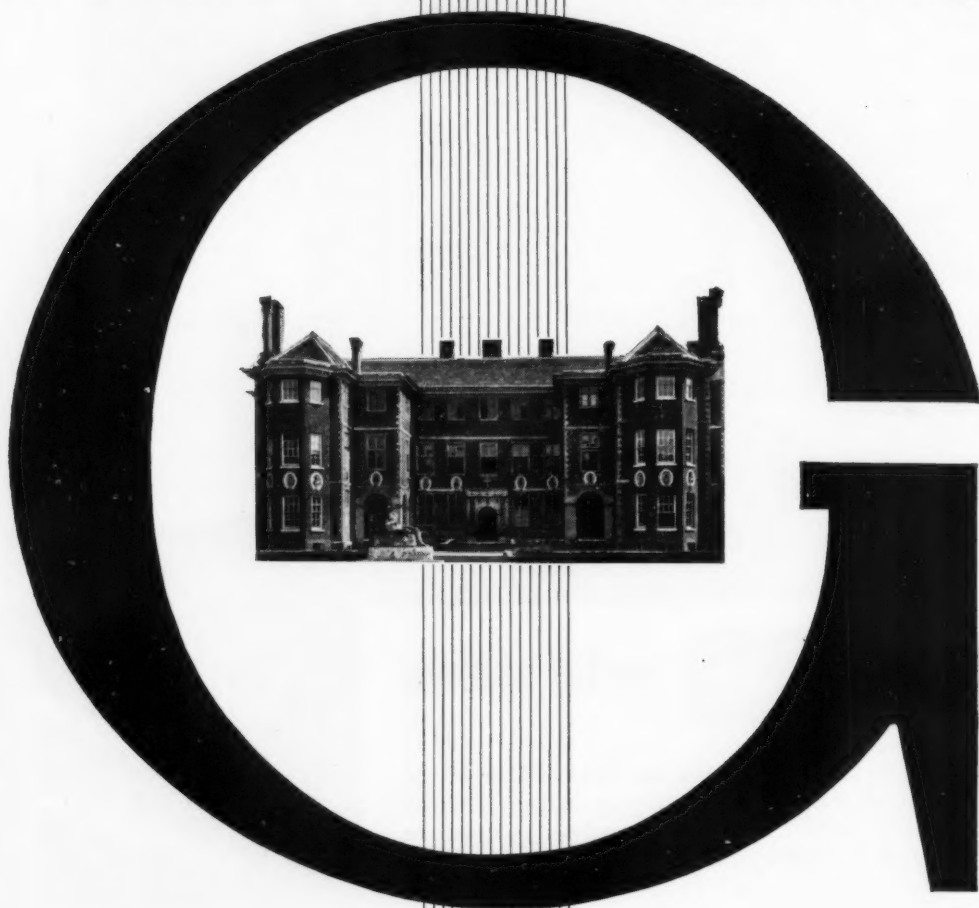
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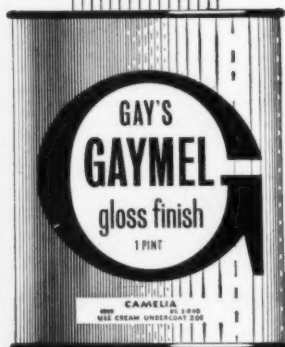
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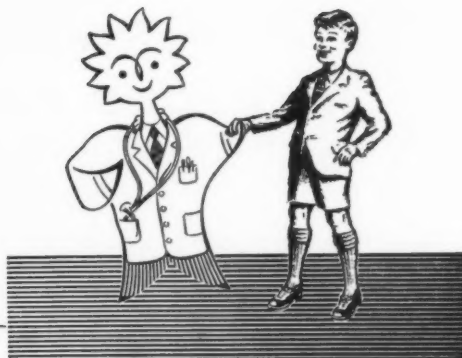
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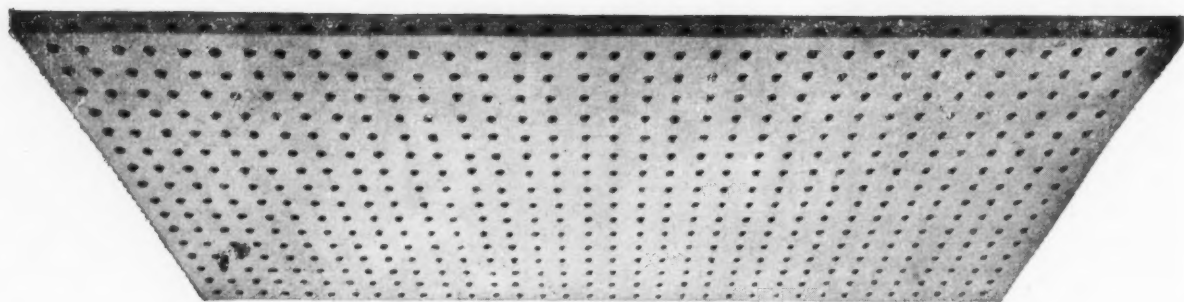
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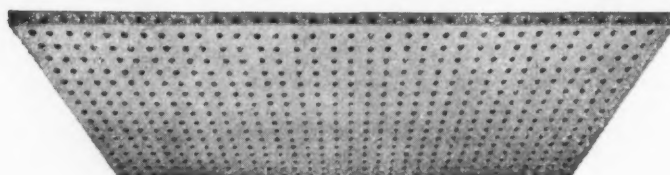
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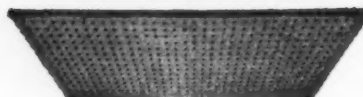
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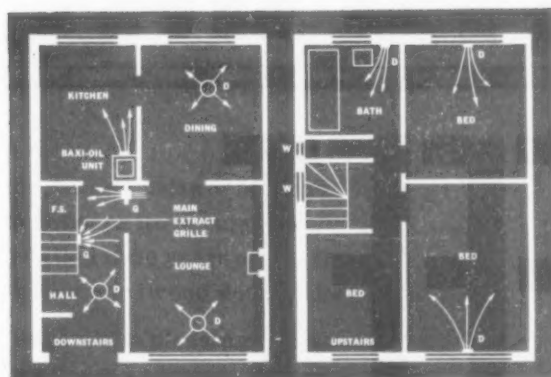
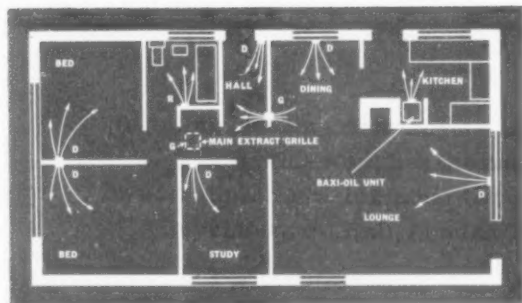
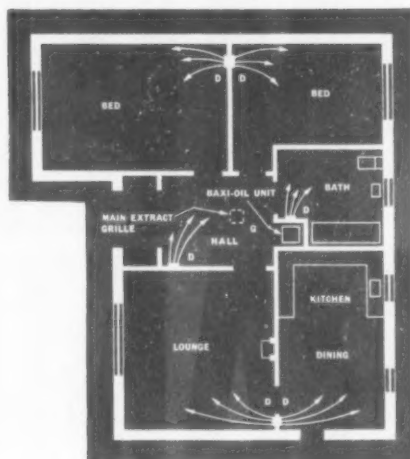
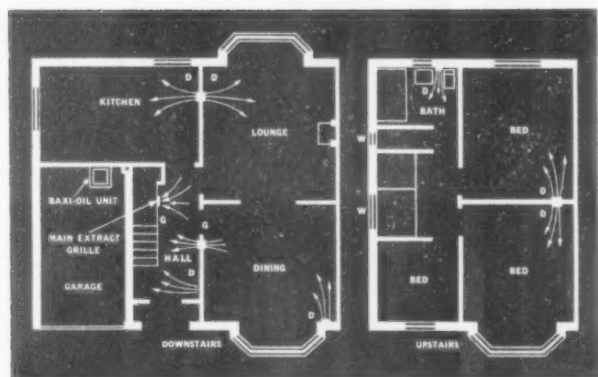
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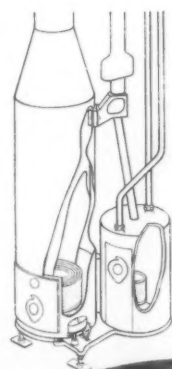
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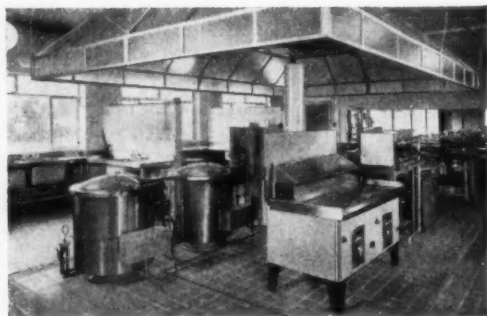
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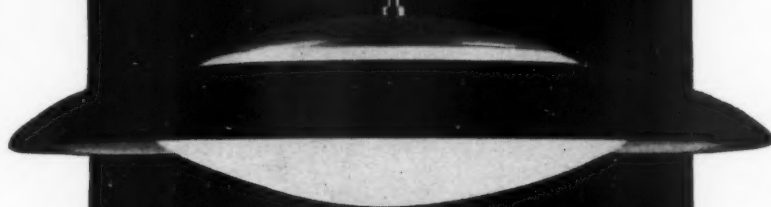
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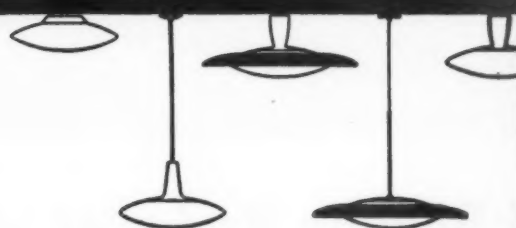


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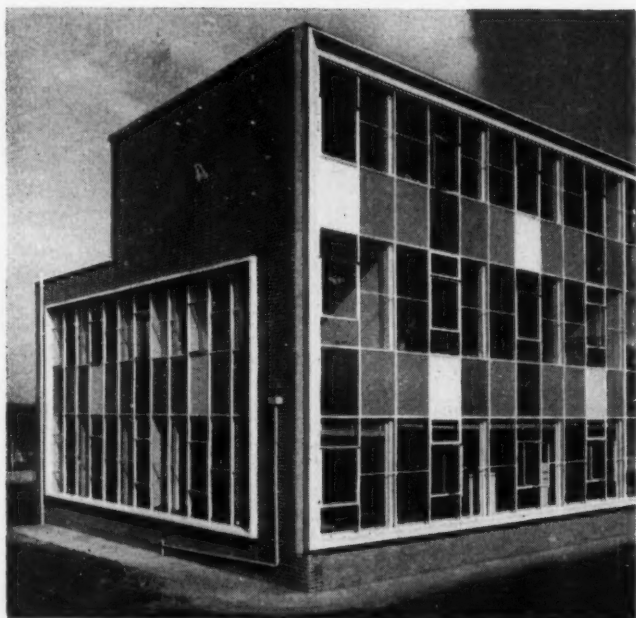
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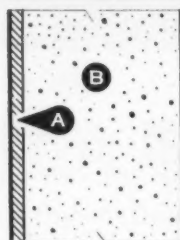
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The graphic features a large, stylized 'A' shape in the background. At the top of the 'A' is a circular logo with a crown and the letters 'SCA'. Below the logo, the word 'ESCABOARD' is written in a large, bold, sans-serif font. Underneath the word, a group of people in mid-20th-century attire are shown in silhouette, some pointing upwards. At the bottom of the graphic, the text '-AN IMMEDIATE SUCCESS' is written in a bold, sans-serif font.

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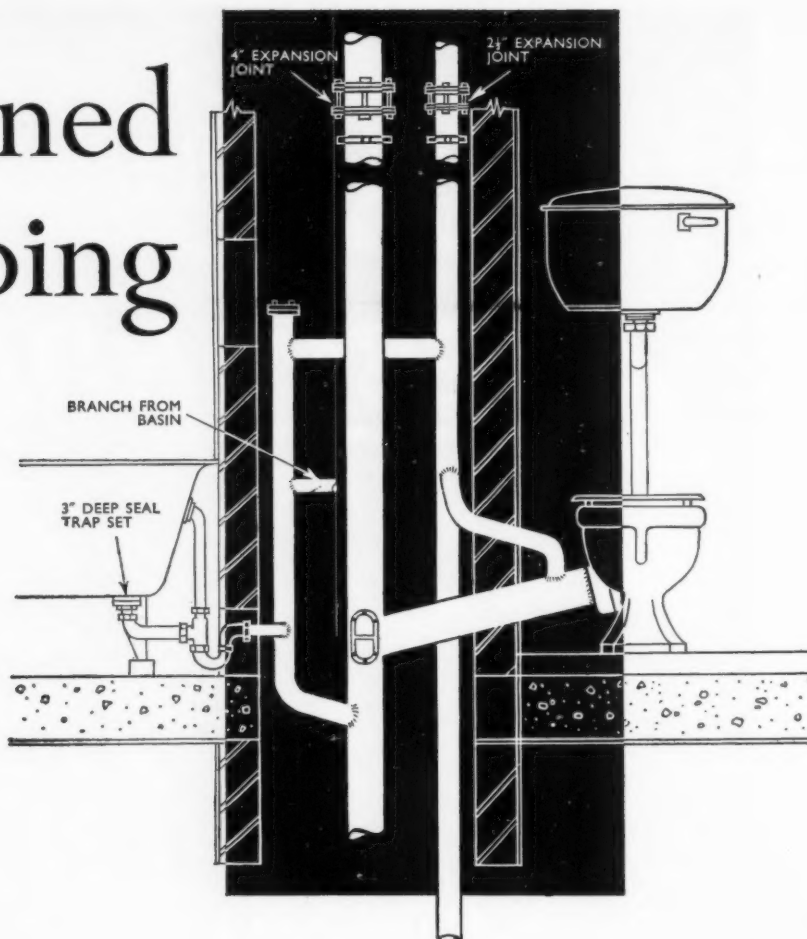


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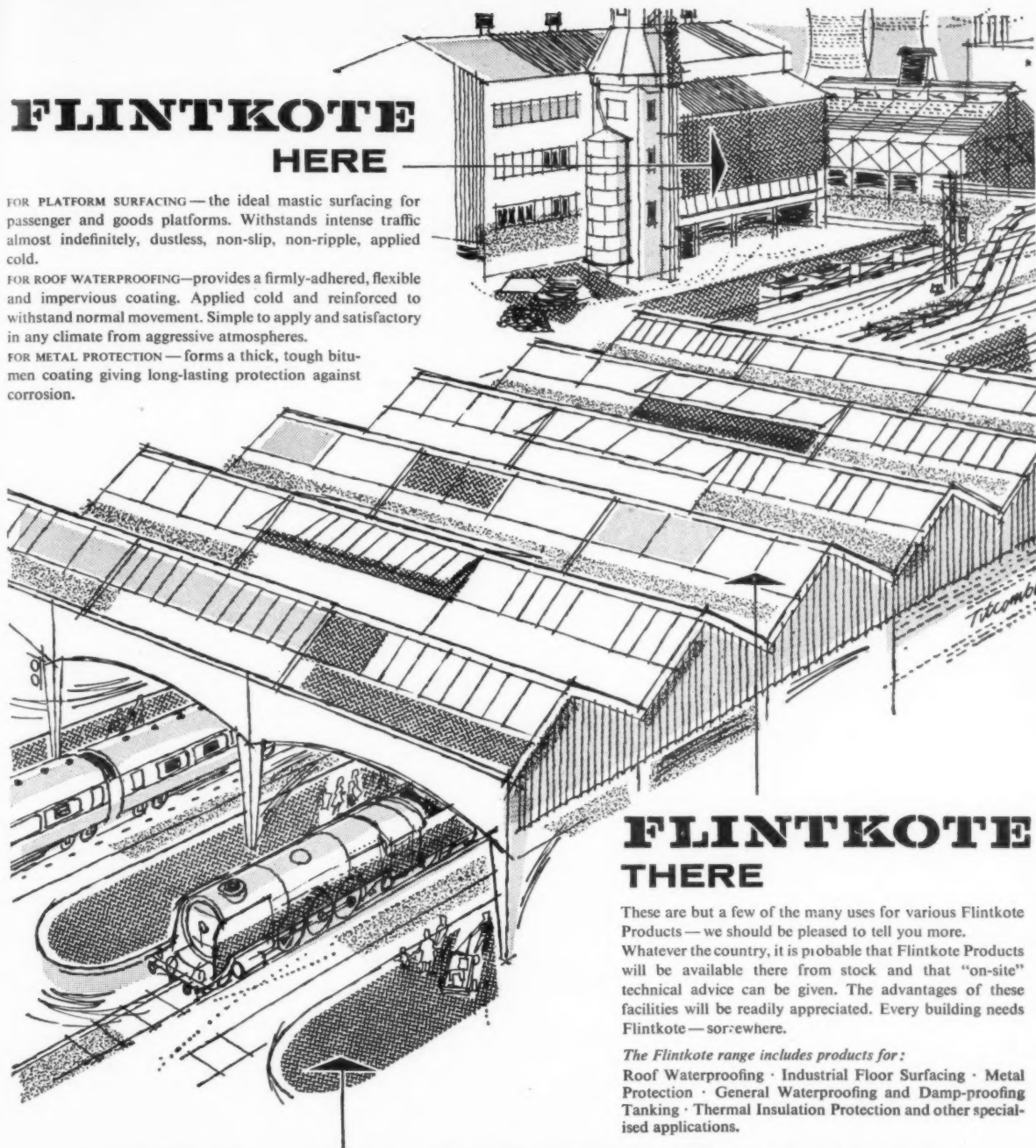
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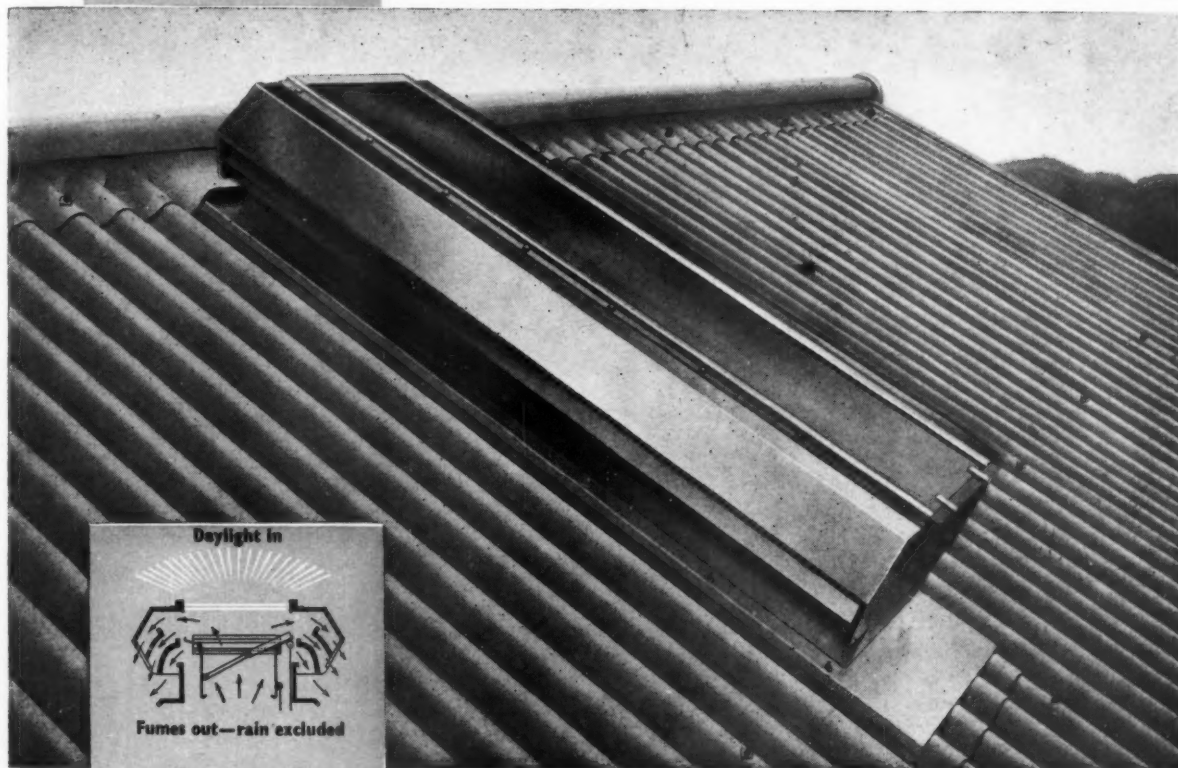
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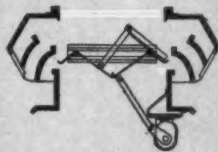
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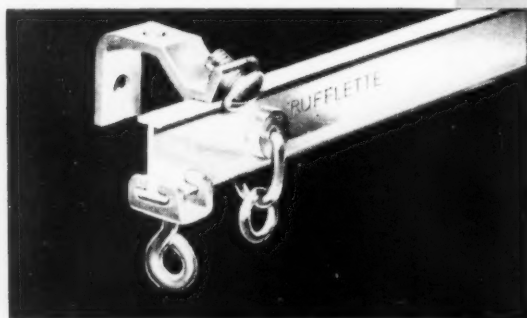
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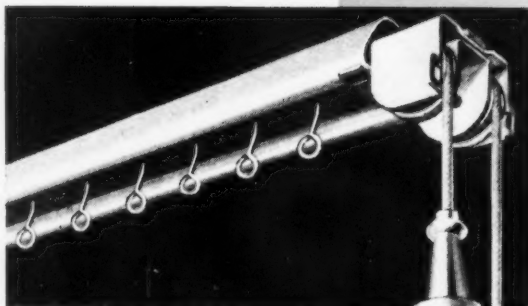
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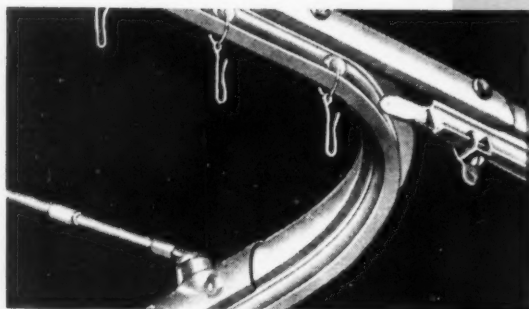
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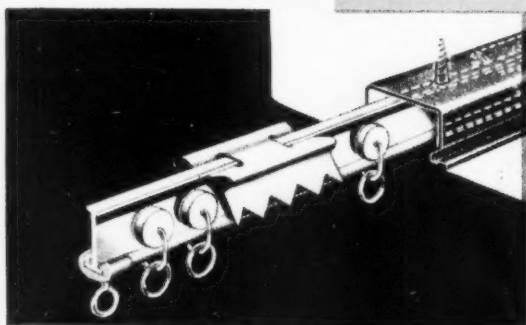
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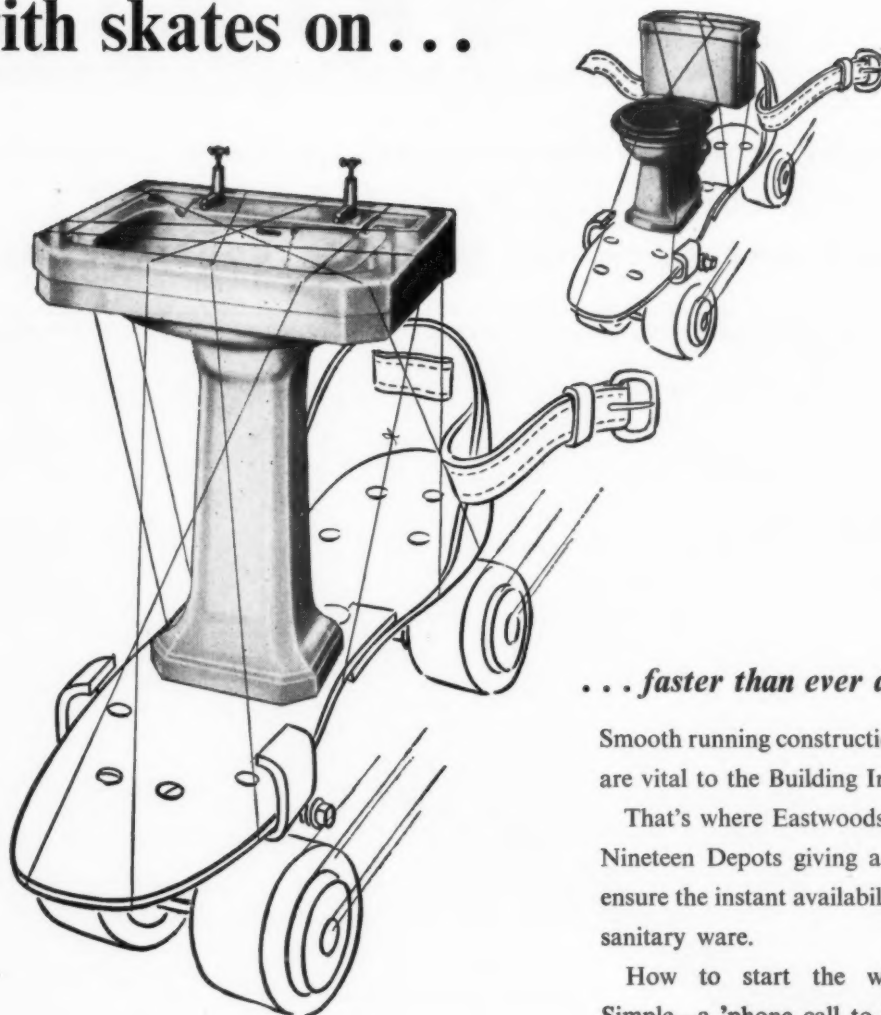
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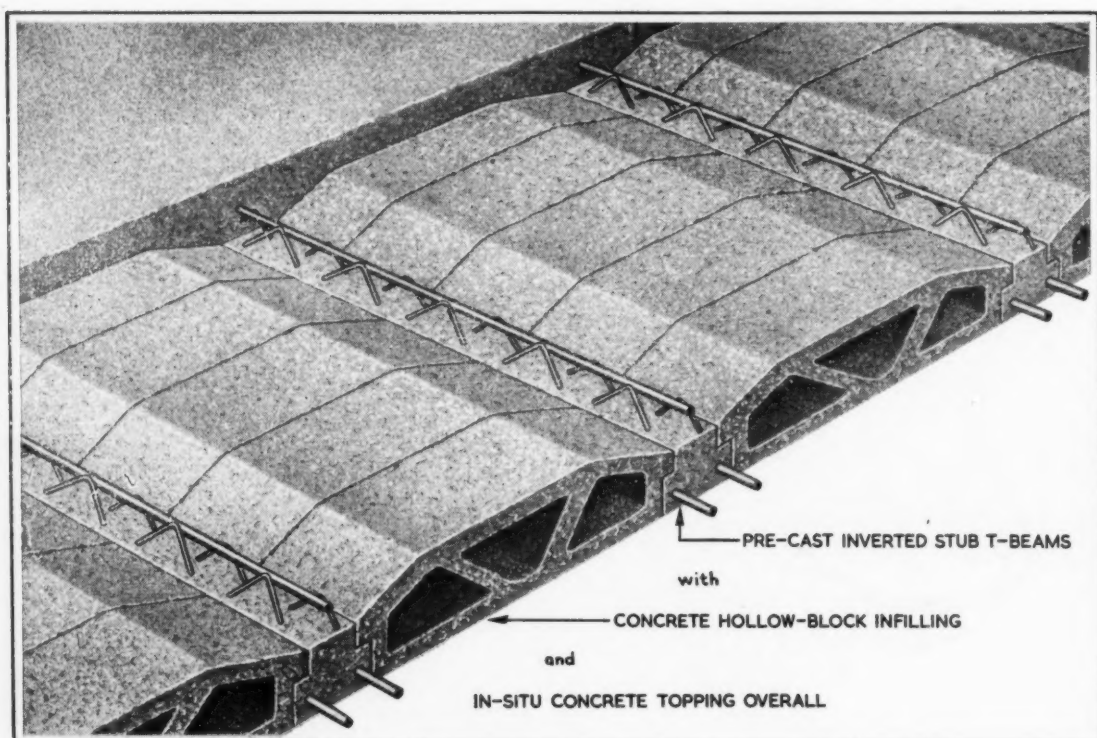
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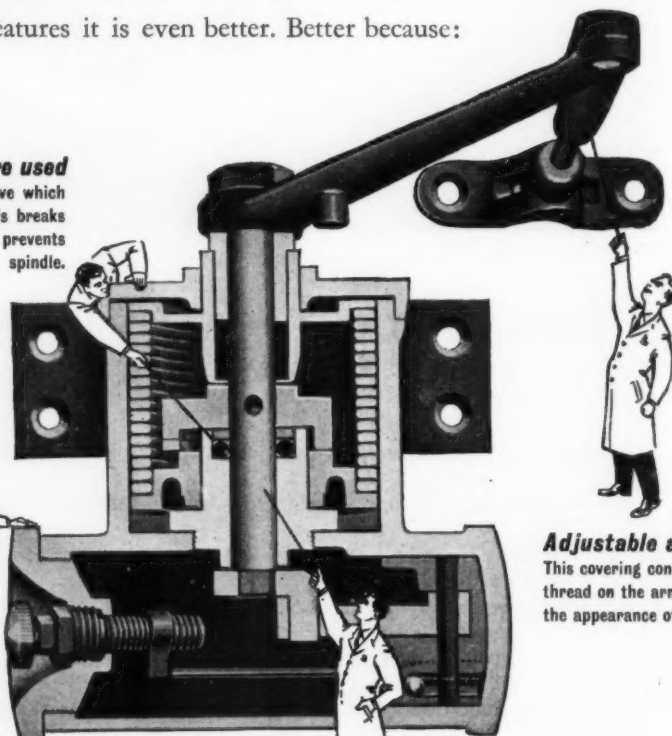
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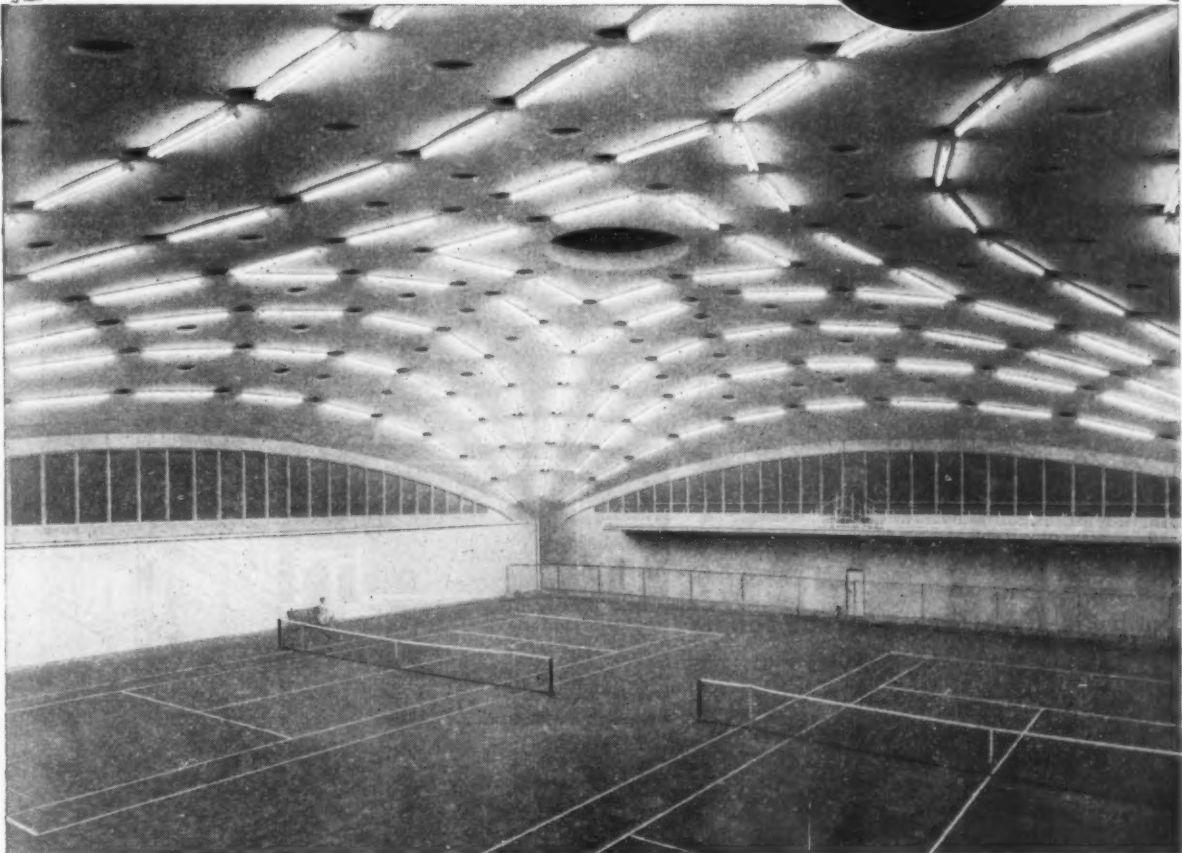
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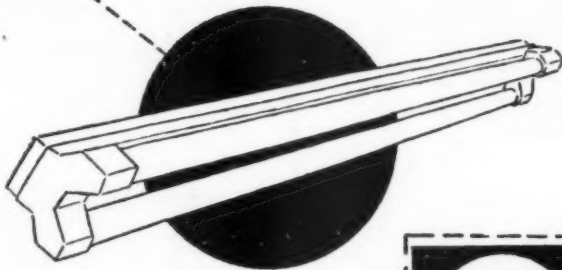
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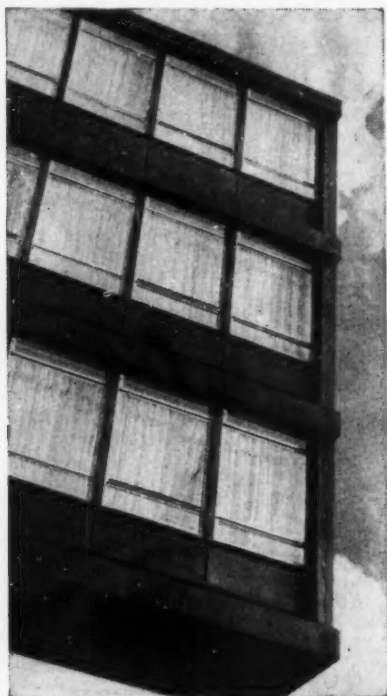
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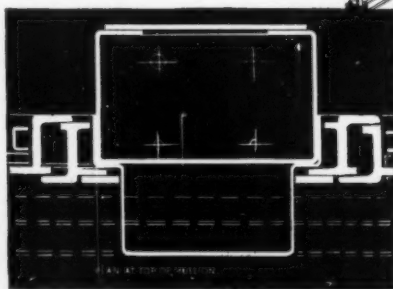
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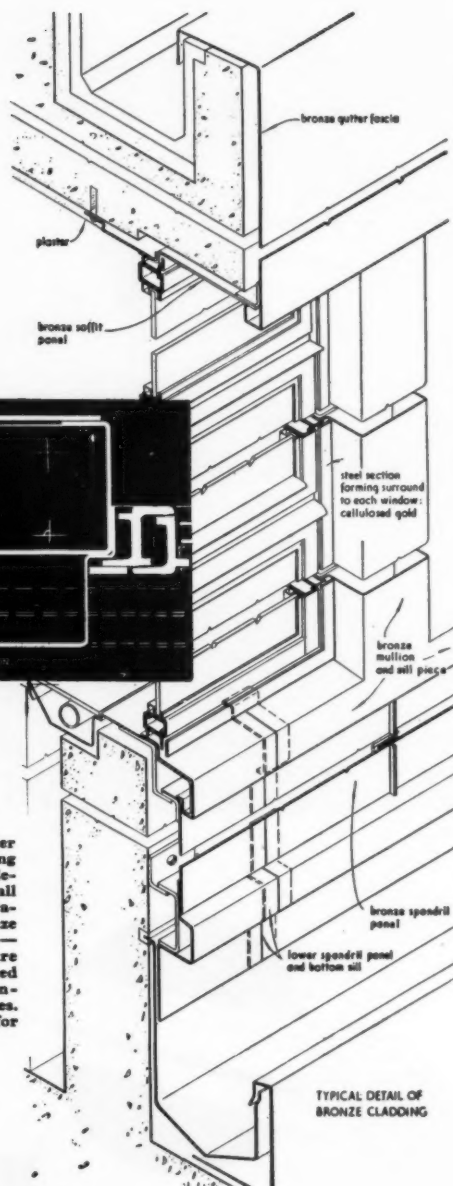
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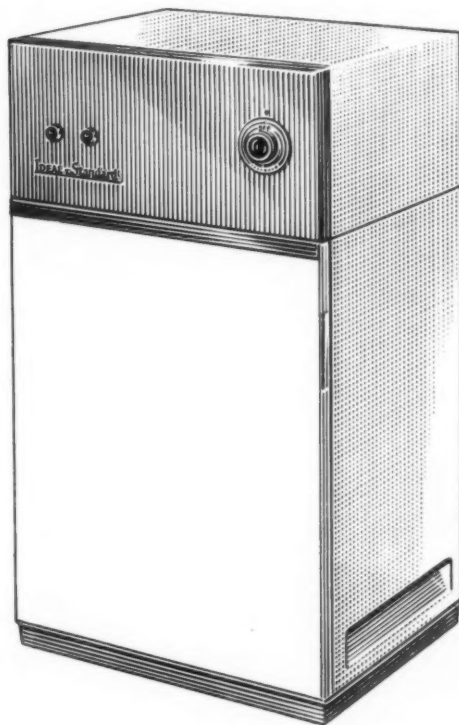


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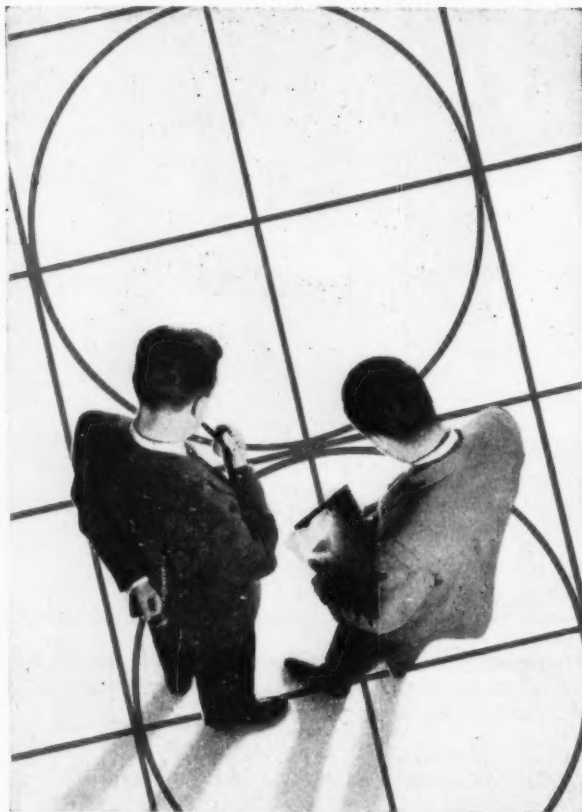
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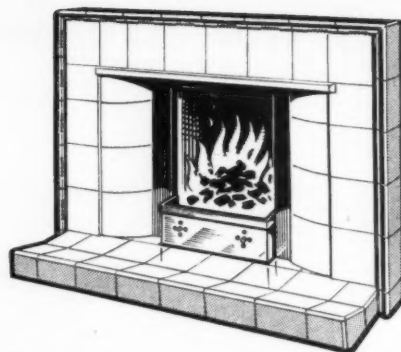
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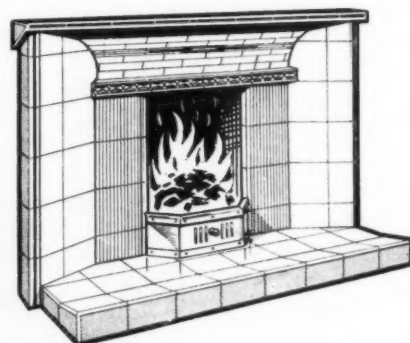
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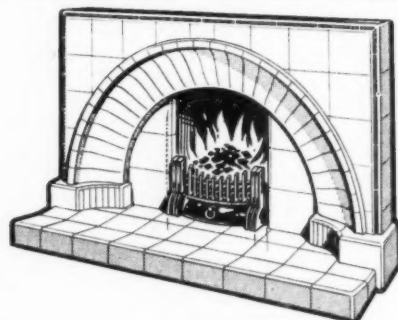
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CELSIUS

[188]

celsius See THERMOMETER (person)

celt 1. *n.*, chisel-edged prehistoric tool (imaginary L.)

celt 2. *n.*, (*pl.*) peoples speaking or having spoken languages akin to that of the Gauls (Bretons, Cornish, Welsh, Irish, Manx, Gaels) (*sing.*) member of such people.

celtic (*adj.*; -ically) of the Cc. (Celtic fringe, the Scots, Irish, Welsh and Cornish, in relation to the U.K.) (*n.*) the Celtic language, celticism, celtomania, celtomaniac, celtophobe, celtophobia, *nm.* (L. Celta)

cement 1. *n.*, Substance made by calcining lime and clay, applied as paste and hardening into stony consistence, and used as material for floors and walls and tanks or as mortar: TUNNEL C. is particularly strong, rapid hardening, weather resistant c. Best C. see The Tunnel Portland Cement Company Limited, 105 Piccadilly, London W.1. GROsvenor 4100.

cement 2. *v.t.* Apply c. to, line or cover with c., unite (as) with c. To C. for best results see TUNNEL

cemetery *n.*, Burial ground other than churchyard (Gk. Koimao, put to sleep)

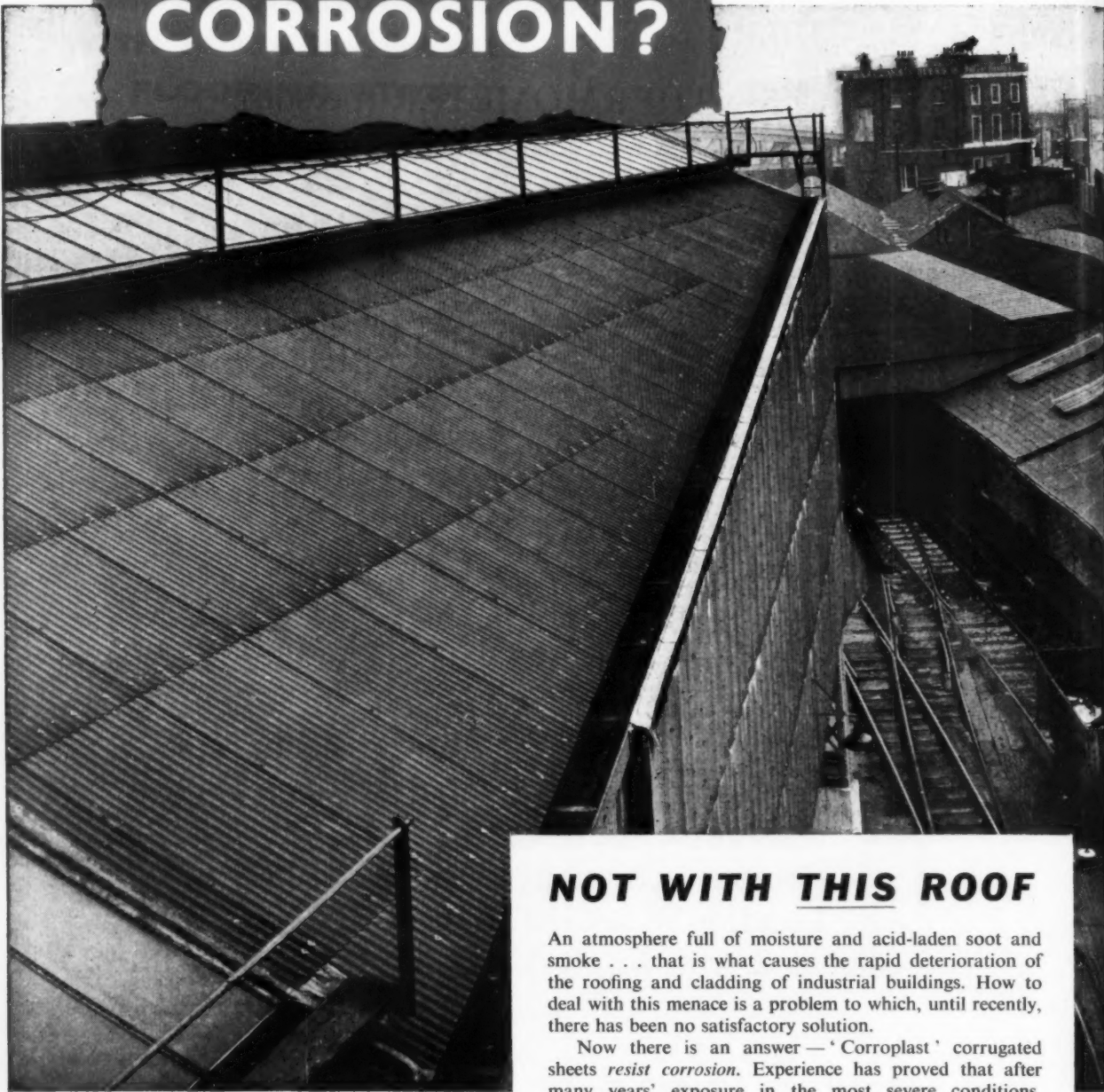
cenobite see COENOBITE

cenotaph (-ahf) *n.* Sepulchral monument to one whose remains are elsewhere.

censer *n.* Incense-burning vessel. Cense *v.t.* adore or perfume with incense (INCENSE 2)

censor 1. *n.* Ancient-Roman supervisor of census and public morals; modern official examining plays books news correspondence etc

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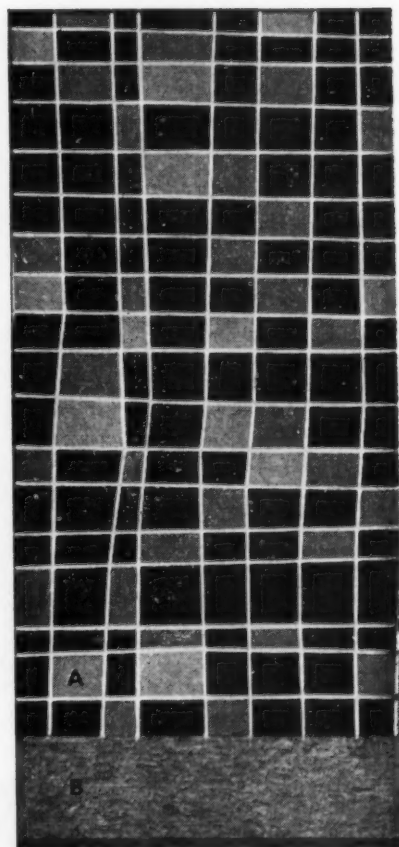
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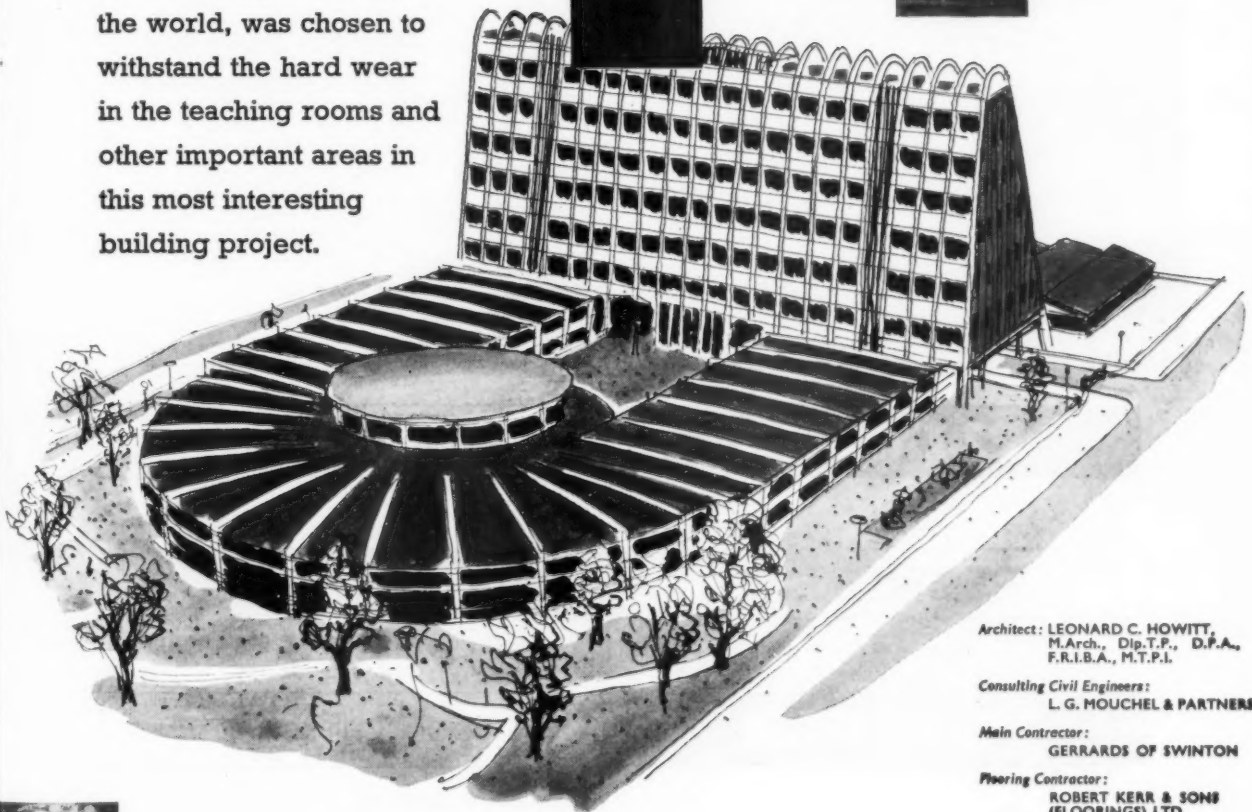
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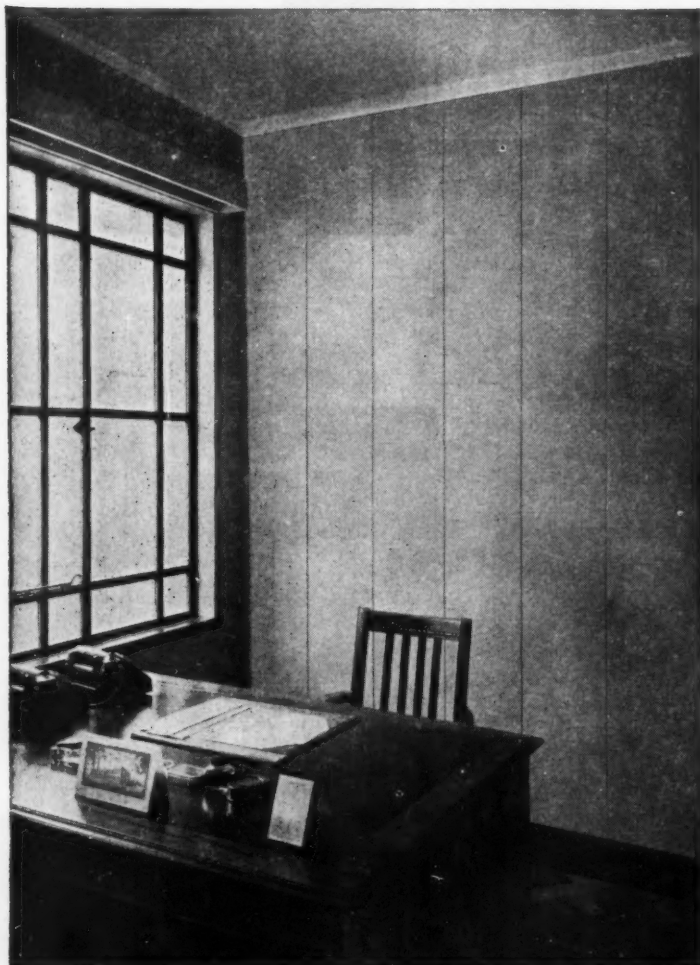
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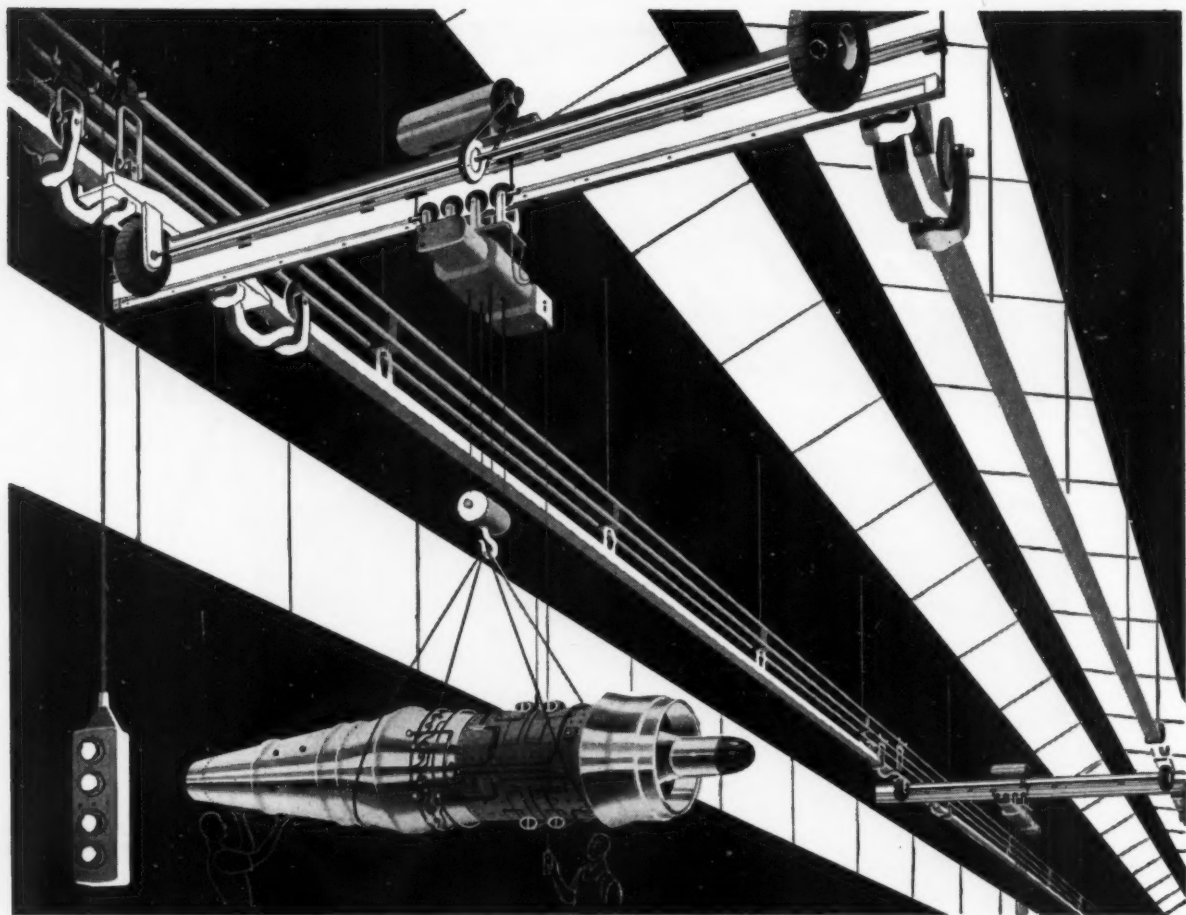
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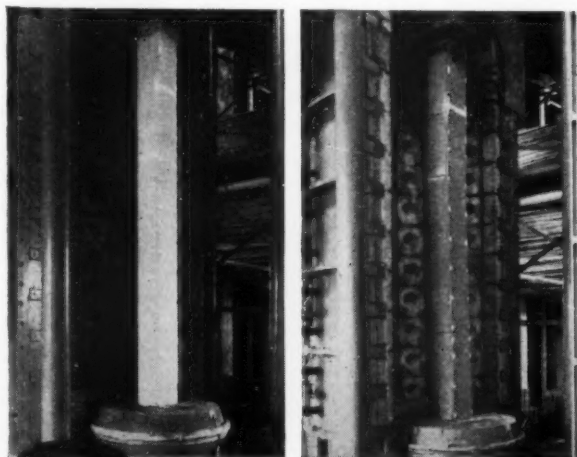
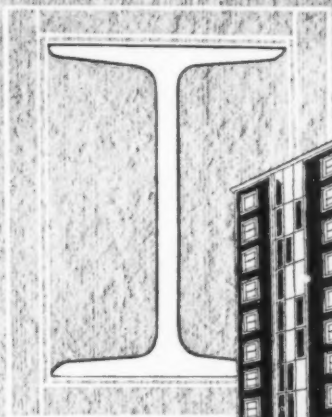
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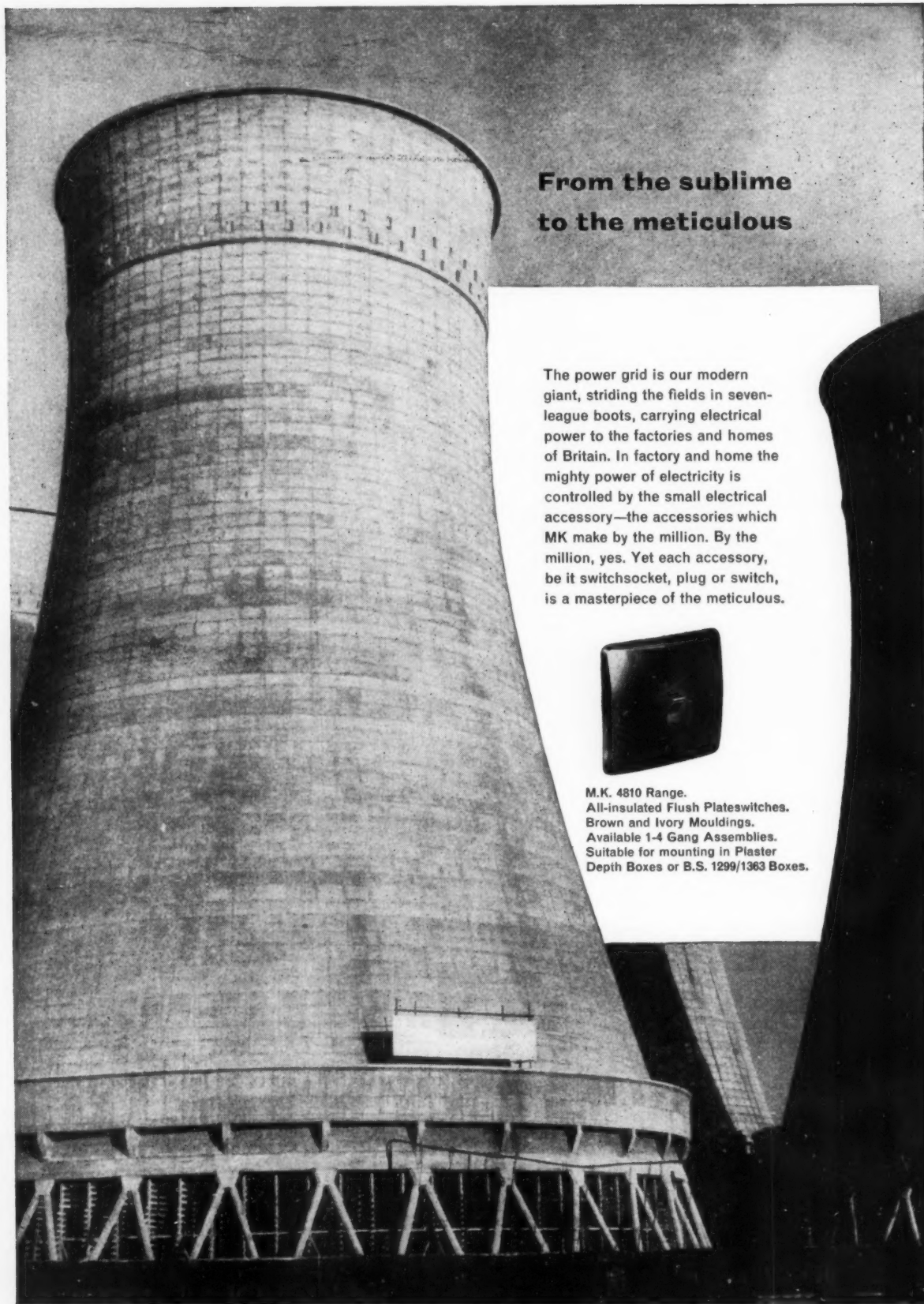
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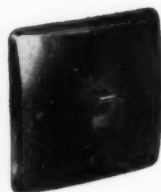
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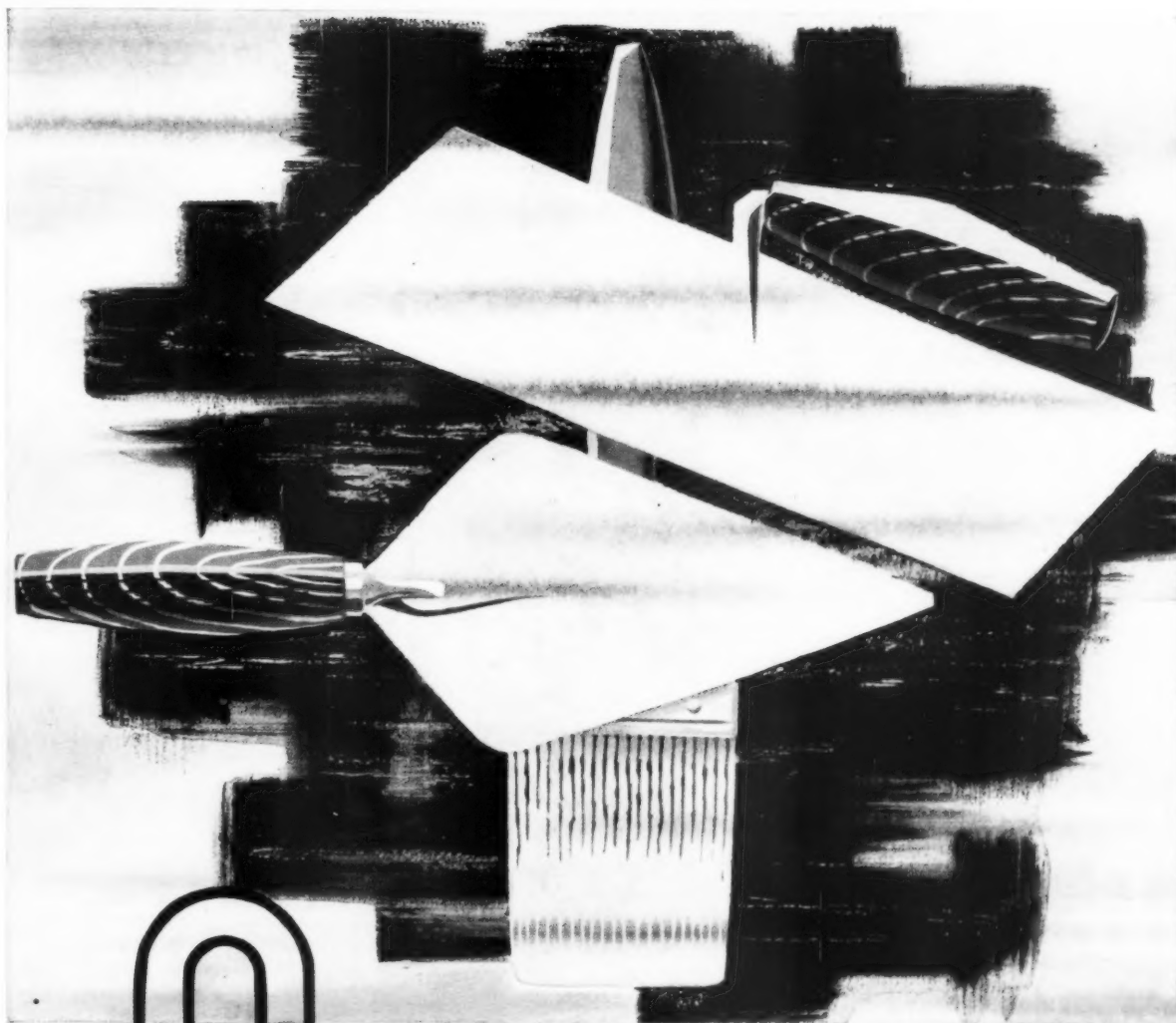
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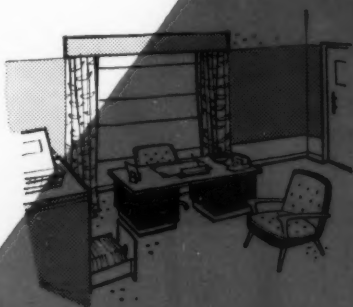
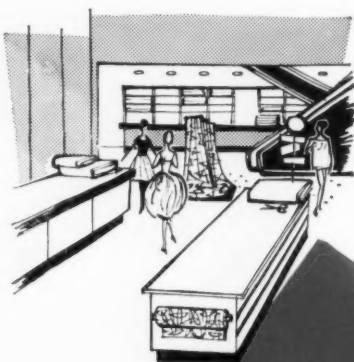
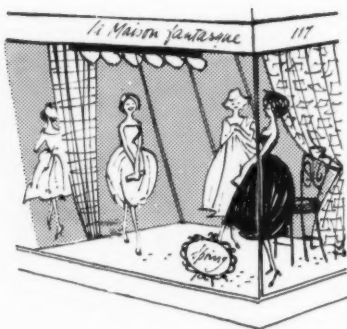
(BATH DIVISION)

28 Brook Street London W1. Tel: GRO 8941

Here's the panelling material for today's shops

POLYPANOL-H/F

It's a hard p.v.c. foil laminated to top quality hardboard



Modern shops need the modern panelling material—Polypanol-H/F. It's made by Plastics Marketing Company Limited, by laminating superior decorative p.v.c. foil to a hardboard of excellent quality. It's ideal for counter fronts and shop window linings, for wall linings and ceiling panels, for flush doors and display boards, because it offers all these outstanding advantages.

Low price • Tough, hard surface which won't easily scratch or rub off • Superb modern fast colours and delightful surface emboss • Realistic wood grain patterns available • Surface not affected by most domestic products including liquids and oils • Long life • Easy to use • Easy to clean • Flame resistant.

The Polypanol-H/F can be treated in the same way as you would normally treat the base material alone.

STANDARD SIZE ON 1" HARDBOARD BASE
8' x 4' 10' x 4' 12' x 4' 8' x 6'

There is also a light weight, semi-rigid 2mm grade of Polypanol-H/F which is particularly suitable for curved surfaces.

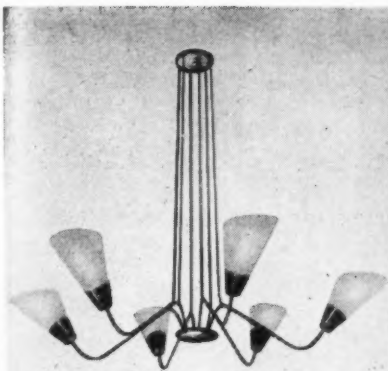
For further information about this important modern panelling material and for samples contact your local stockist or write to

POLYPANOL-H/F

PLASTICS MARKETING COMPANY LIMITED

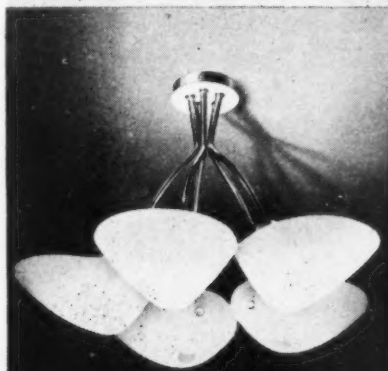
BUCKHURST AVENUE • SEVENOAKS • KENT

Phone: Sevenoaks 55187-8-9 or London CENTRAL 1465



Q 1017

A few from the FIESTA RANGE



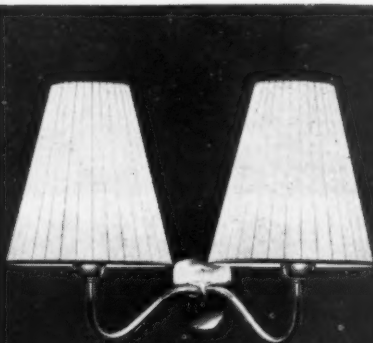
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By top British and Swiss designers, the Fiesta range with its variety and colour gives a wide choice of beautiful, well-constructed fittings to suit every style of modern interior. Write for illustrated catalogue to:

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MELTON RD., LEICESTER.



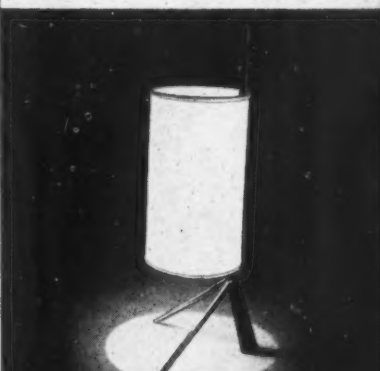
Q 1042



Q 1011



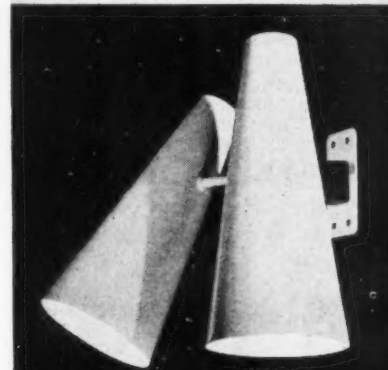
Q 1013



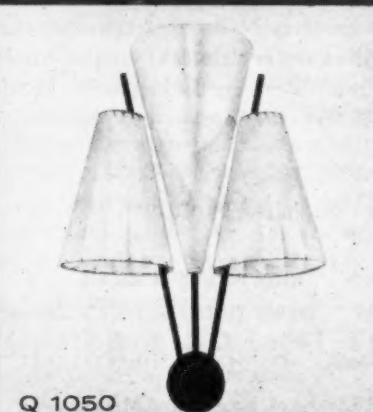
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Q 1039



Q 1045



Q 1050

A E I
Lamp and Lighting Co Ltd

M4856



**“Shouldn’t
you be in
school,
young man?”**

“Please, sir, I just wanted to see how the new hospital’s coming on, sir,”

“Well it’ll get built without you watching. Take my word for it.”

“Yes, sir, I know, sir, because Boots are building it, aren’t they, sir? And my father says it’s a jolly good thing, too. He says you can count on Boots to get every job done quickly — whether it’s building houses or factories or airfields or bridges or roads, sir. D’you think Boots are the best builders in the world, sir?”

“I think it’s time you were in school, my lad.”

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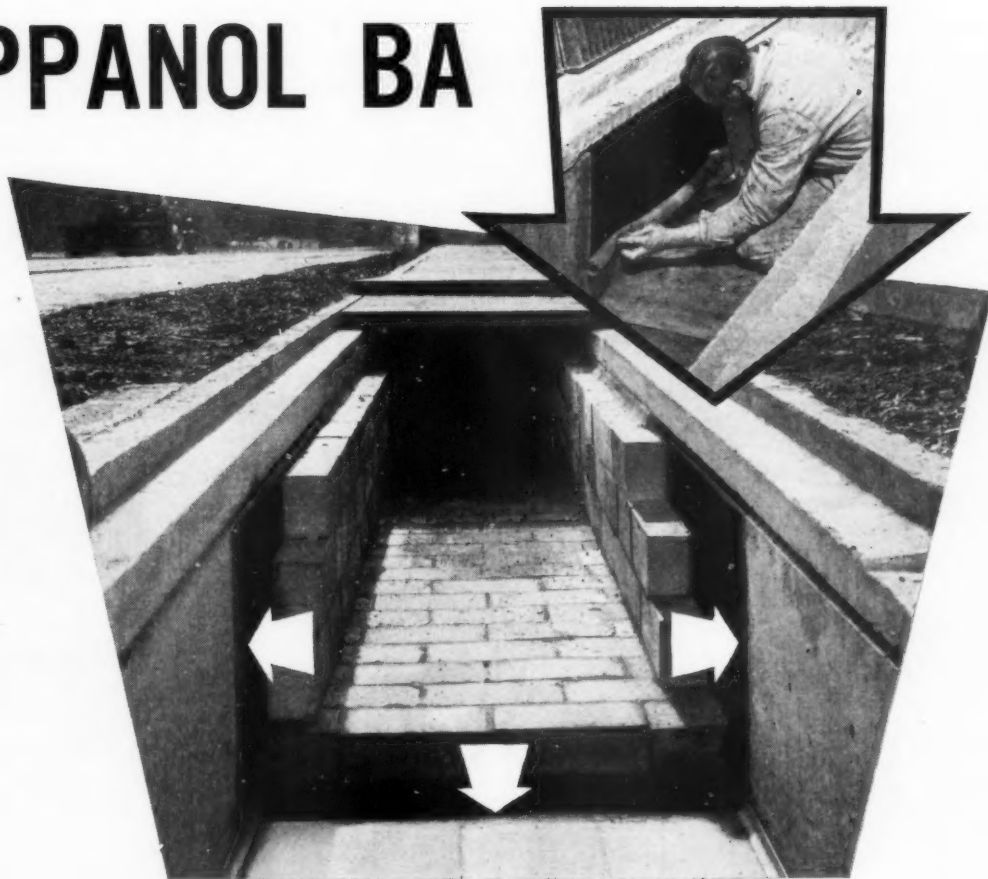
HENRY BOOT & SONS LTD., BANNER CROSS HALL, SHEFFIELD 11, Tel. 54331

Offices also at: Birmingham, Glasgow, Liverpool, London and Manchester



GA/485

$\frac{1}{2}$ mile of OPPANOL BA



speeds construction at Courtaulds Preston factory

The brickwork lining for Courtaulds new chemical effluent channel was bonded with Furane Resin cement. Until set, this cement is incompatible with water, and to wait until the newly laid concrete shell was completely dry would have held up work for weeks.

KEEPING WATER OUT Oppanol BA Plastic Sheeting was the ready made answer to this problem. A layer of this waterproof, rotproof material between brickwork and concrete provided a tough, impervious barrier... enabled the bricklayers to work close behind the concrete mixers.

KEEPING CHEMICALS IN The new channel has to carry a heavy flow of chemical effluent for more than half a mile. Non-corrodible, non-ageing Oppanol BA ensures it will do this safely, permanently.

OPPANOL PLASTIC SHEETING—gives lasting protection against acids, alkalis, water, corrosion of all kinds in floors, foundations, walls, bridges, tunnels and conduits.

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Industrial Div.,
Salford 3

HALF A HUNDREDWEIGHT SAVING

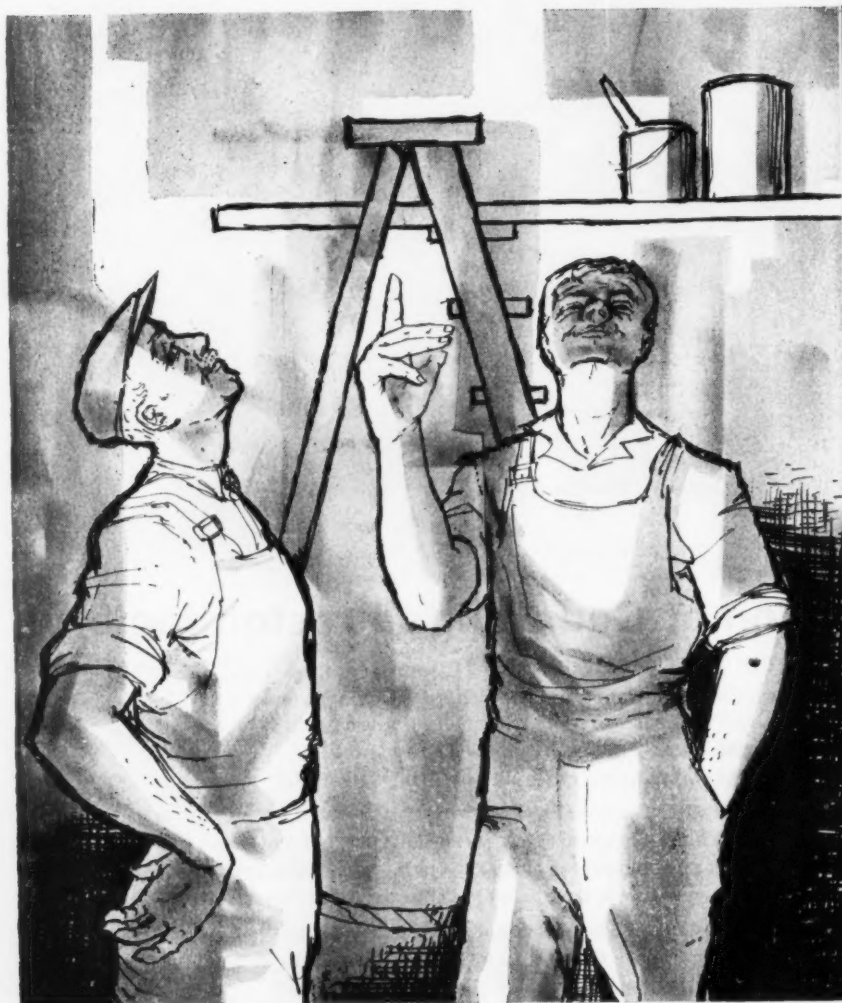
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Messrs. Joseph Webb & Co. Ltd., Building Contractors of Coseley, changed to *New Aqualine Water Paint*. Now they find that they are saving up to half a hundredweight of material per pair of houses—and getting a far better finish. For work on difficult surfaces—such as “hot” ceilings—for greater covering power and ease of application *New Aqualine* is building itself quite a reputation.

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case history



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which is easy to mix and
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Sufficient components are held by us to enable the immediate delivery and erection of Sherbourne buildings covering up to 200,000 sq. ft. Standard, obstruction-free spans range from 105ft. to 15ft. wide. Any length and height to eaves is possible. Well over 700 Sherbourne buildings have been erected for use as factories, warehouses, transport depots, offices, stores, assembly rooms, showrooms, retail premises, canteens, etc.

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City of Birmingham Corporation New Omnibus Repair Depot, designed for the Transport Committee by A. G. Sheppard Fidler, M.A., B.Arch., F.R.I.B.A., A.M.T.P.I., City Architect.



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Park Lane Improvement Scheme in progress at Marble Arch. Chief Engineer, L.C.C. J. Rawlinson, C.B.E., M. Eng., M.I.C.E., M.I., Mech., E.

serving the metropolis

Glazed vitrified clay pipes go down to serve. Naturally they are being used for the drains and sewers in the new Park Lane Improvement Scheme, now under construction. It is accepted amongst men responsible for city planning that there is no adequate substitute for the qualities of **glazed vitrified clay pipes**.

City Engineers know that the flow of traffic must be disturbed to the minimum.

They know their work will serve many generations. It must, therefore, be permanent: they use a pipe that is unaffected by anything encountered from within or without.

For information write to The Secretary

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Hanover Court, Hanover Square, LONDON, W.1.

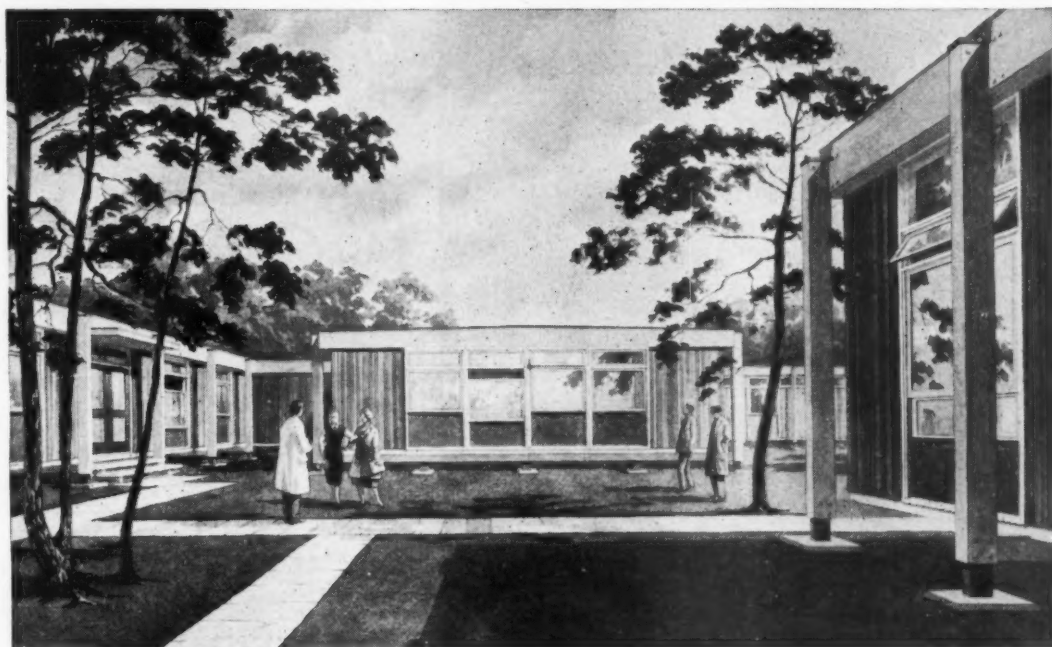
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Glazed Vitrified Clay Pipes



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a brilliant new addition to the
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As specialists for over forty years in the construction, reconstruction, maintenance and water-proofing of industrial roofs, we are able to offer the architect a complete service designed to relieve him of every worry.

* The complete roofing contract can be placed with us, eliminating the need for dealing with several sub-contractors.

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S & F buildings are *permanent* structures and can be extended on all sides as and when the need arises. Frame spacing of 20 ft. reduces foundation and maintenance costs . . . speed of erection.

S & F Unified Site Control is an all-embracing service

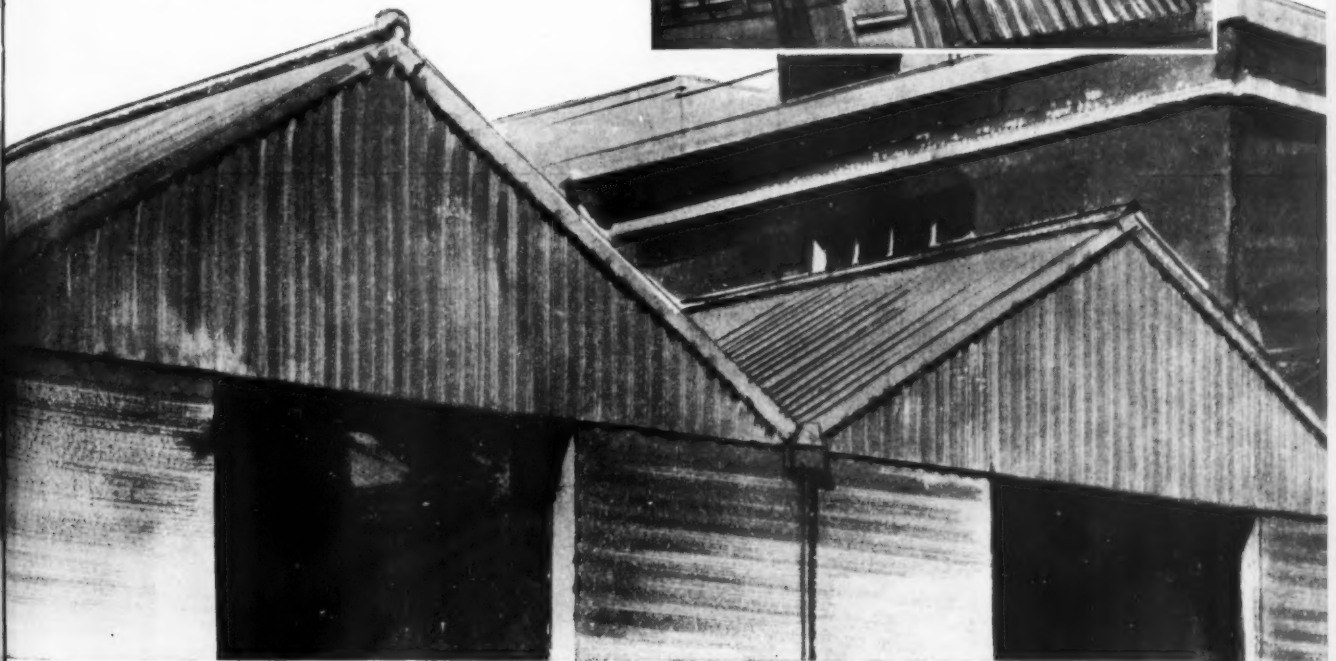
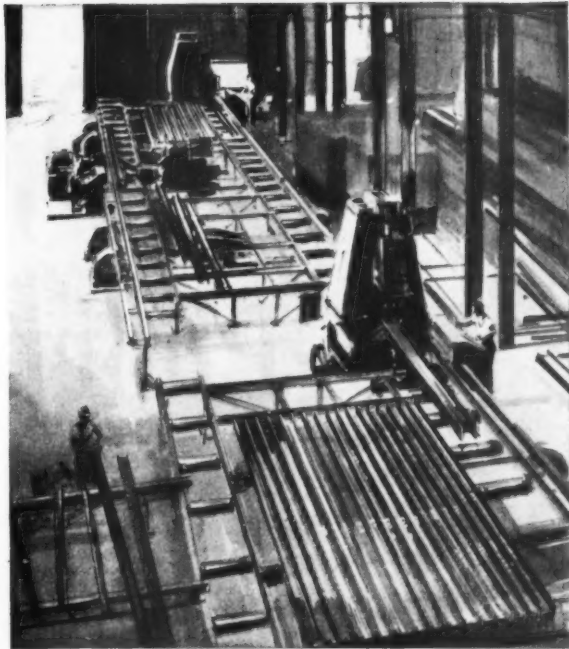
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BUILDINGS *COST LESS* BECAUSE....

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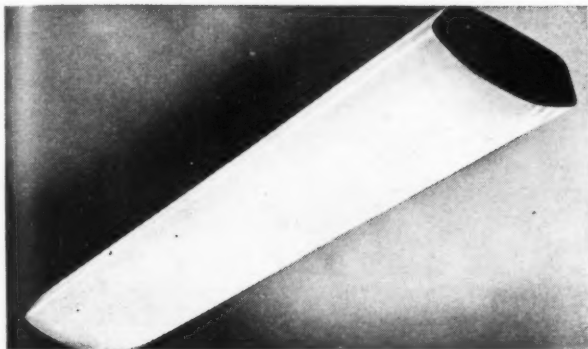
3 BUCKINGHAM PALACE GARDENS, LONDON, S.W.1.

Telephone: SLOane 0833 (10 lines). Cables: Sanforsted, London.

SANDERS & FORSTER LTD

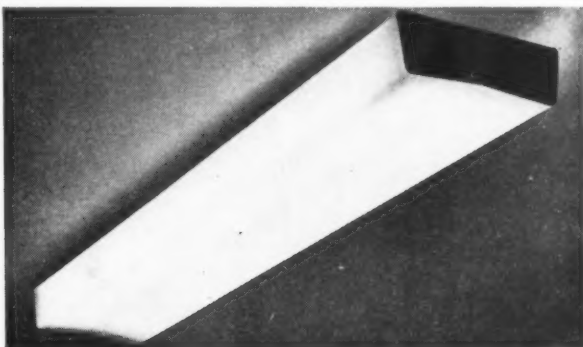
ONE OF THE CHAMBERLAIN GROUP OF COMPANIES

THE COUNTY RANGE OF FLUORESCENT FITTINGS

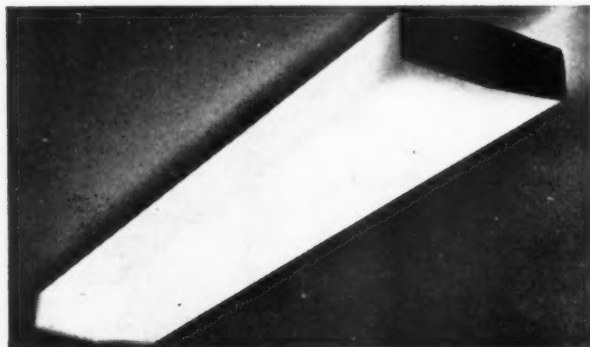


Surrey

They are designed as diffusing fittings and not based on an industrial back spine, consequently the lamps and reflectors can be arranged to give maximum efficiency with a wide and shallow diffuser.



Essex



Sussex

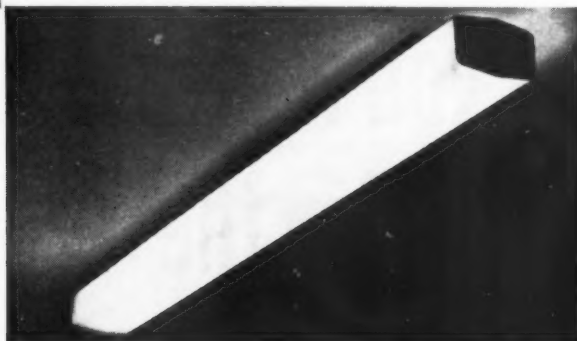
Only the best materials are used in the production of the fittings including heavy gauge steel, Perspex diffusers and reliable control gear.

COMPLETE INFORMATION ON THESE WELL-DESIGNED FITTINGS IS READILY AVAILABLE ON REQUEST

Fittings with clean and functional lines following the modern trend of interior design.

Opal Perspex diffusers with black ends and practically invisible back spines result in high quality fittings reasonably priced.

Ease of maintenance has been an important consideration in the design of these fittings, the diffusers tilting off from either side for cleaning and lamp replacement. Access to control gear is from below.



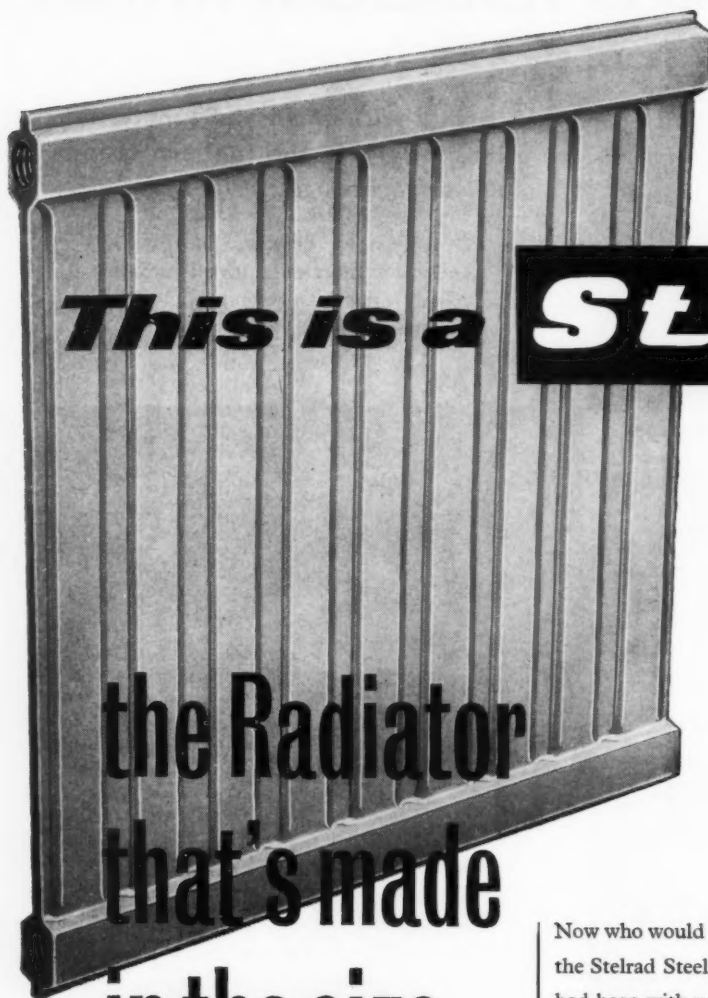
Kent



Harris & Sheldon ELECTRICAL Ltd

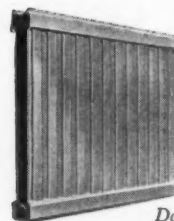
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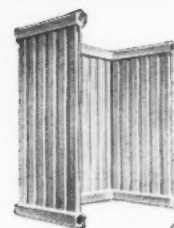


This is a *Stelrad*

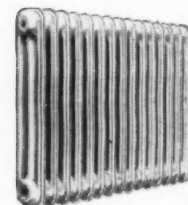
**the Radiator
that's made
in the size
you want,
and in the
shape your
client likes**



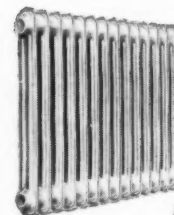
Double Wall



Angle-Wall



3-Column

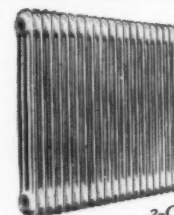


Easy Clean

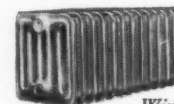
Now who would have thought the Stelrad Steel Radiator had been with us for nigh on twenty-five years? Why, you can probably remember people telling about it at the time.

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Some were doubters, holding forth about steel and how the only Radiator to use was one that was not only heavy to handle but ungainly to behold. But where is the Stelrad today? In buildings large and small throughout the length and breadth of the land, and in a range so wide there is not a single nook a Stelrad cannot heat.



2-Column



Window seat type

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'Arcon' 75 foot span transit building supplied by Taylor Woodrow (Arcon) Ltd., for Dover Harbour Board, Dover, Kent, in which Clear Corrugated 'Perspex' sheet, type 568, has been used for the roof lighting. Consultants: Coode & Partners.

Corrugated 'Perspex' for efficient roof lighting throughout the world



'Arcon' 66 ft. 8 in. span factory building supplied by Taylor Woodrow (Arcon) Ltd., for Bush Radio Limited, Plymouth, in which Clear Corrugated 'Perspex' sheet, type 568 has been used for the roof lighting. Architects: Fuller, Hall & Foulsham.

TAYLOR WOODROW (ARCON) LTD., supplied these buildings for the Dover Harbour Board and Bush Radio Limited; in both, the consultants specified Corrugated 'Perspex' for the roof lighting.

Corrugated 'Perspex' is inexpensive to install. It saves money on artificial lighting, and lasts indefinitely. It is tough, yet light and easy to handle. Corrugated 'Perspex' is unaffected by the severest weather and withstands the corrosive atmospheres of industrial and marine areas.

Corrugated 'Perspex' is available in a wide range of profiles to fit most corrugated roofing materials. If diffused daylight is desired, Opal Corrugated 'Perspex' is available.

It's as clear as daylight—it must be

CORRUGATED 'PERSPEX'

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

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C.P.167



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- after spreading on wall has WORKING TIME of 1½ hours.
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- is available at usual Richafix prices.

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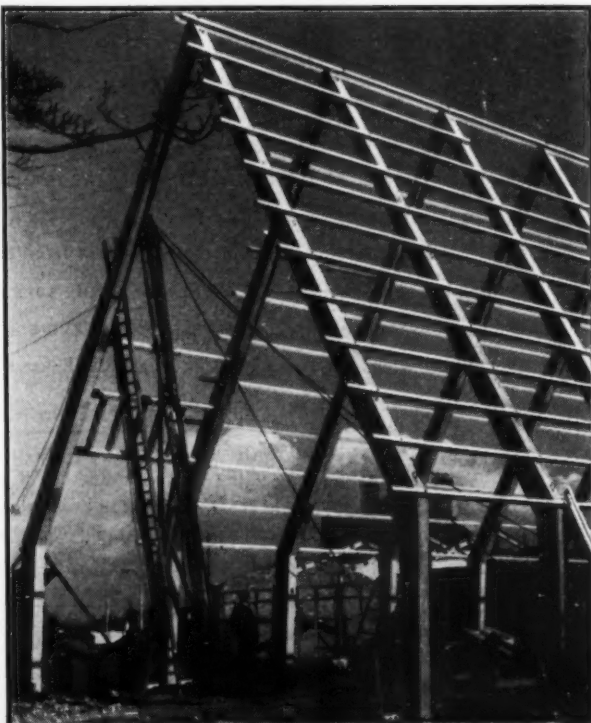
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Our services are available for the design, manufacture and erection of all structural and engineering units. Technical representatives—backed by a country-wide organisation—are always available to discuss projects on request.

By courtesy of Messrs. Shipley & Foster, Chartd. Archts., we show the Portal Frames to the new Anglican Church at Walsall. Clear Span 34ft. 0in., height to Apex 40ft. 0in. T. G. Construction Co. Ltd.—one of the Tarmac Group of Companies—erected the portals.
Main Contractors: Messrs. Bird & Hough, Walsall, Staffs.



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LOW COST WAY TO HEAT TWO ROOMS

- and the water as well -

FOR NO MORE FUEL THAN AN OPEN FIRE



(Left). Installed with Chevin C Inset Fire and Interior Frame No. 37 (used only when convected warm air is returned to the same room).

CHEVIN CONVECTOR Mk IIIa

The Chevin convector makes better use of heat from fuel by using it three ways—radiant heating, convection heating and water heating. This is on no more than an ordinary open fire—i.e. $1\frac{1}{2}$ -2 cwt. a week in the winter.

Warmth for another room. If the convected warm air is returned to the same room it will fully heat a room up to 20 ft. x 12 ft. x 8 ft. By a simple arrangement of closable grilles the convected warm air can be discharged to an adjoining room or hall as required, leaving the living room to be heated by the open fire.

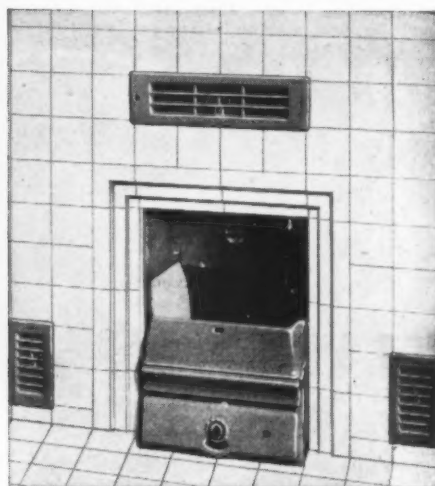
Hot water. The back boiler provides ample domestic hot water. Maximum output is 10,000 B.t.u./hr.: output under normal operation is 7,500 B.t.u./hr. which is equal to 8 gallons of water an hour raised from 50°F. to 140°F.

Overnight burning. The Chevin keeps in all night and has a simple economy air control to provide instantly the required rate of burning.

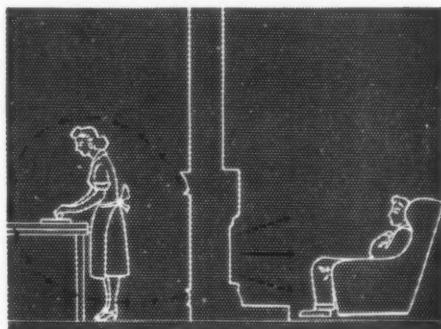
Installation is simple. The Chevin can be installed in a tiled surround incorporating independent convection grilles or with an interior frame incorporating concealed air inlet and outlet vents. A patented method of sealing between the surround and the convector body and between the flue adapter and the lintel speeds installation. There is easy access for flue cleaning and boiler servicing.

Ministry approval. The appliance is approved by the Ministry of Power and is included in the List of Recommended Appliances published by the C.U.C. and the Solid Smokeless Fuels Federation.

The Chevin is available in 5 wipe-clean colours in durable Lexos porcelain enamel. Prices from about £18 according to colour and the accessories required.



Installed behind tiled surround with independent closable grilles and Chevin C Inset Fire with Overnight plate in position.

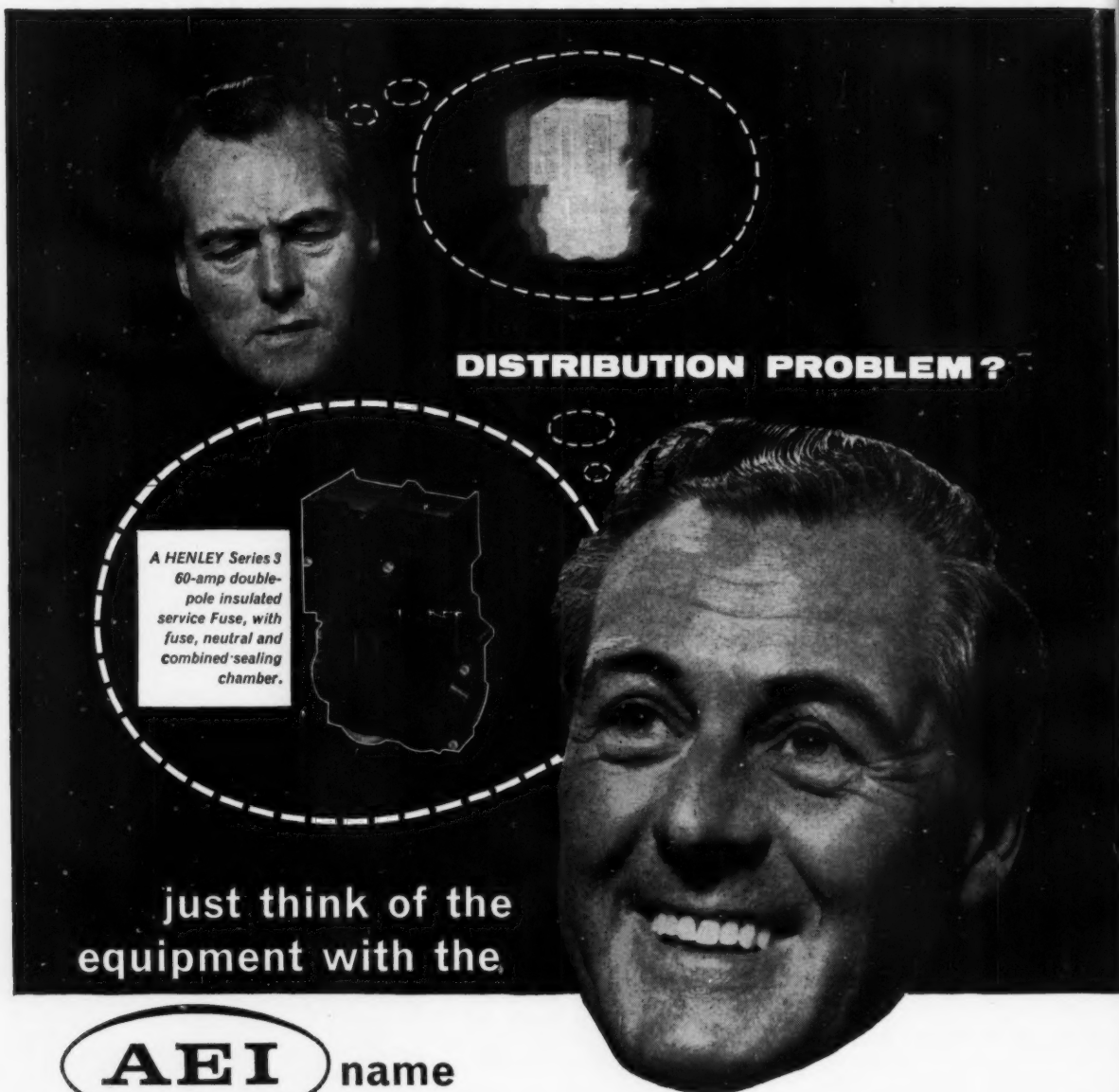


Radiant heat to main room, convected heat to warm adjoining room.



Full details are given in our data sheet available from

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fuse, neutral and
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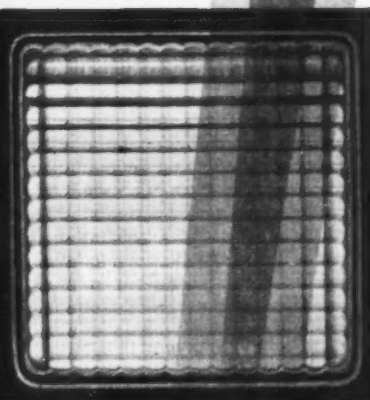
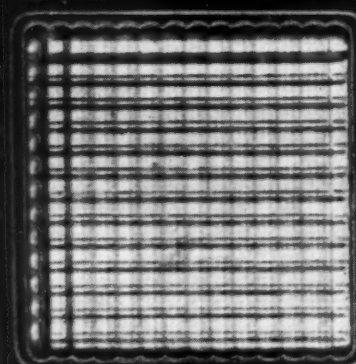
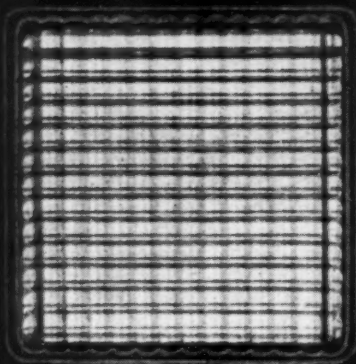


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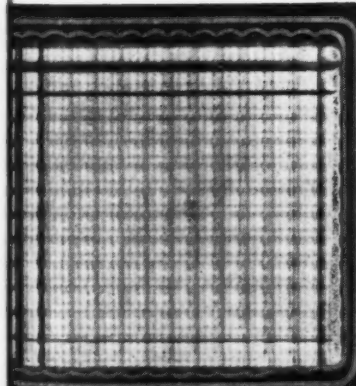
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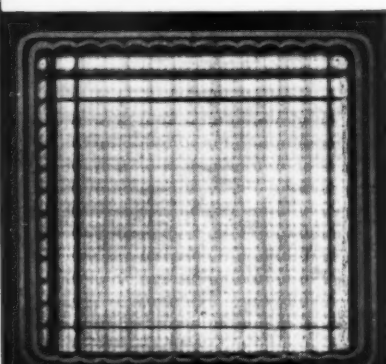


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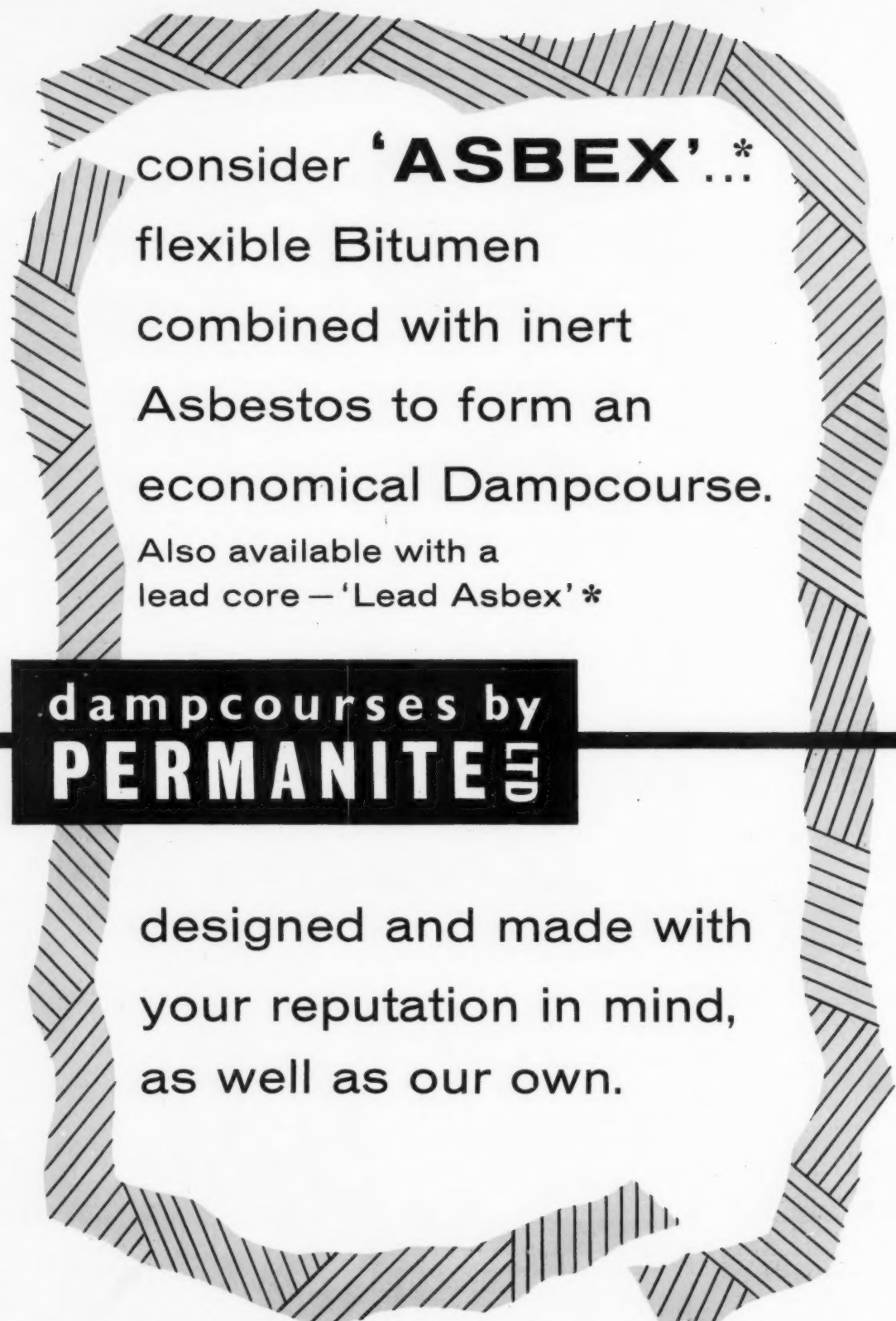
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"—leading 'em up
the garden now, eh?"

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The Architects' Journal

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NOT QUITE ARCHITECTURE

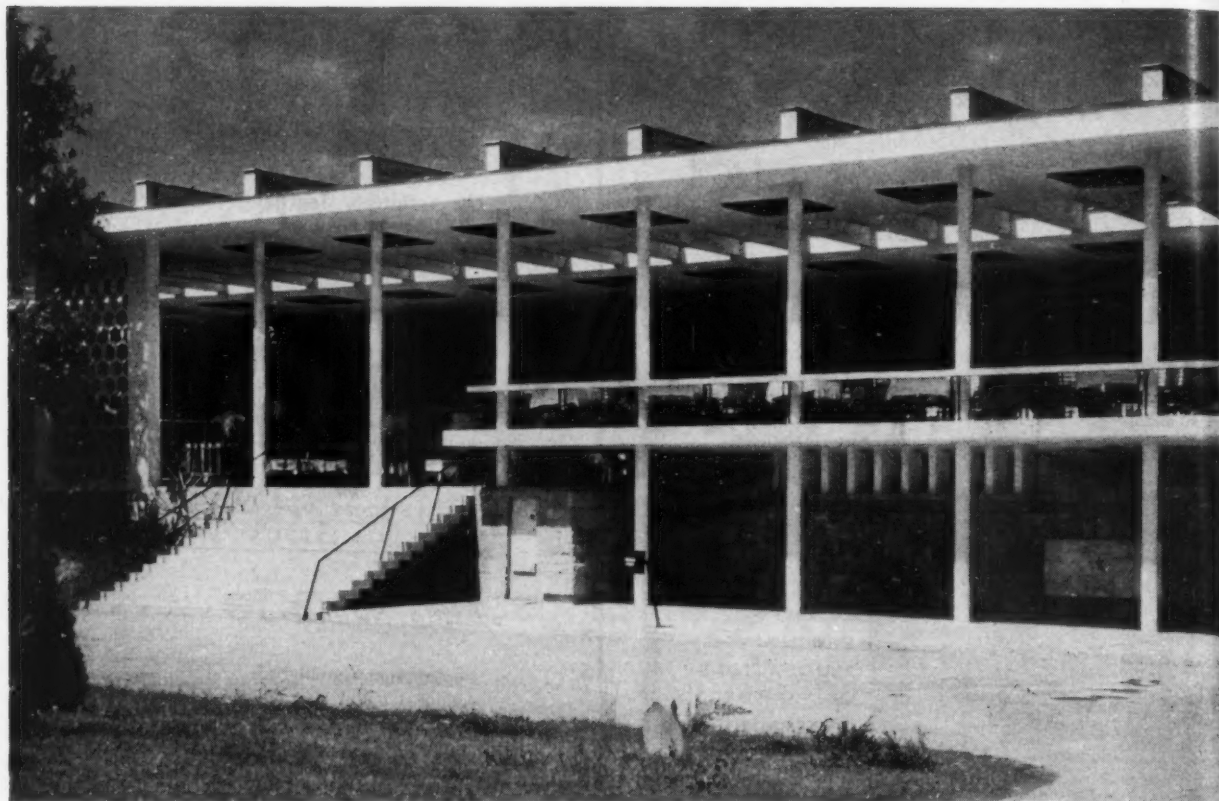
Little Stranger

It takes both intelligence and courage to produce a publication which sets out, without compromise, to say serious things about a subject with minority appeal. Such a venture is the new "little magazine" which is called "Acropolis." Economics have made glossy photographs a mere pipe-dream and we have to be content with words; there are, however, a lot of these.

The Editorial, signed, rather presumptuously I thought, "Son of Wren," dwells on the subject of salaries, to some length. It asks why doctors, solicitors, dentists and accountants are valued so much more highly by the community than architects; it is a situation which should be tackled firmly and quickly. Young Christopher concludes: "The burden of proof is on the profession. It is for the architect himself to prove his value, by actions and by 'building beautifully'; this will speak so much louder than letters to the press and mutterings in the ranks of the Allied Society." Strong words, and food for thought indeed.

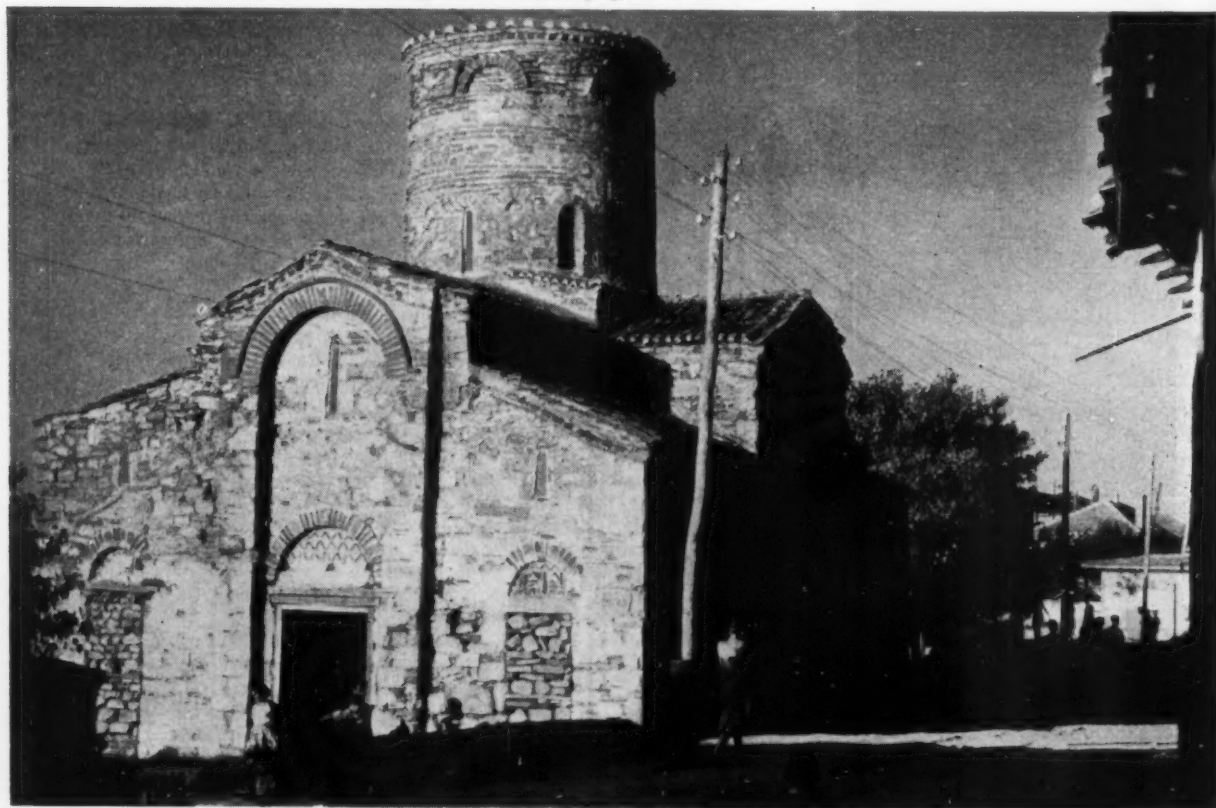
A contribution on "Aesthetic Control" by "A Town Planning Officer" poses questions no less important. He asks first whether there should be control at all, and I am bound to point out that this question is not answered; he merely assumes an affirmative reply, and goes on to tell how he himself works. Before he sets about the business of exercising his control, he finds it necessary to consider the precise nature of beauty; the old problem of *What is Art?* Summing up he says, with some justification, "Isn't it all a matter of taste really?"

All is not solemnity in this magazine. In a lightly satirical conversation piece between a Hare and a Tortoise, there is a sharp, but light-hearted, analysis of current architectural thought. In some ways, and paradoxically, this contribution has some of the



Black and White

Eastern Europe is rediscovering modern architecture, and the photograph above shows a new restaurant in Bulgaria on the Black Sea coast. Crisply executed in white in situ concrete it would be hard to emulate in the West. In contrast is the Byzantine church at Nessebor, sitting in rude crumbling splendour amongst a tangle of telephone wire. Both illustrations were brought back by Kenneth Campbell, the LCC's Housing Architect, whose impressions of Bulgaria are described by ASTRAGAL on page 237.



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deepest thinking and most complex propositions in the whole magazine. My one criticism is that the characterisation becomes blurred at times and it is difficult to tell whether the Hare or the Tortoise is meant to be Sir Howard Robertson.

I was troubled by the two main items, "An Inter-planetary Architectonicism" and "A Reply to Buckminster Fuller." In the case of the former, the standard of duplication suffers a rare lapse, and a great deal is illegible; the remainder, not unexpectedly, held little significance for me. The other long essay is well constructed, and argued with authority combined with good sense, but here again it would have been easier to comprehend had I known what Buckminster Fuller said which the writer is replying to. At any rate, he maintains that there is still room, even in a nuclear age, for a few old-fashioned squares. He does not name any.

The book reviews reach a high standard, though that on the "R.I.B.A. Kalendar" seemed rather superfluous. After commenting briefly on various technical publications, the reviewer goes on to bemoan the lack of a literary picture of the profession for public absorption. He contrasts the bleakness of the picture with the collected works of Richard Gordon, and although there was Creswell, things, he points out, change.

"Are there no architects who marry, or become otherwise involved with their secretaries. Beats there not a heart behind the drawing board? Is there no dagger in the filing cabinet? Stolen drugs in the plan-drawer? White slaves in the print-room?" He does not attempt to answer these questions, but insists that the profession will never have public respect, let alone admiration, until some image is created. Perhaps, he continues, Television provides one answer:

"An M-squad type serial based on the files of the RIBA Board of Architectural Education ('I looked at the drawings. He was lying') or a song and dance version of the Reyner Banham show (. . . your friend and mine, star of nave, screen and portico, with his performing lantern slides . . . Sir Basil . . .")."

These are challenging thoughts, and a New Approach might well be brewing. This is, in fact, a challenging magazine. There are opinions with which one is bound to disagree, but as "A Town Planning Officer" so aptly says, "If we all liked the same things what a dull world it would be." Generally, with the single lunar exception, the presentation is good, and unpretentious. The cover, an abstract monochrome in off-grey, after Klee, is very nice, although it seems to have got smudged in one corner. In short, gentlemen of the profession, we have a new Voice of Expression in our midst. No doubt we will show our appreciation in the usual way.

ALAN PLATER

The Editors

B.R.S. REPORT

ON page 238 of this issue we publish an account of the B.R.S. Report for 1959 which came out last week.

It is in the main a satisfactory report. There are the usual triumphs in matters of detail: this year we have the large size perforated brick, the dry finishing of plasterboard and P.S.A.L.I. Any one of these by itself, be it noted in passing, more than justifies the miserable half-million pounds per annum which this great nation of ours spends on building research. But the really welcome sign is a noticeable swing in interest towards the *broad* issues of building research, expressed in an increase in the number of investigations into the efficiency of buildings.

In times like the present, when the physical nature of the end products of the building industry is changing so fundamentally, these investigations are of capital importance. It is notorious that a modern lightweight structure behaves differently from the heavyweight structures of yesterday, offering a different kind of resistance to the weather, a different maintenance commitment, a different economic proposition both to those who build them and to those who live in them; and that all of these require, of the architect, a different approach to space planning and to the choice of structure.

These broad issues are at once the most pressing and the most difficult to study scientifically, involving an immense number of experiments before valid conclusions can be drawn.

We have a standing complaint that B.R.S. have given insufficient attention to these issues and we, therefore, welcome this new turn of events. At the same time, we are convinced that attention to them does not approach the scale which is required. There is no mention in the report of a study of tall lightweight buildings, enclosed in curtain walls. Immense sums are being invested in buildings of this kind and our knowledge of how they behave and how they are best handled is still only embryonic. It is surely the business of B.R.S. to forestall this problem, to launch large scale investigation at the earliest moment and not to wait until mistakes have brought discredit upon all of us.

We cannot suppress the thought that the relatively slow response of B.R.S. to major issues of this kind may be due to the insufficient "presence" of architects in the B.R.S. hierarchy. Architects are, after all, the key profession in the sphere of building. What would we say of an organisation devoted, say, to medical research, in which all the key posts were held by chemists, physicists and biologists and in which those with a specifically medical training were only to be found a long way down in the organisation's hierarchy? It is to be noted that B.R.S. have now inserted four "Deputy Chief Scientific Officers" between the Director (and Deputy Director) and the heads of departments. These four men are all of unquestioned ability, but not one has an architectural background.



DOCTORING THE PLANS

The winning design in the Cardiff hospital competition is to have many modifications. This news, given by the United Cardiff Teaching Hospitals' Management Committee, will be no surprise to readers who have read criticisms of the scheme. But is it right that an architectural competition should be regarded as a way of selecting not a final design, but merely an architect whose work can then be hacked into a required shape? It seems terribly bad luck on competitors who didn't get anywhere that an organisation which has made a mistake should then encourage the lucky winning architect to correct their mistake.

*

I was beginning to feel sorry for the winner, who has had to face so much criticism which really ought to have been directed at the assessors, until I read what he has to say. "My so-called critics," says Mr. Milburn, who doesn't seem to have read them, "are talking of something they know very little about" . . . "This is a pioneer building and one expects reaction to anything new. I refuse to be drawn into a public slanging match with them. There is such a thing as professional conduct. I will ignore their somewhat tasteless remarks."

*

With respect, Mr. Milburn, the cross-infection of patients—one of the things

critics are worried about—is not a matter of taste.

TOMORROW'S ARCHITECT WITH PICTURES

It was a grave mistake of the Ministry of Labour to illustrate its revised edition of a book on architecture as a career* with the sort of work architects did in early post-war years. But apart from showing such dismally undistinguished stuff, the booklet has some sensible things to say about the architect's work not only as a designer, but also as the man who sees that value is given for money spent. There is only one thing wrong with the following sentence from the publication: "It is the architect's responsibility to provide well-designed buildings, with the right kind of accommodation, to time and within the permitted cost." The trouble is that this appears only under the heading of "Local Authorities," leaving the young career seeker under the impression that such a conscientious approach is not necessary elsewhere.

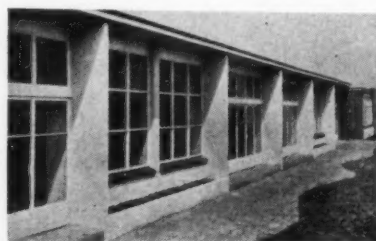
ELAN AT MILAN

There's another—and much better-designed government publication out this week; it is the Ministry of Education's official hand-out about its school exhibit at the Milan Triennale. People who have criticised earlier Triennales for displays of meretricious visual novelty will find this hand-out, like the much-praised exhibit itself, satisfyingly down-to-earth. It shows that the success of British postwar schools has been based not on preconceived ideas of what they ought to look like, but on the need for improved education on a tight budget. In contrast with the MOL the MOE's school illustrations are first rate and say quite a lot in themselves.

PREMIER CONSIDERATIONS

I have often wondered if the pilgrims outside No. 10 Downing Street realise the anti-climax that lies behind the eye-scraped façade. Anyone who lives in a

* The Architect, No. 16 in Choice of Career Series.



Illustrations from a booklet by the Ministry of Labour. See above.

sumptuous council flat or works in a steel and glass palace would feel that the building's reconstruction money is not being squandered recklessly or too soon. I accepted an invitation from the Ministry of Works the other day and took a long, last look at the homely bits of plumbing, the shabby loose covers, the speaking tube, complete with whistle, which evokes thoughts of a Goon rendering of "Pomp and Circumstance," and the state rooms, which must be less stately than those in even the smallest embassy. These, we know, are to be preserved in the Raymond Erith scheme—a scheme which will take No. 12 up to the level of 10 and 11 and thus provide more room for the Chancellor and 50 per cent more office space over all.

YOUNGER VIC

The Victorian Society, which started life two years ago among angry outbursts at the Institute of Contemporary Art and elsewhere, is now respectable—even among the young. This is just as well, because it has a lot to do, as it shows in its first annual report. Works by Pugin, Street, Shaw and Barry are in danger—and even the fate of Bunning's Coal Exchange isn't settled yet. It is sad to be reminded of the deaths of two of the Society's lively supporters—Goodhart Rendel and Peter Floud. But the members' list still has plenty of talent—Betjeman, Casson, Clifton-Taylor, Ferriday, Gloag and Summerson. And there's always you, dear reader, if you can just stop grumbling about vandalism and find time, instead, to prevent it.

WHAT'S LEFT FOR THE LEFT

"The automobile continues to make an even more hideous snarl of our cities; and our cities sprawl even more hideously into the countryside." Those are the words not of a planner, but of the Professor of Economics at Harvard, J. K. Galbraith, who believes (see his recent *Observer* piece on the "Future

for Labour") that "the people at large" are just as bothered by snarl and sprawl as "intellectuals in politics." With security and leisure, says the professor, the "cultural response of most people is probably rather prompt." And he goes on to suggest that the Left should make itself "the generous and imaginative instrument of emerging cultural ambitions."

I hope his optimism is justified. And I hope that *all* political leaders will behave as if it is justified before it is too late.

SOFIA SO GOOD

Kenneth Campbell, Housing Architect to the LCC, who is just back from an IUA Conference in Sofia, is pretty enthusiastic about that remote area. Bulgaria has only about 7 million inhabitants and Mr. Campbell says this gives an air of spaciousness to the place, but that in any case the scenery—mostly mountain and plain—is on a big scale. Architecturally speaking, he says, the background outside Sofia is a mixture of Byzantine, Turkish and late Empire (presumably Austrian) giving an agreeable atmosphere of mellow crumbling plaster usually embowered (he insists that this is the word) in trees and flowers, since the Bulgarians are apparently blessed with green fingers. The new (post-1954) work is clean and simple and, on the Black Sea, even elegant and light-hearted.

Apart from this, his main recollections are extreme cleanliness (in the towns the horses have tarpaulins spread over the shafts under their haunches); essence of roses (a major export); raspberries and cream; excellent wine, a potent plum brandy and—above all—sunshine.

If all this sounds too good to be true you can try for yourself. The second-class fare to Sofia is only £30 return and you'll find Bulgarian architects helpful, and anxious to discuss the last issue of the *Architectural Review* with you. Most of them speak some French or German and half of them are women. If you go by car you should know that it's over 2,000 miles to the Black Sea Coast and that although the main roads are reasonable but narrow, the country roads are just dirt.

ASTRAGAL



E. G. Lassetter, A.R.I.C.S.

Mark Hartland Thomas,
F.R.I.B.A.

J. Fallas, A.R.I.B.A.

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

Too Little, Too Late

SIR: Your Editorial Note last week following "Too little, too late" implied the blame for lack of information and guidance on hospital building to the architectural staff employed before the recent influx of young "enthusiasts." As a quantity surveyor colleague of most of the members of this staff since the "appointed day," I should like to state through your columns that what is implied is wholly untrue as well as both scurrilous and reckless.

None of the staff concerned, including myself, would deny the great need for more guidance, etc., in hospital building, but might I remind you that civil servants like other servants are not responsible for the acts and omissions of their masters, past or present. They merely carry out the duties consigned to them. *Quis custodiet ipsos custodes!*

E. G. LASSETTER

Guildford

Whenever something has gone wrong in a Ministry, it is notoriously difficult for those outside to allocate blame as between those within. We did not attempt to do this. We did, however, formally exclude recent architect entrants to the Ministry as these could not conceivably be responsible. Mr. Lassetter seems to put the blame on to his superior, non-technical, officers and he may well be right; but could not they turn round and say that it was not their fault, because they, the administrators, were insufficiently briefed by their architect and surveyor advisers? It is clear that a heavy load of blame must be carried by someone and the fact that we cannot say who this is exactly, does not relieve us of the duty of drawing public attention to the fault.—The Eds.

Standard Sizes

SIR: Mr. Frederick Hill complains that he cannot get baths to standard sizes. Baths are not the only commodity for which BS sizes are honoured more in the breach than the observance. Kitchen fittings are another: metal windows another. Standard sizes agreed trade by trade, each in isolation, will continue to be ineffectual. When standard sizes are part of a complete system of sizing, covering all components, then it will be worth everybody's while to keep to them. That is what the Modular Society is aiming at. Until that day comes, Mr. Hill must continue to choose the bath before designing a house around it.

MARK HARTLAND THOMAS

London

Split Level Critics?

SIR: Would you consider telling us just how many people wrote the article on Harrison Gibson's Department Store at Ilford—AJ, August 4—or was it just a schizophrenic who broke off for lunch? If a critic criticises and only offers up half a story then he must expect to be criticised in turn, so perhaps he/they could give one good reason why anyone should be interested in a prefabrication system which apparently leads to a building taking almost twice as long to build as another similar building on what appears to be, from a badly reproduced photograph, an almost identical site. Perhaps the writer or writers think that as architects we are as stupid as we've been led to believe we sometimes look.

J. FALLAS

Drumbo, Co. Down

The story is incomplete because our knowledge is incomplete of all the factors which speed or slow down building. One building took the amazingly short time of six months to design and build, the other fifteen. But even the latter figure is well above average. Our (sole) reporter implied no criticism of the former achievement. We hoped open-minded readers would be interested in learning of the adaption of a prefabricated, precast-concrete structural system for a different type of building than that for which it was originally designed. Who knows but that in years to come it may be even faster than more traditional methods?—The Eds.

Urban Renewal

SIR: Mr. Noel Moffet wonders how many architects would agree with his nine basic factors. I would agree whole-heartedly with every one. In particular, I think he is absolutely right to emphasise the vertical separation of vehicles and pedestrians. In my view this is the only possible solution to the vehicle-pedestrian conflict and for heaven's sake let us make sure that the pedestrians are kept up and the vehicles down below.

GEOFFREY L. PRICE

Newcastle-upon-Tyne



YORK

Architectural Courses

Two new courses are introduced in the York Institute of Advanced Architectural Studies' autumn courses. The first, September 9-13, is on the Architecture of New Theatres and includes lectures by Richard Southern, R. Leacroft, E. Davies and Peter Moro. The second, from September 29 to October 4 is on Colour in Architecture with lectures by Michael Keyte and David Medd on theory. Bruce Allsopp gives an historical survey and J. A. Wells Thorpe gives principles of application.

Repeats of courses on modern techniques in concrete construction (September 5-9) and on architectural project management (October 7-11) will also be held.

OBITUARY

*H. E. B. Cavanagh,
Architect Western Region*

The architect of the Western Region, British Railways, H. E. B. Cavanagh, was drowned in a sailing accident off the Isle of Wight on August 3. Architect to the Region since 1949 he always fought to keep the architects' department independent of engineering control, and under his leadership a number of progressive designs for railway building in the Region were developed. He was trained at the Architectural Association. He worked for Graham Dawbarn, H. Barnes and Parkers, and Morris de Metz before the war. After the war, in which he served in North Africa, Italy and Greece, he joined British Railways. He was 53 when he died, leaving a widow and two children.

COMPETITION

*Library for Trinity College,
Dublin*

Conditions are now available for those who hurry for the international architectural competition for the design of a new library for Trinity College, Dublin, to cost £500,000. The assessors are: the Earl of Rosse, vice-chancellor; Franco Albini, professor of interior architecture, Venice; Sir Hugh Casson; Raymond McGrath, principal

architect of the office of Public Works, Dublin; K. Dewitt Metcalf, American Library consultant and former director of Harvard library. The conditions can be obtained from the Competition Registrar, Trinity College, Dublin, on payment of a £5 deposit which will be refunded to all who submit a *bona fide* design or have returned the conditions by December 31, 1960. The last day for registration is August 31; the last day for questions is September 30 and for despatch of design March 1, 1961. The winner gets £1,500 and will be appointed architect for the work which will be proceeded with as soon as practicable. The second prize is £1,000 and the third £750.

B.R.S.

Annual Report for 1959

The report for 1959 by the Director of Building Research (available from H.M.S.O. at 7s.) summarises the very broad field of research carried out during the year. It is divided into six sections (1) General Research and Co-operative Investigations, (2) Tropical Housing and Building Research, (3) Enquiries and Special Investigations, (4) General Information Services, (5) British Standards, Codes of Practice and Building Legislation, and (6) International Collaboration.

Preceding this is a brief report by the Building Research Board, signed by its chairman, Sir Herbert Manzoni. It may be assumed, no doubt, that the Board attaches special significance to the aspects of research singled out for reference here and it is pleasing to see that two of these items are research into hospital design and the dissemination of information throughout the building industry. Both are subjects that must attract the attention of the profession and of the industry generally from now on. Concerning hospitals the report points out that a huge Government programme, amounting to an expenditure of some £300 million over the next six or seven years is under way. It advocates a programme of research in conjunction with the Ministry of Health similar to that carried out in the past on schools and housing. The Board takes this opportunity of making a plea to the Council for Scientific and Industrial Research, to whom the report is directed, for "additional resources of manpower." In other words more technical staff! Early studies in hospital design will be directed at the problems of engineering installations. "(These) have become increasingly complex and expensive," states the Board, "their cost . . . amounting to a third of the total building cost."

On the dissemination of information, the problem to which past reports have made frequent reference, the Board points out that the National Agricultural Advisory Service of the Ministry of Agriculture, Fisheries and Food employs some 1,500 advisory and ancillary officers at a cost approaching £3 million and that whilst it is far bigger than anything the building industry is likely to get in the foreseeable future the principle of on-the-spot advice by locally based staff is one at which we should aim. Men-

tion was made that a pilot survey had been conducted by the station amongst contracting firms which had justified the need for a main survey to investigate techniques for discovering what information reaches the various levels of staff.

This point reappears in section (4) of the Director's report where we are told that a similar pilot survey is being made of the information habits of the architectural profession and, should it prove equally promising, a full scale survey is envisaged. This would be undertaken in conjunction with the RIBA.

The Board's report also mentions the collaborative work of the Physics Division and the User Requirements Division, two research branches of the station. It refers to their work on domestic heating, in which the Physics Division studied the economics of various systems and collected information on the climate they provide within a building, and the User Requirements Division concerned itself with the way in which heating systems satisfy the occupant of the dwelling and with gaining a knowledge of the general level of domestic expenditure on fuel throughout the country. Another example quoted is the joint study of drawing office lighting in terms both of the quality and quantity provided by different installations and also of the requirements of drawing office staff. The Board's report concludes with the announcement of a re-grouping of staff at the Station whereby the 14 research divisions now come under four senior officers, themselves under the director and the deputy-director.

The first section of the Director's Report is the longest, covering the full range of activities under the headings "materials," "design and performance of structures," "soil mechanics," "efficiency of buildings," "building operations" and the work of the Scottish laboratory.

Testing of materials and their performance under adverse conditions has always been a basic feature of the work of the Building Station. The report describes tests on coping blocks exposed to freezing conditions. The blocks were laid side by side as copings, one on a damp-proof course and the other not, using the two kinds of stones that are normally susceptible to the effects of frost. The results of these tests, carried out over two winters, suggest that, in fact, the life of susceptible stones is directly related to "... the ease of transfer of moisture across the bed joint." Although the BS Code of Practice recommends the use of damp-proof courses in parapet walls they are often omitted for fear that the coping may not be safe without dowel fixing. The Station has experimented with a mortar comprising six parts of well-graded sand and one part of an epoxy resin which has been formed to combine good initial adhesion with low permeability.

The report indicates that the Station is persevering with its perforated bricks (mentioned in the last report), on which it has been working since 1955. A new brick, the V-7, has been developed which is larger than its predecessors—as large, in fact, as a brick layer could lay with one hand

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without undue fatigue. The brick is $13\frac{1}{2}$ in. \times $8\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. and it is claimed that this will be even more economical to lay than V-5 or V-6, either of which needs only about three-quarters of the time required for an 11 in. cavity wall in ordinary bricks or about the same time as for an 11 in. cavity wall using clinker blocks for the inner leaf.

A number of cases of failure in adhesion of plaster applied to the soffits of concrete floors were reported during the year. Investigations by the Station showed that the failures had all occurred where gypsum plaster had been applied to concrete made with a limestone, granite or brick aggregate and that no similar failures had occurred where a flint gravel concrete was involved. The difference in thermal expansion between gypsum plaster and flint gravel concrete is about half the difference in thermal expansion between plaster and concrete made with limestone, granite or brick aggregate and most of the failures reported followed a rise in temperature of the structure, either during the hot weather or at the beginning of the heating season. "All the evidence," states the report, "supports the view that, where there is any weakness in adhesion, failure is induced by the stresses set up by differential thermal expansion between the plaster and the background." Wetting down the surface immediately before plastering will substantially improve adhesion. The method adopted in replastering the buildings concerned, however, was to use a bonding liquid. It is pointed out that whilst flint gravel aggregates avoid the problem of lack of adhesion by plaster, concretes made with the other aggregates have a better fire resistance.

Problems arising from moisture in roof screeds—blistering, reduction in insulation value staining and on the underside of the roof slab—have led to controversy within the building industry as to the best methods of overcoming them. Tests have been carried out at the Station on methods for treating no-fines lightweight aggregate to make them less absorptive. One of these involves the use of a silane vapour (methyl-trichloro-silane) and another a wax emulsion. They eliminate one-half or even two-thirds of the mixing water normally required, without reducing the strength of the concrete by more than 25 per cent.

In the field of plastics the Station has anticipated requests for information on the weathering qualities of plastics used for gutters and downpipes by giving a practical trial to two gutter and downpipe systems in an acrylonitrile-butadiene-styrene copolymer. The tests were initiated in the autumn of 1957 and the gutters and downpipes are still in a very satisfactory state. They can withstand the impact of a ladder falling heavily against them in cold weather and, with brackets at 3 ft. centres, do not distort unduly under the weight of a ladder carrying a man.

On the subject of polyester resins, the report states: "Natural exposure tests on translucent sheets made with polyester resins reinforced with glass fibre, intended for roof lighting, have shown that weathering produces a yellowing of the resin and a

decrease in the light transmission, apparently associated with the breakdown of glass-resin bond. Some loss of resin also occurs and the glass fibre may eventually become exposed. Supplementary laboratory experiments show that the yellowing can be caused by heat or by ultra-violet light, whereas the other effects are caused mainly by wetting, possibly in conjunction with the action of ultra-violet light."

Referring to expanded polystyrene used as thermal insulation the report continues: "Tests have failed to substantiate claims to the effect that $\frac{1}{2}$ -in. sheets of expanded polystyrene used for thermal insulation would also serve as a vapour barrier and be particularly suitable in that respect for the insulation of factory roofs and in other circumstances where resistance to the transmission of water vapour is an important requirement. In tests on such sheets, having densities ranging from 0.8 to 1.9 lb./cu. ft., none showed a water-vapour transmission as low as the limiting value recommended for this application. Even in 1-in. thickness, only one met this requirement."

From materials the report goes on to a description of studies on what is called "Efficiency of Buildings." It would appear from the report that a good deal more research is being undertaken in this direction. Reference is made to the work on permanent supplementary artificial lighting of interiors (PSALI). This work has been carried up to the point of publication*, and investigation has now been halted to allow time for applying the results to several buildings. A new artificial sky for the next stage of research is under construction. On the question of sound insulation of party walls and floors, the Station is concerned with the fact that though work already done in this field (as early as 1954) has provided working rules for the use of the building industry, the provision of satisfactory sound insulation along these lines results in "... much additional and otherwise useless weight in partitions in flats, schools, hospitals and offices." Practical tests are therefore to be undertaken on two experimental buildings recently constructed to find alternative methods which do not rely on mass. Each building consists of four rooms on the ground floor and four rooms above, one being of brick construction and the other framed. "Each building," we are told, "thus provides four 'party' floors and four 'party' walls. . . . The first experiment planned is an investigation of various materials for the resilient layers of floating floors."

The subject of house heating also has been occupying the attention of BRS. They seem to have established that comparisons of domestic heating systems cannot be made merely in terms of the cost of the unit of heat. The report states that "... this can only be done if all other factors, such as methods of control, metering and charging, are the same." To support this view they point out that investigations have shown that the level of heating adopted by occupants varies with the type of system installed. For example, flats with central

heating were found to be running at temperatures of some 20 deg. F. or more above outside temperature, those with individual solid fuel appliances (i.e., open fires or openable stoves with back boilers) at 16-17 deg. F. above and those with electrical floor heating at about 14 deg. F. above. Fuel consumptions varied considerably and the report continues: "It was found in fact that fuel consumptions during winter could be largely explained in terms of the efficiencies with which the various fuels might be expected to contribute to the space heating and of the temperature levels maintained." These and other factors helped to explain the wide range of annual consumptions observed (e.g., 1,200 therms per flat using central heating, 600 therms where space and water heating was by individual solid-fuel appliances and 300 therms with an electrical floor-heating system). On this subject the report concludes by saying: "The final judge of the heating system is the occupant who uses it, and field interview surveys have therefore been undertaken to find out how occupants of flats heated in various ways used their heating systems and what their opinions were of the services provided." Results of the surveys to date indicate that, apparently, satisfaction is not determined solely by the temperatures maintained. Electrical floor warming, for example, seems to be as favourably regarded as central heating. A publication is now in preparation which details the results of these studies.

It is interesting to note from the Director's report that the use of mechanised procedures in offices has become increasingly common in administration and commerce and that a preliminary study of some two hundred medium and large organisations indicated that the majority had either adopted or were planning to adopt mechanised procedures. The need for guidance by users has become apparent and a pilot study has been completed preliminary to a main survey which will investigate the problems of a desirable layout and space standards and acceptable conditions of temperature and humidity, illumination and noise.

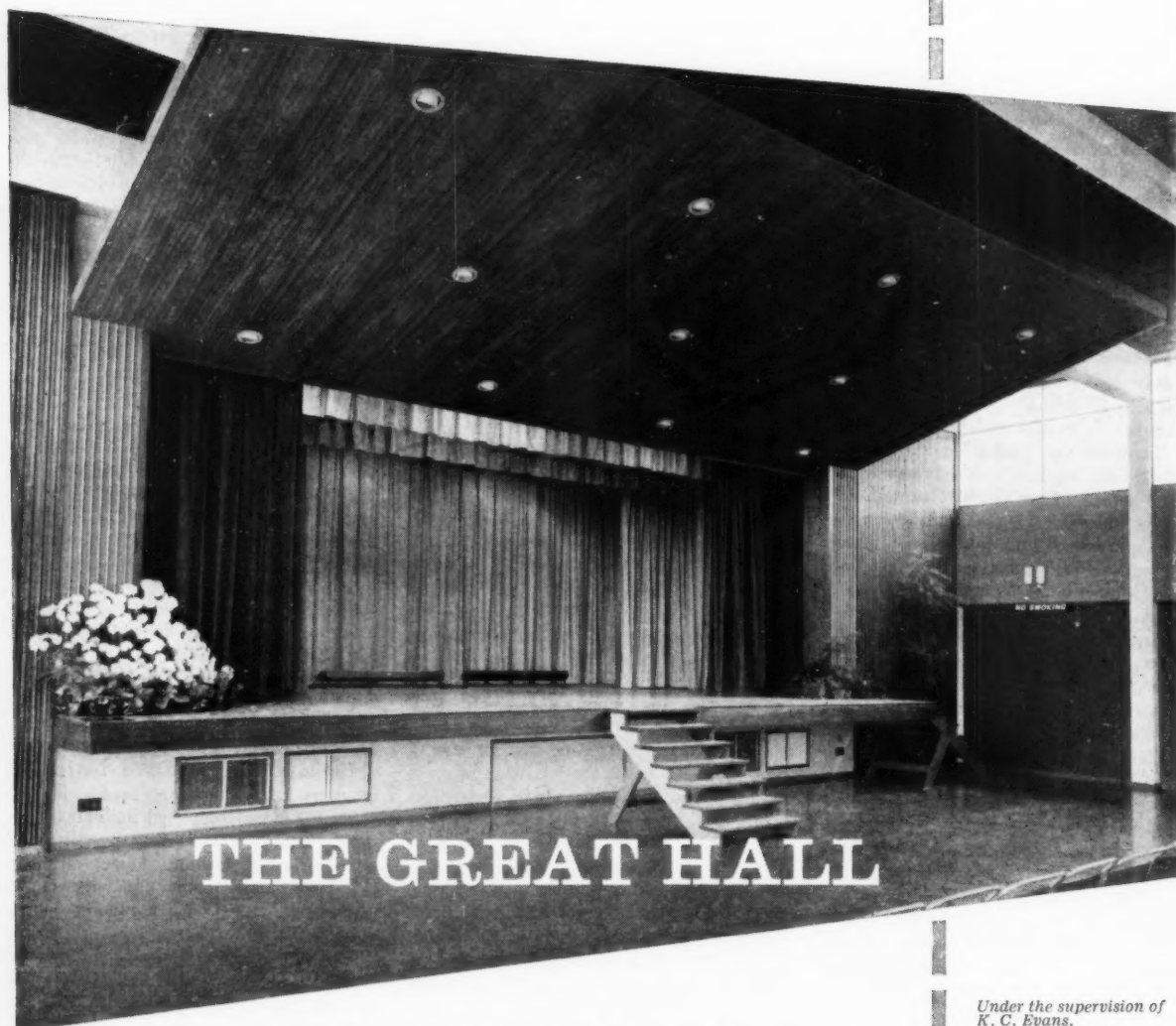
A welcome subject, mentioned on p. 49, is called Design Economics. This centres around studies of maintenance and running costs as factors in assessing economic alternatives at the design stage. The subject of maintenance costs rightly exercises the minds of many people in the building industry these days, so the BRS studies are timely.

We are told (pages 36, 37, 39, etc.) that BRS is building up a good record of collaboration with international agencies such as *Conseil International du Bâtiment* (C.I.B.) and *Réunion des Laboratoires d'Essais et de Recherches sur les Matériaux et les Constructions* (R.I.L.E.M.). This is a good sign. It is a little disturbing, however, to learn (p. 37) that a joint investigation with R.I.L.E.M. had shown that considerable differences occur between values of thermal conductivity determined in different laboratories on similar materials. The leader, p. 235, refers to this report.

* See AJ October 8, 1959.

ISLE OF ELY COLLEGE

and Horticultural Institute, Wisbech



All the selected joinery hardwoods—Sapele, Agba, Beech and Teak—and all the veneered panels—faced with Sapele, Beech and Agba (as well as "Armourply" metal faced plywood) were supplied by

*Under the supervision of
K. C. Evans,
Dip. Arch. (Birm.)
A.R.I.B.A.,
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MANUFACTURERS OF PLYWOOD, ARMOURPLY, PANELS AND COMPOSITE PARTITIONING



GULBENKIAN MUSEUM, DURHAM, designed by Philip R. Middleton & Partner



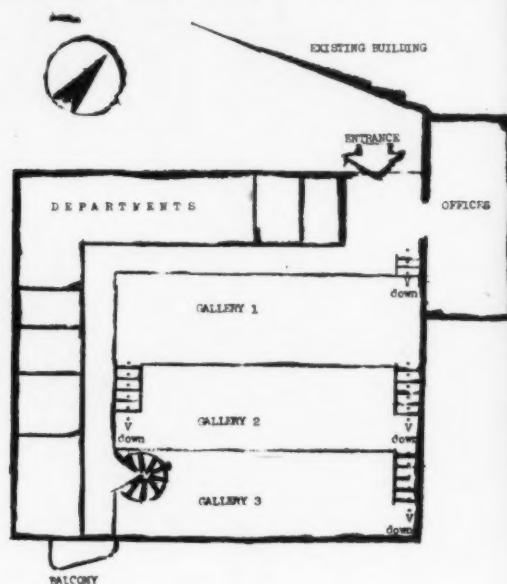
GULBENKIAN MUSEUM continued



South-west facade. The canopied door serves the stores, the projecting balcony is at the upper gallery level of the museum.



The main entrance on the north-west side of the building.



The new museum is joined to an existing Victorian Gothic mansion on a difficult but magnificent wooded site a mile or so to the south of the city. It is at present separated by a narrow belt of countryside from the other post-war university buildings, which lie to the south of the river and the cathedral. Most of the new buildings are depressing essays in various styles, past and present. The museum, infinitely better than the rest, does not entirely avoid eclecticism and shares with the one other good building, Professor J. S. Allen's science buildings, a slightly mannered neo-

Swedish air, at least on the outside.

Structure consists generally of load-bearing brickwork which carries the "space deck" roof structure. The roof itself is copper and the walls are hand-made facing bricks. Internal wall finishes are generally textured plaster finished in a very pale blue, B.S.8087. Walls adjoining showcases (which are recessed into the upstands in the stepped galleries) are grey hand-made facing bricks. The ceilings of exposed wood wool slabs are spray painted in a fairly deep blue, B.S.0013, and the "space deck" roof structure gloss-painted

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View across the museum to the entrance. The blank panels with louvres contain the heating system. The roof, despite its apparent complexity, is not oppressive or distracting, although the coloured light fittings compete rather unfortunately with the structure.

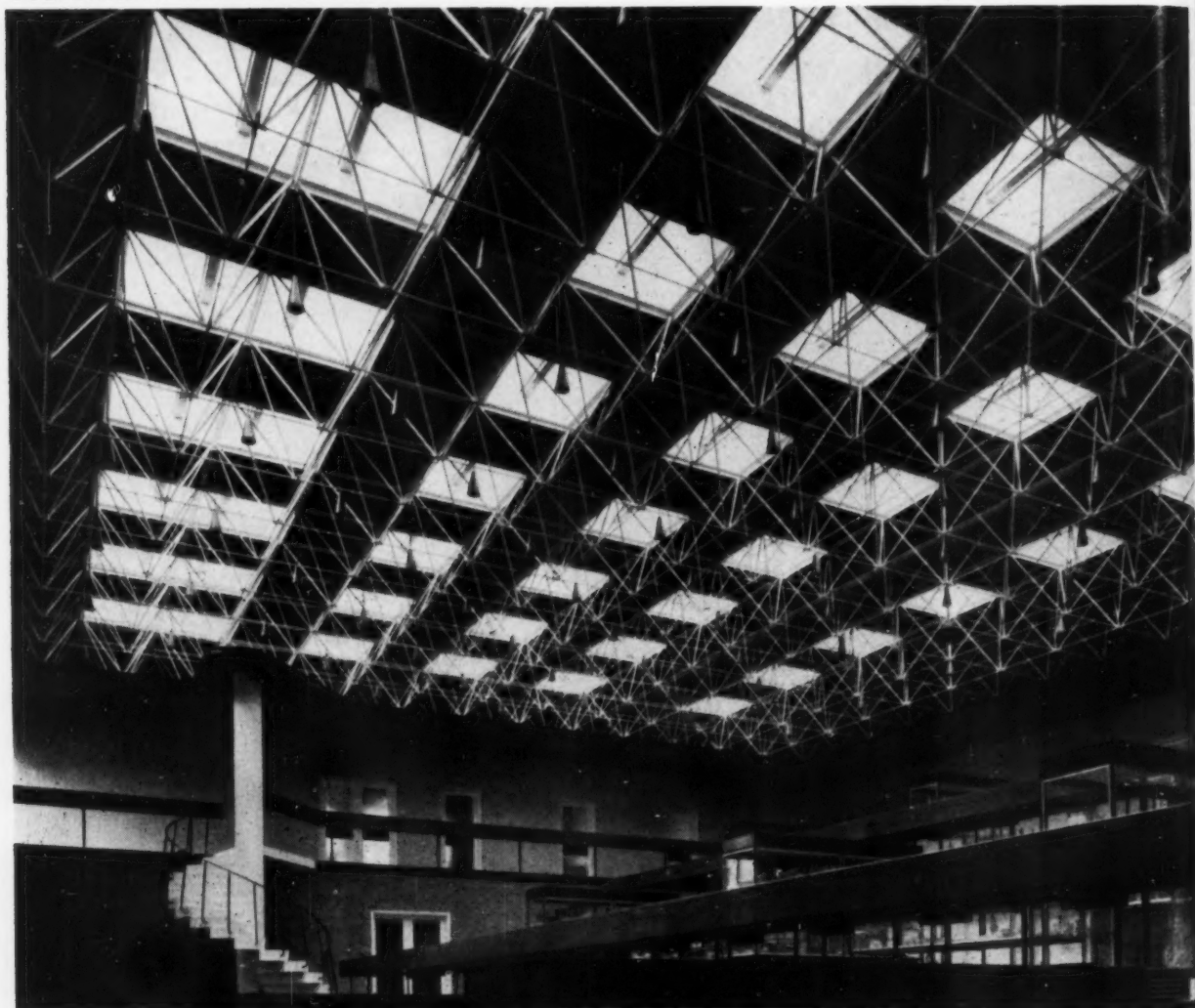
white. In the main entrance hall the wall adjoining the entrance doors is faced with large stone pebbles into which are let Egyptian stelæ; these latter are floodlit by concealed spotlights. Floors are cork tiles throughout.

Owing to the special nature of the exhibits, in particular the Egyptian section, a minimum temperature of 70 deg. was required throughout the year. The Gulbenkian Foundation's grant of around £60,000 did not make it possible to include a plenum heating and ventilating system. The museum is heated by means of mechanical convectors incorporated with

the showcases and recessed into the upstand walls of the three galleries.

Rooflights provide the natural lighting to a calculated amount of 25 foot candles; this has proved very satisfactory in practice. The architect would have preferred a full plenum system because in very hot weather heat coming through the rooflights does in fact raise the temperature inside the building. Artificial lighting is from tungsten lights arranged in a set pattern within the framework formed by the roof units. Lighting is also incorporated in most showcases.

GULBENKIAN MUSEUM continued



The museum seen from gallery 3, the lowest of the four floor levels. On the far side are doors to various departments.



The suspended ceiling around two sides is slightly strange, but acceptable; its junction with the column of the staircase is most regrettable.



One of the immaculately designed showcases.

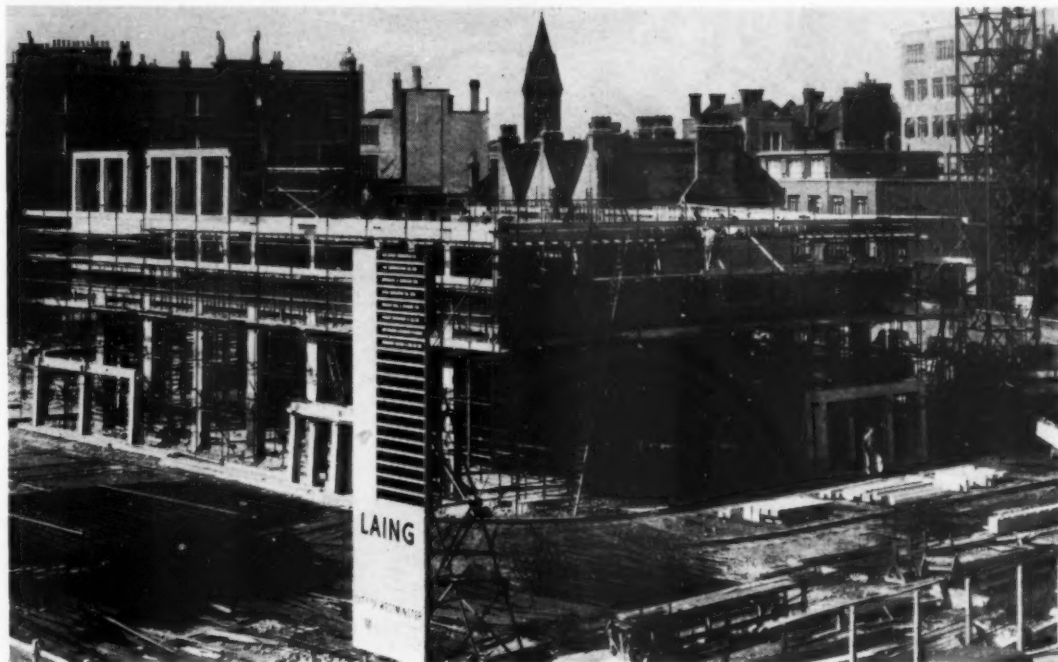
HIDE PLACE DEVELOPMENT

The second of a series of progress reports, the first of which appeared in the AJ for June 23.

2

SIB File No. (98)

UDC No. 728.2



General view, taken on June 30, 1960.

director of
Westminster housing E. J. EDWARDS
architects STILLMAN & EASTWICK-FIELD
associate R. SMORCZEWSKI

assistant D. STOLLAR
structural engineers CHARLES WEISS & PARTNERS
quantity surveyors HARRY TRINICK & PARTNERS

At the time of the first meeting between the architects and engineers, the general massing of the building had been decided. It was to be a tower block with 20 habitable floors and a roof storey with public and utility rooms built over a double-storey-height open ground floor—the equivalent of 23 storeys. Strong preference was expressed for a solid-looking mass on a relatively high and open ground floor, enhanced by cantilevering the north and south elevations. The relation of the length of the building to the column grid of 12 ft. determined the 8-ft. cantilevers carrying 21 storeys.

To accommodate the floor heating, $2\frac{1}{2}$ in. of dense screed was necessary, adding considerably to the dead weights to be carried.

A quick comparison of costs between reinforced concrete and structural steel favoured concrete so decisively that a detailed analysis was considered unnecessary. It has been said that use of structural steel speeds erection of the frame, cuts contract time and consequently overheads, thus balancing any additional costs of the frame itself. Whilst this is debatable, it was felt that two aspects of the construction of structural steel framework, namely prefabrication and simple connections, are

well worth adapting for concrete.

Thus the next step became clear: to prefabricate as much as possible the elements forming the structure and to design simple and efficient connections. Generally there is no difficulty in connecting pre-cast beams to columns, or slabs to beams, but in the past column to column connections in multi-storey pre-cast frames have been made by joining the upper and lower units with a section of column cast in situ. This method is both cumbersome and illogical: because of the difficult compacting conditions the concrete in the joint is much weaker than in the pre-cast shafts which can be manufactured under ideal conditions. Moreover, the usual method of welding the reinforcement at the joint and the introduction of aligning nuts is also expensive and complicated.

A brick or stone pier is constructed of small elements held together by mortar; and so long as it has to carry central vertical loads only, or a combination of loads which will resolve in a force within the "core" of the section so that the pier will be always in compression, its stability is beyond doubt, as has been proved through the centuries. This simple principle was adopted for columns of concrete in a

building frame.

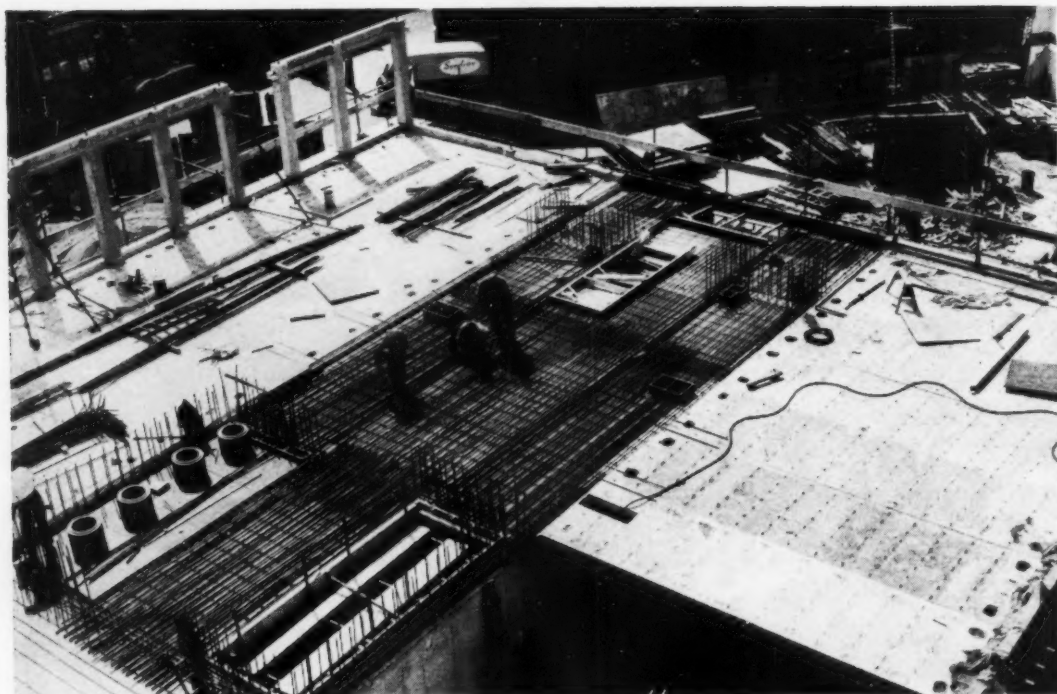
If the columns are storey height there will be one simple mortar joint to make at each storey. All that is necessary for stability during erection is to "load" the temporarily free-standing column so that when combined with accidental lateral forces and wind forces the resultant stresses on the contact surfaces will remain in compression. This loading (or pre-loading) can be achieved simply by principles similar to pre-stressing, that is by anchoring a central bar in the lower column and applying sufficient tension at the top to compress the joint to the desired extent.

The foregoing principles of construction and system of jointing had then to be incorporated in the basic design, deriving such further advantages as the system may offer during the detail design stage.

It was first necessary to ensure the lateral structural stability of the building; this was the only major structural problem.

The width of the building is broadly divided into two outer spans containing flats and an inner core containing lifts, stairs and circulation areas. Roughly, these are equal bays of 22 ft., a reasonable span for floor slabs. Thus the structure consists of a core and rows of

progress report



The refuse chutes. The reinforcement in the core slab is not typical, as the second floor is part of the cantilever system.

columns and beams on the perimeter. If the perimeter columns are joined vertically by a simple mortar bed only, they will not be able to resist any lateral forces, therefore the lateral stability of the building must be given by the central core. The lift walls and walls enclosing the refuse shafts are suitable for this purpose but they were insufficient in themselves. An examination of the plans revealed that if some partitions were constructed in concrete it was possible to arrange two pairs of large H-shaped buttresses near each end of the building. These were found, together with the central walls of the lift and refuse shafts, to give sufficient stability to this tall building. The buttresses were connected transversely above the main roof by rigid storey-height box beams so that each pair acts together as a frame, rather than each buttress as an independent vertical cantilever. This centre core naturally had to be a solid monolithic structure and in situ construction was the only reasonable method of erection.

Having established the rigid stable centre core and the "flexible" perimeter, it was now necessary to connect them to stabilise the whole structure. The floor slabs are sufficient for this purpose and their design incorporates the necessary details for making the connection.

It was logical to extend pre-casting to as many building elements as possible and it was then decided to prefabricate the floor units of the two outer wings and the stairs. The large beams required for the cantilevers of the first floor

made it necessary to construct in situ the whole ground floor and the first floor. This has not only allowed realisation of the rough concrete finish for the open ground floor, but also gained time for the casting and maturing of the large quantity of pre-cast units for the upper storeys.

In view of the large proportion of pre-cast elements the next important point to consider was transport and lifting. After a detailed study of site conditions it was thought possible to organise the casting of the units on the site. But as some contractors tendering for the job might prefer to cast units away from the site, units were designed to comply with both conditions.

Erection of the units is, of course, a most important problem and their design depends on the capacity and characteristics of an economical crane for the job. The design was based on a central crane of approximately 60 metre ton capacity climbing in the area of the refuse shafts. (The contractors eventually chose a tower crane travelling around half the perimeter of the building.) Maximum weight of the units worked out at approximately 3 tons. It was obviously advantageous to design the units as large as possible within the crane capacity. Columns of the perimeter structure were connected by beams (maximum depth 12 in.) resulting, incidentally, in further economies in reinforcement because of continuity. Thus the largest units are over 24 ft. long and 9 ft. high. Since the load of the columns was to be transmitted to the next storey by a

thin mortar joint and it was essential that proper bearing over the whole area of the joint should be obtained, it was thought that the columns should be placed on the still plastic mortar and pre-loaded to squeeze out surplus mortar and thus ensure full and even bearing. Experiments were carried out in the laboratory with various mortar mixes which were then loaded at various times between 5 minutes and 30 minutes after mixing. It was concluded that the plastic mortar bed will safely resist the stresses imposed on it by the pre-load and accidental lateral loads, including wind loads, without any temporary strutting. The mortar beds were also tested after setting and their strength was found to exceed that of the concrete in the columns.

The next element to consider was the floor slab. The minimum depth necessary for the span and for the slab to function efficiently as a strut and tie between perimeter frames and core was 7 in. To bond efficiently the in situ concrete of the core with that of the floor slabs, it was decided to pre-cast 5½ in. of thickness and to complete the slabs with a 1½-in.-thick in situ topping. The 6- and 12-ft. column grid of the upper floors suggested that the slabs could be pre-cast in 6-ft.-wide panels. The weight of a solid slab over 22 ft. long, 6 ft. wide and 5 in. thick was over 3 tons, therefore large holes had to be arranged in the units to reduce the weight to 3 tons. Since the window heads were to be at the soffits of the slabs, the joint between slab and frame had to be halved. This would have made

casting of units complicated, if the holes were to run parallel with the span; in consequence these were arranged transversely. Since only material near the neutral axis is omitted, the slabs are not seriously weakened.

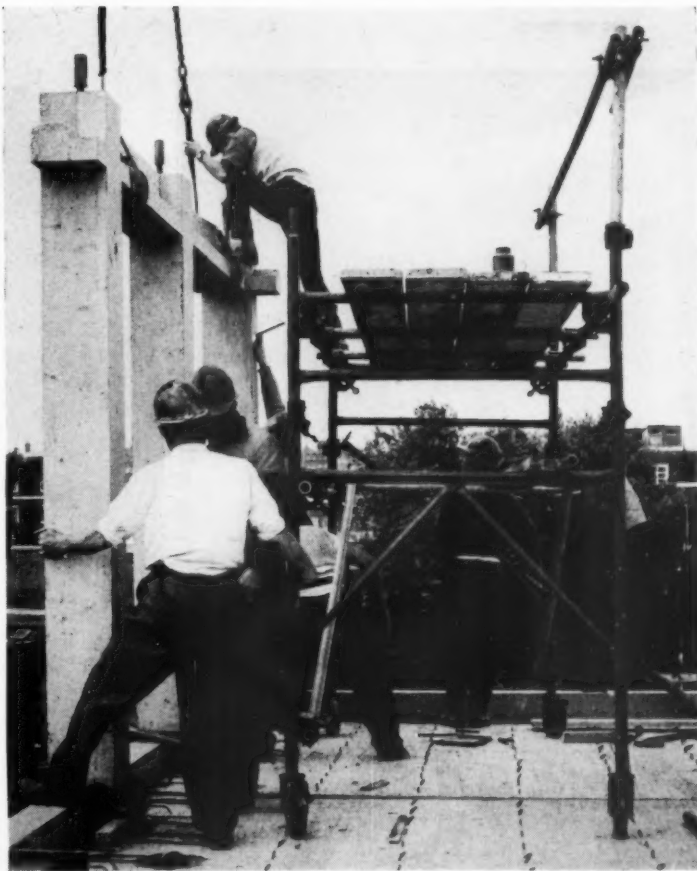
Another advantage of the design was that perimeter columns and beams were all pre-cast and could be fixed from the inside. The outer bays of the slabs were also pre-cast and the up-standing edges of the perimeter beams formed a check for the in situ topping. Thus, all in situ work is centred around the building's core where men can work safely at any height. The cladding (which will be the subject of a further report) was to be in some form of pre-cast concrete which could be designed for fixing from the inside. If window frames and other finishes on the elevation were also designed so that they could be fixed from inside, scaffolding could be omitted above the second floor. For a building of over 300 ft. perimeter and some 200 ft. height it was thought that considerable economies may be gained by making it possible for the contractor to dispense with external scaffolding.

Sketch drawings of the whole structure were then prepared, and a selected list of contractors to be invited to tender agreed. The design was explained to them in detail in individual interviews before working drawings were prepared. The object of these interviews was to draw constructive criticism, but, apart from a wish from a minority to reduce the proposed sizes of pre-cast units, none of the comments were such as to make it worth changing the principles of the design.

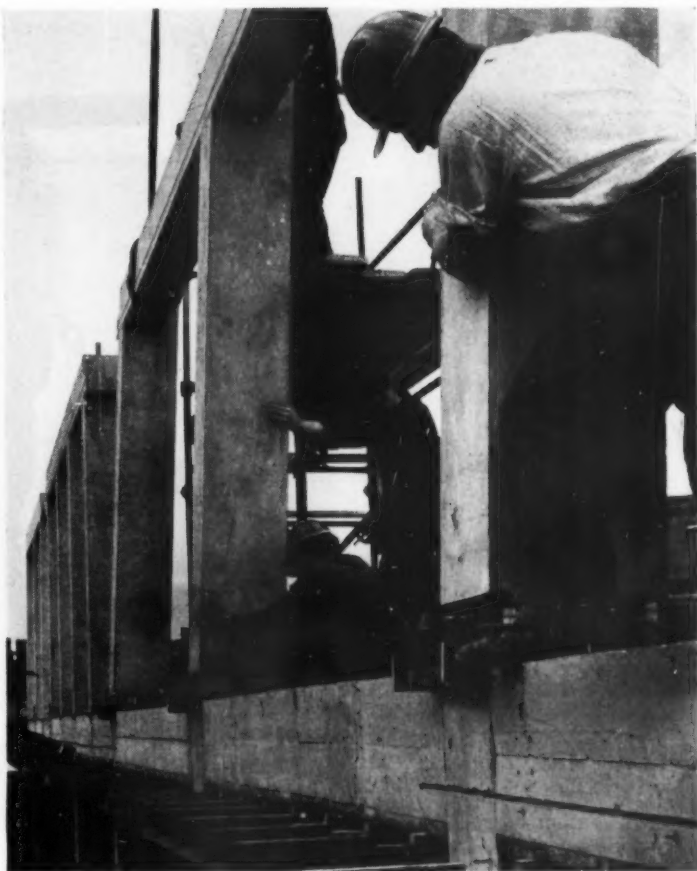
A full-size model of a frame unit and cladding panel fully confirmed the design assumption. Full-size floor panels were also made and loaded to destruction, with and without the in situ topping. These tests confirmed that stability of the floor panels would be little affected by the large transverse holes.

The staircases to the first floor are in situ like the rest of the structure, and the south stairs are supported by a large cantilever spine. Stairs of upper floors were designed with open risers, to allow both maximum daylight to circulation areas and to block as little as possible the fine views: the design also reduces the deadweight. Upper stairs are constructed in pre-cast granolithic concrete rather like simple timber stairs with spandrels and treads only. Since the formwork or mould to produce these stairs would be too complex it was decided to cast the spandrels and treads separately and bolt them together on the ground for erection by crane in complete units.

Careful thought was given during the design to the tolerances necessary both in the manufacture of individual units and for erection. The permitted tolerances specified were generally $\pm \frac{1}{8}$ in. for every foot in length and $\pm \frac{1}{16}$ in.



Lowering pre-cast frame unit on to mortar bed.

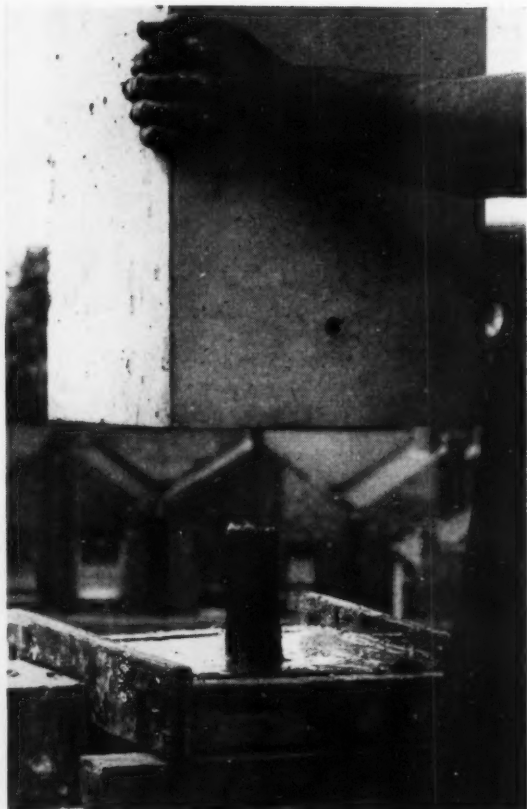


Another view of the frame being lowered into position.

progress report



Close-up of a coupling nut.



Lowering pre-cast frame unit over coupling nut. Note the mortar bed.



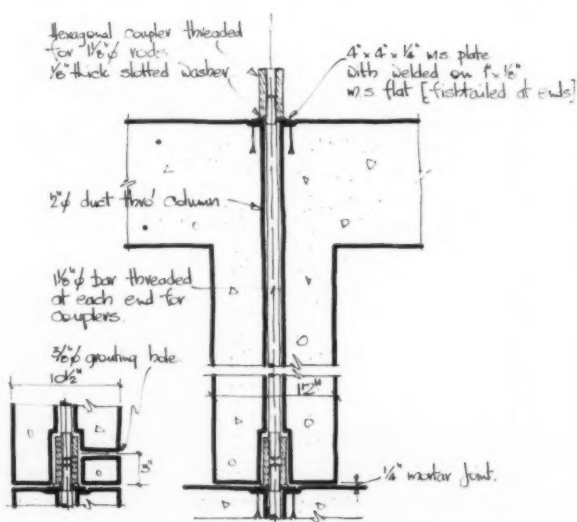
Pre-loading columns by torsion wrench.



Torsion wrench breaking at predetermined tension.



Pre-cast floor slab, showing the transverse holes which reduce the weight.



for every foot in cross-section of the members. In the floor panels $\pm \frac{1}{4}$ in. was allowed in the 5 ft. 11 $\frac{3}{4}$ in. nominal width of the panels for the 6 ft. 0 in. actual width. During construction it became apparent that the width of the panels should have been reduced by at least another $\frac{1}{4}$ in. for comfortable erection. Other tolerances seem to be working out reasonably well. However, the length of each column shaft is carefully checked before erection and the actual length noted on it, so that the craftsman can make an appropriate allowance in the thickness of the mortar bed (nominally $\frac{1}{4}$ in.). Minor adjustments can be made during erection by varying the pre-load on the columns, increasing the mortar squeeze-out if necessary.

The District Surveyor was consulted about the sketch design and kept informed of every stage of the design, detailing and tests. His co-operation was much appreciated, especially in view of the relatively little time allotted for preparation of the design and drawings.

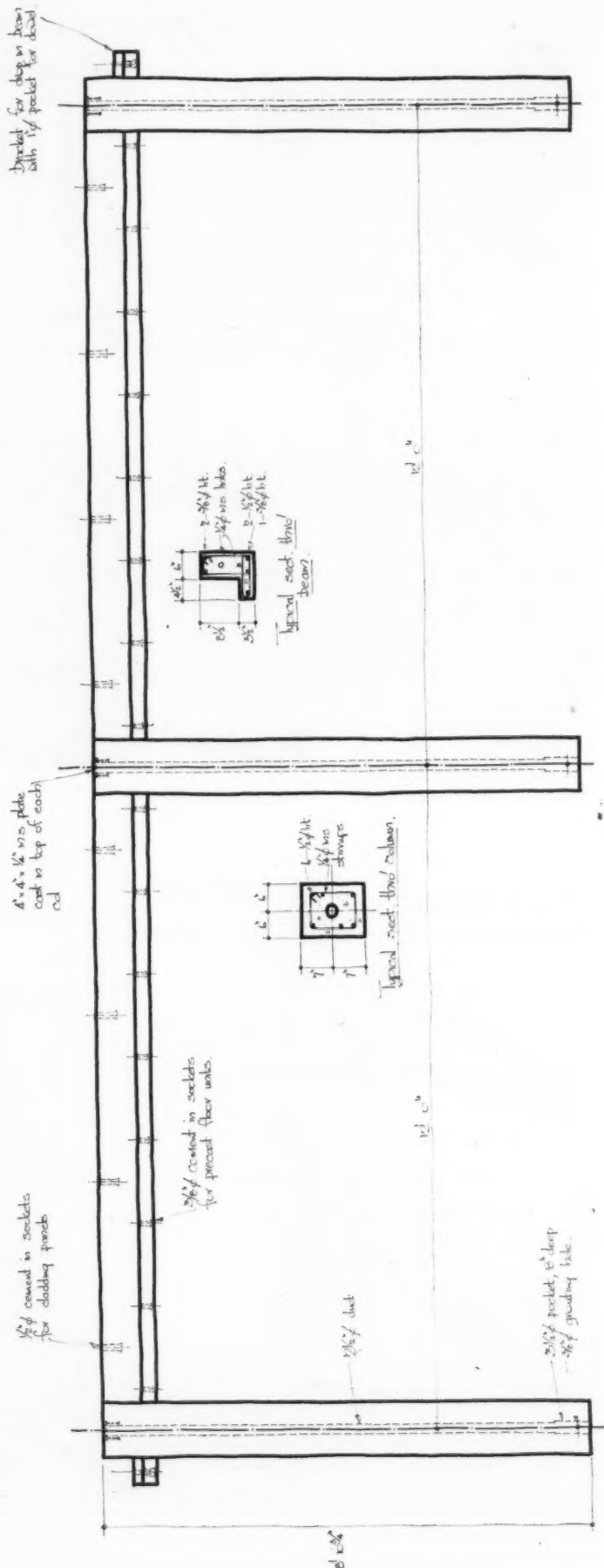
The contract documents included a very comprehensive description of the structure and proposed methods of erection; giving, nevertheless, full freedom to the contractor to erect the building by any means he wished. Eventually the contractor departed from the suggested method in three respects only: he chose

progress report

to cast the units off the site; he preferred a travelling tower crane to a central climbing crane; he wished to pre-cast the lower halves of the spine beams of the central core connecting walls and buttresses. The balance between pre-cast and in situ work largely governs the rate of progress and the contractor's specialised knowledge was necessary to determine just where the two would balance.

At the time of writing the sixth floor is being completed. The men quickly got used to the method of erection and very few teething troubles were experienced. Foremen, erectors and crane drivers are all experts in their fields, and, in spite of crane breakdowns and inclement weather, steady progress is being maintained. The present rate is one floor per week but it is hoped to improve this to a four- or five-day cycle. The method of erection is generally that proposed in the design. Work on the in situ core is slightly ahead of the erection of pre-cast units. Shuttering for the core walls and buttresses is prefabricated in large units, the reinforcement is prefabricated on the site as much as possible. While the formwork and reinforcement are placed in the core, the perimeter frames are hoisted and placed on prepared mortar beds, over the large coupling nuts of the lower storey. The central threaded bar is then screwed down into the lower coupling nut and the upper coupling nuts tightened one by one to a pre-determined pressure by a torsion wrench. After tightening, the crane is released for hoisting the next unit. The whole operation takes approximately ten minutes for each unit. Vertical forms to the core walls are struck within twelve hours, and core and perimeter frames are then ready to receive the floor units. These are hoisted straight off the lorries and placed on a thin mortar bed. Cement in sockets in the frames receives bolts through slots in the floor slabs; the bolts are tightened to provide a mechanical connection between perimeter frames and core. The in situ topping is then applied to form a monolithic slab with the core, and the floor is completed. Staircases are erected as work proceeds. Delivery of pre-cast units needed careful liaison between factory and site; it is working very well. Floor units are lifted off the lorries and hoisted straight for fixing. Frame units are stacked vertically around the building and hoisted when required.

It is hoped to apply the experience gained from this building to other projects, and two more are now being planned. The principles described could be applied to any multi-storey pre-cast building frame of any height, but the economies are likely to be greatest for tall buildings.



THE INDUSTRY

Brian Grant describes this week a range of dishwashing machines, a new timber preservative, a vinyl floor covering, a counterbalanced door, and a joint cover strip for use beneath asphalt carpets.

Equipment for catering

A completely new Rotex range of automatic glass and dishwashing machines has recently been introduced by the Kenwood-Peerless and Ericsson group of companies. The dishwashers are designed for outputs between 2,000 and 15,000 pieces per hour, and all the actions are automatically timed, including washing and rinsing, with control of both wash and rinse temperatures, as well as detergent consumption. Dishes are fed into the machine on racks, either manually, or in the larger models, on conveyors. There is also a glass washer which will deal with all shapes and types of glass at 1,500 an hour. (Peerless & Ericsson Ltd., 1, Carlisle Road, The Hyde, Hendon, London, N.W.9.)



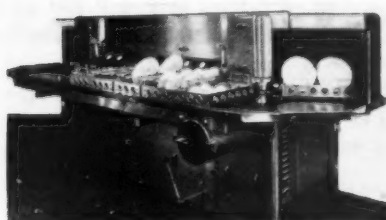
Peerless & Ericsson Rotex glasswasher.

The control of woodworm

There is now a new R60 grade of Bruno-phen timber preservative to be used for killing woodworm. It is used for roughly the same purposes as Brunophen No. 2, but is intended for occupied buildings, as it has a smell which the manufacturers describe as "positively pleasant." The term woodworm is used to include furniture, death watch, lyctus and house longhorn beetles, which are most commonly found in this country, and the makers issue a specification for eradicating both woodworm and dry rot. (Preservation Developments Ltd., 23, Sloane Street, London, S.W.1.)

Vinyl floor covering

Sandran vinyl floor covering is at the moment being produced in America, where it is claimed that over 150 million square yards have already been laid, and will shortly be made over here. The floor consists of a sandwich of three layers. The central layer is printed to the required pattern by roto-gravure and is then coated with a top layer of p.v.c. at a high temperature for curing. The bottom layer is bitumen saturated felt, which is welded to the upper layers at high pressure. The material can be cut with a knife and is laid like linoleum, the makers recommending that it should be stuck down. Floors must be level, dry and well ventilated, and a d.p.c. is necessary if the sub floor is on ground concrete. Retail price is 13s. 9d. per square yard and delivery of any of 32 patterns is immediate. It is resistant to alkalis, including strong caustic soda, and to most household stains. (Williamson-Sandura Ltd., Lune Mills, Lancaster.)



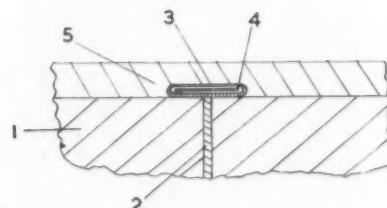
Peerless & Ericsson Rotex dishwasher.

Overhead door gear

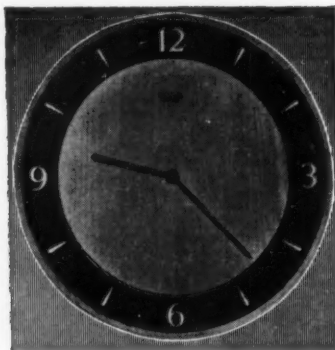
Coburn have just introduced a new up and over counterbalanced door gear known as type 200, for use with doors up to 7 ft. 6 in. wide by 6 ft. 6 in. high. Two lengths of high tensile cable pass from the door pivot over pulleys in the ceiling to a concrete counterweight at the back wall of the garage. There is a safety device to hold the door if one of the cables should break. Price of the gear is £6 12s. (Coburn Engineers Ltd., Coburn Works, Peasmarsh, Guildford, Surrey.)

Protecting asphalt carpets

When asphalt is laid on either new or old concrete roads there is a tendency for any cracks or joints in the concrete to be reproduced in the asphalt. This can be produced either by horizontal temperature movements or changes in level due to the movement of the sub grade, but cracks in the asphalt allow water to penetrate and cause further damage to the surface and the foundation. Stress in the asphalt can be reduced if it is freed from the concrete on either side of the crack or joint. Rigidflex aluminium foil has been used with some success, but the asphalt tends to stick to the aluminium. This trouble has now been largely overcome by sheathing the aluminium in a sleeve of Lubri-thene plastic which does not adhere to the asphalt and is not softened by it. These insulating strips are supplied in 5- and 6-ft. lengths and consist of a strip of 7-in. wide Rigidflex foil in a 9½ to 10 in. wide seamless tube of Lubri-thene. (Sparkes Bros. Ltd., Spring Road, Feltham, Middlesex.)



1, Concrete base; 2, joint in concrete; 3, plastic; 4, Rigidflex aluminium foil; 5, asphalt carpet.



Model ECS/W2

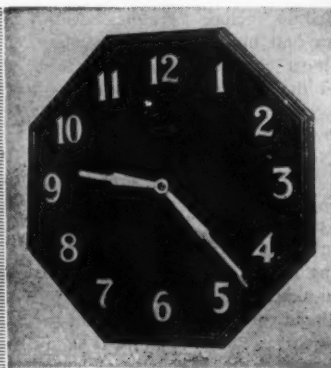
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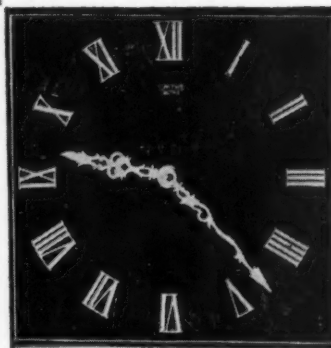


Model ECS/W4



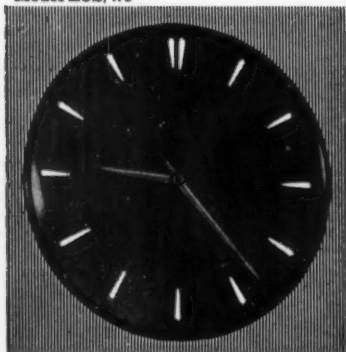
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26 SERVICES AND EQUIPMENT, MISCELLANEOUS

projector screens

Information governing the size of screen to be provided for lecture halls is not easy to get. We print below an article by James Hough, M.A., of the Physics Department of the University of Hull, which gives data not only on the screen size, but on the size of lens needed for different distances of throw and on how much lettering can be got onto each slide.

It is common practice to use slides of tables, etc., to illustrate lectures; frequently when lecturing in strange auditoria, it is found that the audience is unable to read the slides because the image is too small. This problem has presented itself to the author very forcibly whilst engaged in the design of a new suite of lecture theatres. The architect had asked many questions and it was very surprising to find how inaccessible the data was on this subject. There is little that is really new in the present paper but experience has shown that few people are aware of some of the facts that were found. It is hoped to propose a standard for projection which will eliminate many of the difficulties encountered at the present time. The main emphasis is placed on making written matter legible but it is obvious that standardisation will also assist in ensuring that pictorial matter is satisfactorily displayed.

Factors determining image size

Little seems to have been written on the relation between image size and the distance from the audience; the best data seems to be in a leaflet by Leitz.* Usual practice appears to be to let the projector power determine the image size in terms of the brightness necessary to get a satisfactory picture. This is a case where the wrong criterion is being used as it should be the image size determined by other factors which decides the power of projector necessary.

The two criteria which should decide the image size are legibility and the comfort of the audience. It would be very easy to decide on a picture size if the whole of the audience could be at the same distance from the screen; usually, the back of the audience is up to six times as far from the screen as the front of the audience. An image which is satisfactory to those at the front may be quite illegible at the back; an image which can be comfortably viewed from the back may involve much head movement at the front. A compromise must be found and the need for legibility at the back must have a higher priority than the comfort of those at the front.

It is generally considered that an image subtending 15 deg. at the eye is the optimum size; however, if this is adopted at the back of the audience the image will be excessively large at the front. The

* "Large Hall Projectors," ref. no. 35.4/Engl., Ernest Leitz, G.m.b.H., Wetzlar, Germany.

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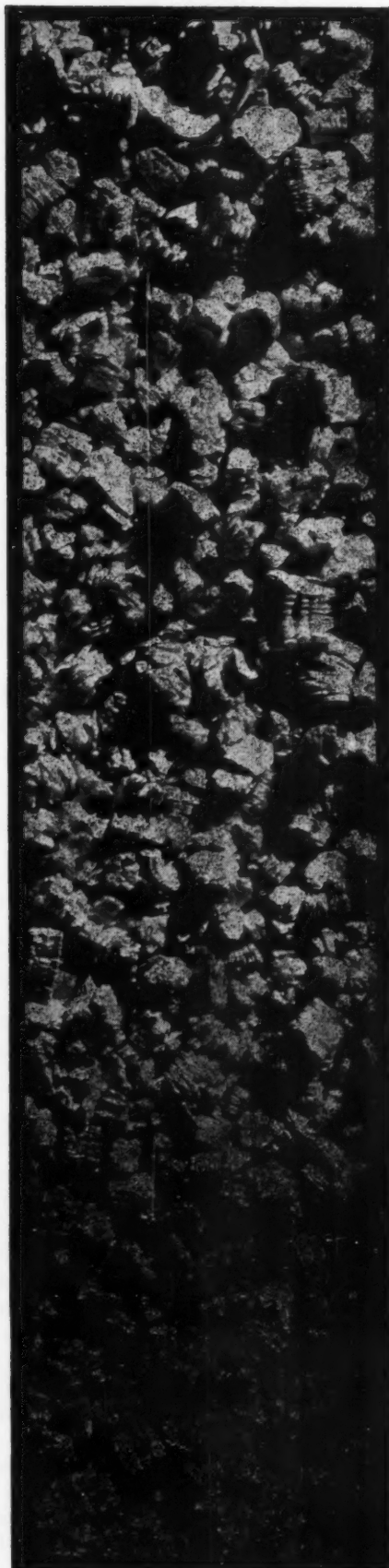
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technical section

Society of Motion Picture Engineers* has suggested that the angle should not exceed 60 deg. at the front of the audience nor be less than 10 deg. at the rear of the audience. In terms of distance, this means that the minimum distance between screen and audience should not be less than 0.87 times screen width nor the greatest exceed six screen widths. The eye is capable of resolving very fine detail for those people who have "normal" eyesight but it is usual to find that many members of the audience have less than perfect vision. It is suggested that it is safer to assume that nearly all the audience (wearing spectacles where necessary) will have a vision of 6/12 Normal which means that a letter must subtend an angle of 10 min. at the eye. An ophthalmic surgeon, in fact, suggested that a capital Roman letter should subtend 15 min. for safety; allowing for spaces between lines, this means that each line of type must subtend 20 min. at the eye.

Standardisation of projection conditions

When making a slide, it is easy to reduce the size of the original to any desired degree and so get a very large amount of information on a slide. This has no value if the people at the back of the audience are unable to read it; it may be possible to adjust the image size so that a particular slide shall be visible at the back of the audience but in many cases it will be quite impossible to produce a large enough image. This seems to imply that the slide maker ought to know the conditions under which he may expect his slide to be projected and then determine how much information it is possible to display.

It would seem that the suggestion of the Society of Motion Picture Engineers would provide an adequate standard, namely that the image should subtend an angle of 10 deg. at the eye.

This would imply that not more than 30 lines of type should be reproduced on one slide. Wherever possible a smaller number should be used as the less information on one slide the easier it is to assimilate. Lettering on graphs, diagrams, etc., should never be smaller than 1/30 of the total size of the diagram.

There may, of course, be individual circumstances which compel the adoption of a different standard; when these occur, it is not reasonable to assume that the slides made will be satisfactory when shown under conditions other than those for which they were made.

Once a standard for image size has been determined, it becomes possible to decide on the focal length of lens required and the power of the projection lamp which will be necessary. In the next three sections the three commonest types of still projectors will be considered—miniature slides (2 in. \times 2 in.), standard slides (3½ in. \times 3½ in.) and episcopes projection.

Miniature slides

Although it is possible to get an area approximately 45 mm. square of data on to the standard miniature slide the B.S. specification* restricts the area to 40 \times 28 mm. Using the maximum dimension as that which specifies the angular size of the image, it is easy to calculate the angle subtended at the projector for different focal length lenses on the assumption that the focal length is small compared with the projection distance. The results are given in Table 1 for common focal length lenses.

Table 1

| Focal length, mm. | 50 | 75 | 85 | 100 | 135 | 150 | 200 |
|---------------------|------|------|------|------|------|------|------|
| Focal length, in. | 2 | 3 | 3½ | 4 | 5½ | 6 | 8 |
| Angle at projector | 43° | 30° | 27° | 23° | 17° | 15° | 11° |
| Fractional distance | 0.23 | 0.33 | 0.37 | 0.43 | 0.59 | 0.67 | 0.91 |

It will be seen that even an 8 in. lens provides an image slightly larger than that required for the standard projection conditions if the projector is at the back of the audience. The last line of the table shows the fractional distance at which the projector must be situated for 10 deg. projection at the back of the audience; fractional distance is defined by

$$\text{Fractional distance} = \frac{\text{Screen-Projector distance}}{\text{Screen-Rear audience distance}}$$

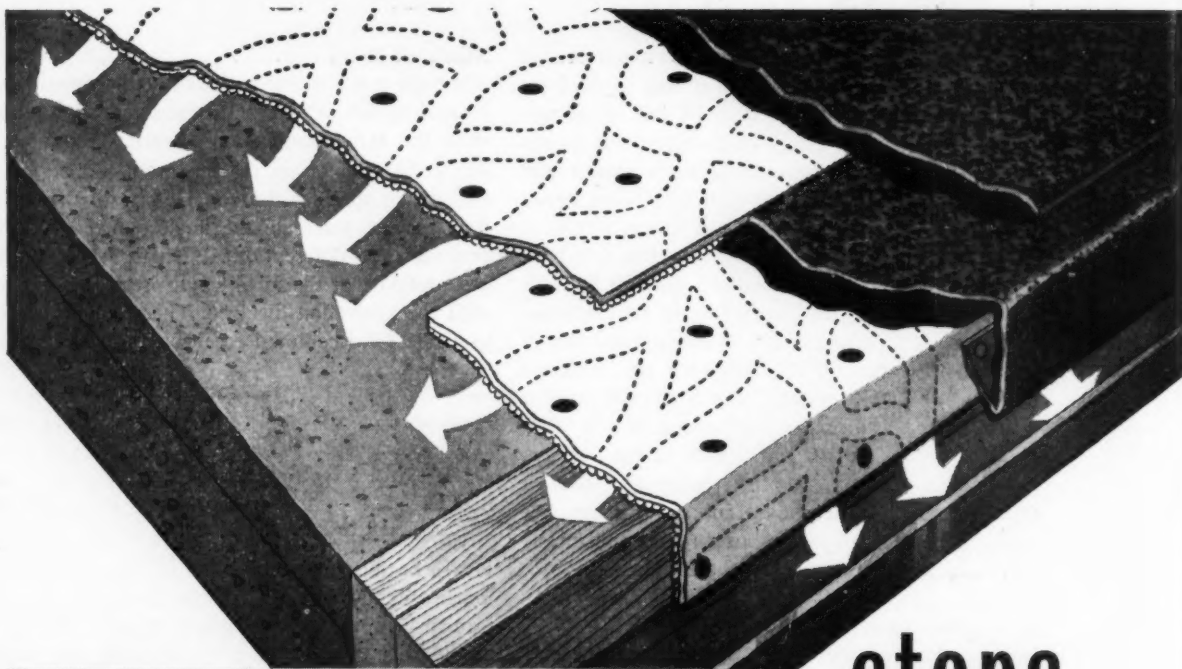
It will be seen that an 8 in. lens is a reasonable lens to use if the projector is at the rear of the audience, a 6 in. lens for two-thirds fractional distance and a 5 in. lens for a projector position half-way between the rear of the audience and the screen.

Having decided on the size of image required, it is necessary to consider the power of the projector necessary to produce an image of adequate brightness. Various standards of screen brightness have been suggested but they are of little value as manufacturers do not quote the light output of their projector/lens combinations. One recent standard† suggests a screen brightness of 8-12 ft. candles for black and white and about 25 ft. candles for coloured transparencies. The power of the bulb does not permit the calculation of screen brightness because the aperture of the lens, the efficiency of the condenser system and the reflecting power of the screen must all be known. Modern projectors are very much more efficient than the older models for the same size of bulb. Assuming that the image size is such that it is 10 deg. projection at the rear, a 100-150 watt projector might be suitable for audience distances up to 20 ft., 300-500 watt for audience distances up to 40 ft. and a 1,000 watt projector up to 60 ft. It must be emphasised that these figures are very approximate and it is very advisable to try out a projector under working conditions before purchase.

* Quoted by L. J. Wheeler, "Principles of Cinematography," Fountain Press, London, 1953.

* B.S. 1917: 1952.

† "The Illumination of Lantern Screens," Photographic Alliance, 16 Princes Gate, London, S.W.7. Leaflet 1/56, 1956.



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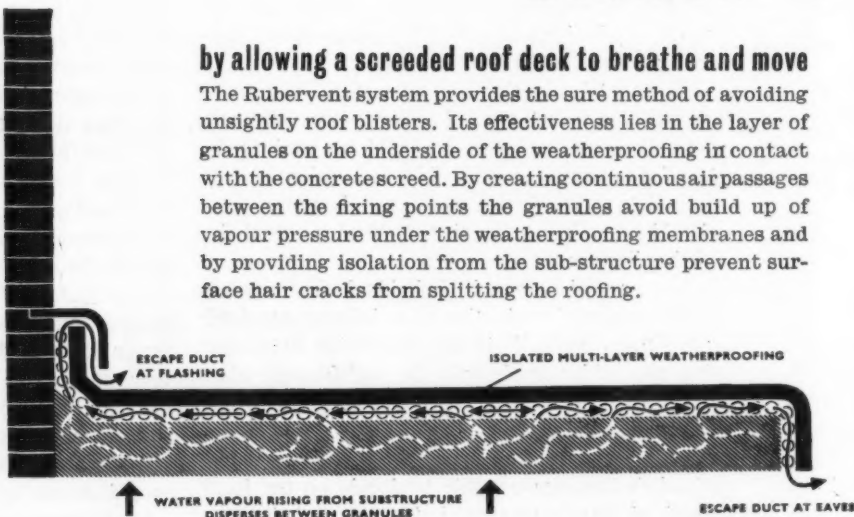


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technical section

Standard slides

Most of the points raised in the previous section apply here; the main difference in B.S. Specification concerns the image area (3 in. \times 3 in.). Table II gives the equivalent information for this size of slide.

Table II

| | | | | | | |
|---------------------|------|------|------|------|------|------|
| Focal length, mm. | 150 | 200 | 250 | 300 | 350 | 400 |
| Focal length, in. | 6 | 8 | 10 | 12 | 14 | 16 |
| Angle at projector | 28° | 21° | 17° | 14° | 12° | 11° |
| Fractional distance | 0.36 | 0.52 | 0.59 | 0.71 | 0.83 | 0.91 |

It will be seen that a 16 in. lens is required if the projector is to be at the rear of the audience, a 12 in. lens for a position two-thirds of the maximum and an 8 in. lens at a position of half maximum audience-screen distance.

As with miniature slides, it is not possible to give more than an indication of the projector power required. A 250 watt projector should be adequate for a 30 ft. throw, a 500 watt for a 40 ft. throw and a 1,000 watt for a 50 ft. throw.

Episcope projection

In an episcope, the two main problems are the space required to house the illumination system and the low efficiency of the system. It is not possible to use short focal length lenses and most episcope seem to have a minimum of 14 in. It is very difficult to obtain a really bright image and so it is customary to provide a faint image which is far too small to be visible at the back of the audience. It is very clear that wherever it is possible, the material to be projected should be made into slides and an episcope only used in exceptional circumstances. Only the most expensive machines will provide really satisfactory projection and a great many slides can be made for the money saved by not purchasing one. Most episcope project an area of 5-7 in. square; for normal typing and printed matter, such a length will tend to contain up to 50 lines. When this is coupled with poor illumination, it will be realised that the 10 deg. standard projection will make this illegible at the rear of the hall. It would be wise to assume that 20 deg. projection would be desirable. This would require a 14 in. lens at two-thirds maximum audience-screen distance or a 20 in. lens at the rear of the audience.

It is not really possible to suggest any standard of power for episcope. It is necessary to test each model under the working conditions proposed to see whether it is suitable. Episcope with less than 1,000 watts of lighting are unlikely to be suitable in any but the smallest of rooms.

Screen size

For the projection of still pictures the screen should be square and, for 10 deg. projection one-sixth of the maximum audience-screen distance. However, it would be very unwise to make the screen as small as this because it will rarely be possible to obtain exactly the correct focal length lens for the throw and also it is not uncommon (particularly with miniature slides) to rather overfill the slide. It would be wise to make the screen 20 per cent. oversize and so the rule will be that the screen size is one-fifth of the maximum audience-screen distance.

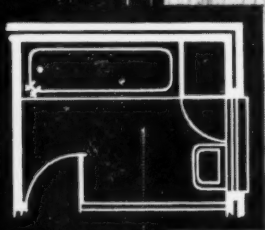
When an episcope is used, the picture will tend to be too large for this size of screen. All that is possible is to inspect the image in sections; in many cases this will be an improvement as it will reduce the amount of information presented to the eye at one time.

Conclusions

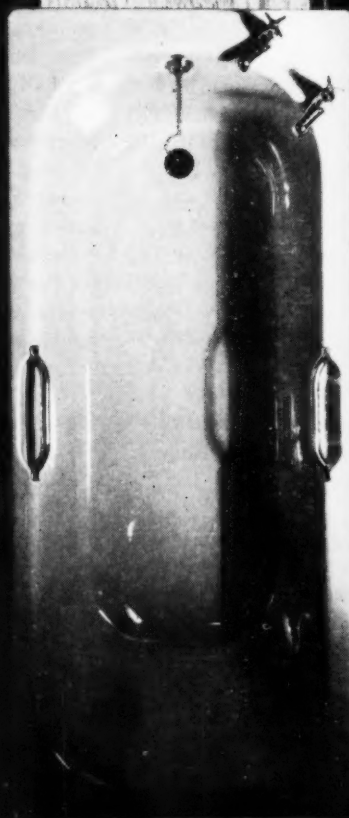
- (a) To obtain satisfactory projection of slides, etc., it is necessary to arbitrarily determine the angle the slide will subtend at the rear of the audience.
- (b) A satisfactory standard appears to be that the angle subtended at the rear of the audience should be 10 deg.
- (c) The screen size should be one-fifth of the maximum audience-screen distance. This allows for the image being slightly larger than 10 deg.
- (d) The focal length of lens required does not depend on the size of hall but on the relative position of the projector in the hall.
- (e) For miniature slides, an 8 in. lens is required at the back, a 6 in. lens for two-thirds distance and a 5 in. lens for a projection position half-way down the hall.
- (f) For standard slides, the corresponding focal lengths are 16 in., 12 in. and 8 in.
- (g) Not more than 30 lines of material should be included in a slide. This is very important and many slides made at the present time contain too much material.
- (h) For episcope, a 20 deg. angle should be subtended at the rear of the audience as it is usual to project material under conditions which would not be legible under standard projection conditions. A 20 in. lens is required if the projector is at the rear of the audience and a 14 in. lens for a projector at two-thirds maximum audience-screen distance.
- (i) The power of the projector must be increased with increasing size of hall. Exact relationships are not possible owing to great variations in projector efficiency.

The author is indebted to Mr. P. L. Cocke, F.R.I.B.A., and Mr. Stenhouse-Stewart, D.O., for stimulating discussions on this subject.

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7 PRACTICE

house conversion costs

Government policy in housing recognises the part played by old properties converted to modern standards of planning, fittings and services. Local authorities are empowered to make monetary grants to owners to assist them in meeting the cost of conversion and improvement. Owners and developers who want to know whether to convert or rebuild, however, need a yardstick to compare costs. The author of this article, R. Baden Hellard, is a partner in a firm of architects whose practice includes conversion work, and he describes a system of cost analysis devised by his firm which will provide this yardstick. At the same time it could form a basis for cost planning conversion work in a more useful way than the normal basis of element cost per square foot of floor area.

Hardly a week goes by in Parliament without the subject of the nation's capital investment in housing being raised. Frequently this is related to the need for preserving old properties and improving their usefulness by conversion. Increasing emphasis has been given to the facilities which exist for improvement grants to be made towards conversion of properties which are out of date in terms of modern planning, services, and equipment, but which have a sound structure with many years of useful life remaining. The economics of the local authority grant often cause confusion both to the authority making the grant and to the owner receiving it. This confusion exists both with the standard and the improvement grants. Nationally it has been decided that better value for money will result from "Improvement" rather than from wholesale redevelopment which might carry an even larger national subsidy. But what of the value for money to the individual or small developer? Will it pay to convert, or to completely redevelop the site? Some yardstick for comparison early in the consideration of a scheme is desirable, but what should this yardstick be?

In the end the purpose of cost analysis is to provide a yardstick of value for money in building work. Whilst it is rarely possible to compare like with like in any building circumstances, a common denominator may be introduced which will enable an assessment of

value for money between two completely different alternatives to be made. In considering the redevelopment of a site in an area where planning density had been determined, the valid cost factor may be the cost of alternative methods of housing a given number of people, that is, the cost per person housed, in a similar way to the cost per place or per patient in schools and hospitals. Land values may come into this as well, since the cost per acre might be divided over a different number of persons housed, but this does not directly affect the consideration of the building costs.

Cost analysis of conversion schemes is obviously invalid if related to a cost per square foot, because in some cases the structure may not be altered at all, and therefore the area enclosed by the structural element will not alter, but elaborate new services may be required. This in turn may, or may not, affect the cost of internal decoration or provision of fittings and finishes, but one project with the same cost for these elements as another may house 50 people, as opposed to 40, with a vastly different implication on the rental return from the conversion investment.

But relating costs to the number of persons housed raises the problem of how that number should be determined. In this analysis the architects Brunton, Baden Hellard & Boobyer have taken the Town Planning figure of 1.1 persons per habitable room* as the basis of their calculations. This takes into account such factors as bedrooms which may be used by one or two people, kitchens large enough to have dining recesses, etc.

Table 1 shows the analysis of total contract costs for each of a number of conversions equated to the cost per person housed and the accommodation provided. In the case of the larger schemes, some of which were on an acre of ground, the return on money invested might have to be compared with the demolition of the existing building and the construction of a multi-storey block of flats.

Table 2 shows a number of these individual job costs analysed into cost and, sometimes, operational elements (see note of author's comments in relation to new works, AJ, August 23, 1956). It can be seen that with as few analyses as are presented here, it is possible to develop a rough yardstick for judging the value for money in a particular scheme. These figures, too, related to the number of persons likely to be housed in future conversions enable rough cost targets to be set at the sketch scheme stage so that detailed planning can continue much in the same way as with a new building project.

* The LCC uses the figure of 1.1 persons per habitable room (habitable room: all rooms except bathroom and kitchen) in relating housing to density figures.

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technical section

Table 1: Summary of analysed jobs

| No. | †Class of Conversion | Completed | Location | Type and Condition of Property | Nature of Conversion | Total Persons Housed | Contract Sum | Cost per Person Housed |
|-----|----------------------|-----------|--|---|---|----------------------|--------------|------------------------|
| 1 | (2) | 1959 | 126 Inchmery Road, Catford, S.E.6. | Semi-detached house c. 1920 structurally sound and in good state of repair | House converted into 2 self-contained flats: lower flat— liv. room 1-1 din./kit. 1-1 bedroom 1-1 3-3 upper flat— liv. room 1-1 din./kit. 1-1 2 bedrooms 2-2 4-4 | 7-7 | £1,260 | £163-6 |
| 2 | (2) | 1959 | 21 Rosenthal Road, Catford, S.E.6. | 3-storey semi-detached (end of terrace) house c. 1900 structurally sound and in reasonable state of repair. | House converted into 3 flats sharing common entrance hall: lower flat— liv. room 1-1 din./kit. 1-1 bedroom 1-1 3-3 middle flat— liv. room 1-1 din./kit. 1-1 2 bedrooms 2-2 4-4 top flat— liv. room 1-1 din./kit. 1-1 bedroom 1-1 3-3 | 11-0 | £ 840 | £167-3 |
| 3 | (2) | 1959 | 41 Bishopsthorpe Road, Sydenham, S.E.26. | Large semi-detached suburban house c. 1910, structurally sound and in good state of repair. | House converted into 2 self-contained flats: lower flat— liv. room 1-1 din./kit. 1-1 2 bedrooms 2-2 4-4 upper flat— liv. room 1-1 din./kit. 1-1 3 bedrooms 3-3 5-5 | 9-9 | £1,720 | £173-74 |
| 4 | (2) | 1959 | 37 Queenswood Road, Sydenham, S.E.26. | 4 bedroomed terrace house c. 1910, structurally sound and in reasonable state of repair. | House converted into 2 flats sharing common entrance hall: lower flat— liv. room 1-1 din./kit. 1-1 2 bedrooms 2-2 4-4 upper flat— liv. room 1-1 din./kit. 1-1 2 bedrooms 2-2 4-4 | 8-8 | £1,540 | £175-0 |
| 5 | (2) | 1959 | 36 Bishopsthorpe Road, Sydenham, S.E.26 | Average size semi-detached suburban house c. 1920, structurally sound and in reasonable state of repair. | House converted into 2 flats sharing common entrance hall: lower flat— din./kit. 1-1 bed/sitting 1-1 2-2 upper flat— liv. room 1-1 din./kit. 1-1 3 bedrooms 3-3 5-5 | 7-7 | £1,405 | £183-1 |
| 6 | (2) | 1959 | 8 Torridon Road, Catford, S.E.6. | Semi-detached house c. 1920, structurally sound and in reasonable state of repair. | House converted into 3 flats with common entrance hall: lower flat 1— liv. room 1-1 bedroom 1-1 2-2 lower flat 2— liv. room 1-1 bedroom 1-1 2-2 upper flat— liv. room 1-1 din./kit. 1-1 3 bedrooms 3-3 5-5 | 9-9 | £1,880 | £189-9 |

| No. | †Class of Conversion | Completed | Location | Type and Condition of Property | Nature of Conversion | Total Persons Housed | Contract Sum | Cost per Person Housed |
|-----|----------------------|-----------|---|--|---|----------------------|--------------|------------------------|
| 7 | (3) | 1955-6 | 96 Eltham Road, Lee, S.E.12. | Large detached 4-storey house, c. 1880, structurally sound and in reasonable state of repair. | House converted into one self-contained flat and 5 flats sharing common entrance hall and staircase: flat 1—liv. room, bedroom=2·2 flat 2—liv. room, din./kit., 2 bedrooms = 4·4 flat 3—liv. room, din./kit., 2 bedrooms = 4·4 flat 4—liv. room, din./kit., 3 bedrooms = 5·5 flat 5—liv. room, din./kit., 3 bedrooms = 5·5 flat 6—bed sitting = 1·1 | 23·1 | £5,589 | £241·9 £265·4* |
| 8 | (3) | 1956 | 72 Eltham Road, Lee, S.E.12. | Semi-detached 4-storey house c. 1880 structurally sound but in poor state of repair. | House converted into 4 flats with common entrance hall and staircase: flat 1—liv. room, din./kit., 2 bedrooms = 4·4 flat 2—liv. room, din./kit., 3 bedrooms = 5·5 flat 3—liv. room, din./kit., 3 bedrooms = 5·5 flat 4—liv. room, 2 bedrooms = 3·3 | 18·7 | £4,551 | £243·2 £245·9* |
| 9 | (3) | 1956 | 72 Eltham Hill, Eltham, S.E.9. | Large detached 4-storey house c. 1880 structurally sound but in poor state of repair. | House converted into 6 flats sharing common entrance hall and staircase: flat 1—liv. room, din./kit., 3 bedrooms = 5·5 flat 2—liv. room, din./kit., 2 bedrooms = 4·4 flat 3—liv. room, 2 bedrooms = 3·3 flat 4—liv. room, dining room, 2 bedrooms = 4·4 flat 5—liv. room, din./kit., 1 bedroom = 3·3 flat 6—liv. room, 1 bedroom = 2·2 | 23·1 | £6,268 | £271·3 £351·7* |
| 10 | (4) | 1957 | The Coach House, 96 Eltham Road, Lee, S.E.12. | Detached coach house c. 1880 structurally sound although still fitted out as stables. | Coach house converted into private dwelling house. Liv. room, dining, 3 bedrooms. 5·5 | 5·5 | £1,915 | £348·2 £365·0* |
| 11 | (4) | 1959 | The Coach House, 98 Eltham Road, Lee, 12. | Semi-detached coach house c. 1880 sharing a common party wall with 98 Eltham Road, structure partly unsound. | Coach house converted into private dwelling house. Liv. room, dining, 3 bedrooms. 5·5 | 5·5 | £2,022 | £367·6 |
| 12 | (3) | 1957-8 | 98 Eltham Road, Lee S.E.12. | Large detached 4-storey house c. 1880, basically structurally sound although in need of damp proofing in the basement and in poor state of repair. | House converted into 1 self-contained flat and 6 flats sharing common entrance hall and staircase: flat 1—liv. room, bedroom = 2·2 flat 2—liv. room, bedroom = 2·2 flat 3—liv. room, din./kit., 3 bedrooms = 5·5 flat 4—liv. room, bedroom, din./kit. = 3·3 flat 5—bed/sitting, din./kit. = 2·2 flat 6—liv. room, dining, 2 bedrooms = 4·4 flat 7—bed/sitting, din./kit. = 2·2 | 22·0 | £8,172 | £371·5 £377·7* |
| 13 | (4) | 1955 | 3 Upper Phillimore Gdns., Kensington. | Semi-detached 4-storey house in good condition previously well kept as gentleman's single residence. | House converted into 5 flats for high income group tenants. | 19·8 | £4,161 | £210·2 £230·0* |

† Class of Conversion

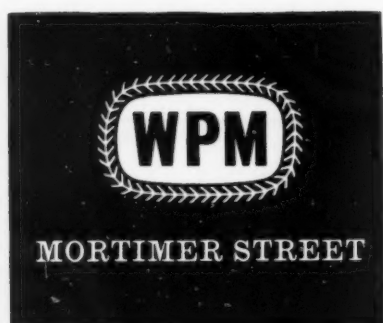
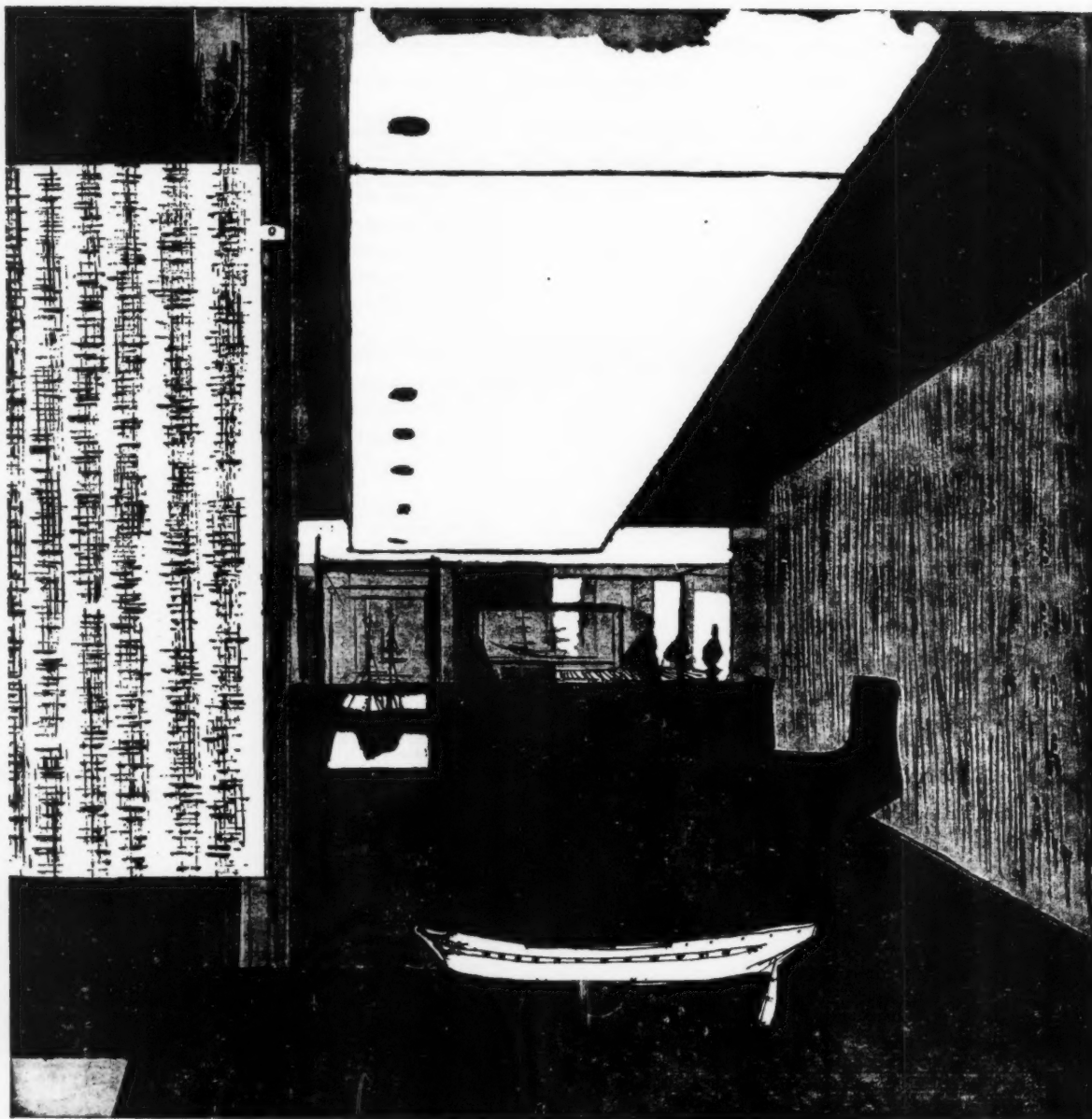
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or King's House King Street West Manchester 3

technical section

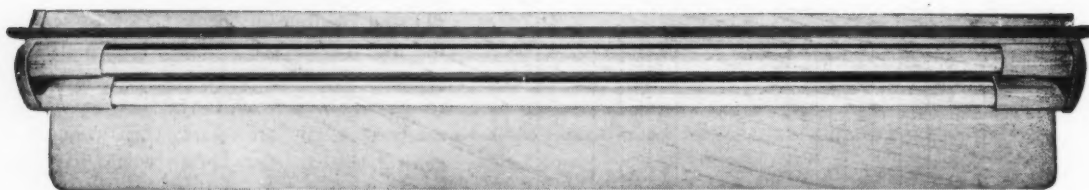
Table 2: Cost analysis of 13 conversion jobs, expressed as elemental cost and cost per person housed. The elemental breakdown relates to the nature of this type of conversion work and often coincides with actual site operations. Figures expressed are *estg.* and are at 1959 values.

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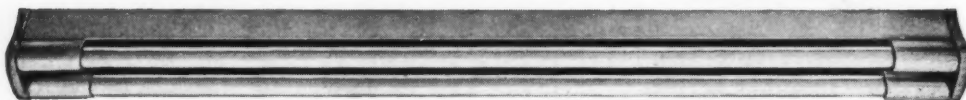
Some surprising things show up on detailed examination of the tables. For example, the general level of electrical works per person housed varies between £11 and £16, but in scheme 12 the cost was £32.8. At the time of tendering it was known that the prices obtained for these were too high, but as one sub-tender was very much lower than the others this was accepted. Had more figures been available then the general level of costs shown would have caused the architects to ask themselves whether some different method of providing the service could be devised to give the same result, or whether further tenders should be sought, as the *value* (not necessarily costs) produced relative to other current schemes was poor. Similar considerations apply to the decoration works in schemes 12 and 5, both of which were carried out by the same contractor, whose prices for this part of the work were known to be high. Of course in every case the likely element cost has got to be related to the initial plan of the building and its state of repair, for such elemental cost analyses are not a substitute for, but merely an aid to the exercise of technical judgment.

It will be seen, however, that despite the wide variety of conditions in size, persons housed and structural condition of these conversions, there is a remarkable consistency in cost per person housed. Thus it would be possible to suggest that the norm for a good conversion was a scheme which produced a cost per person housed of between £170 and £220 for average "housing standard work" (Group 2), and that good class conversions (Group 3) should cost from £250 to £350 per person housed. This underlines the obvious value for money created by scheme 13, a luxury conversion with costs of £230 per person housed down near the bottom of the Group 3 cost bracket. Particularly with conversion schemes such analyses as these enable programming and costing of drawing office work to be related to the various elements of the structure before it commences, and by budgetary control then to see that these costs are not exceeded without detriment to the plans and quality of the scheme produced. Sometimes, too, Local Authorities have required the allocation of drawing office costs against the various elements for improvement grant assessments, and this breakdown has assisted in this. These analyses are regarded by the architects at the moment only as a check against other methods of achieving the result, but it may well be that this type of information opens up new lines of argument and avenues of study in the field of cost research. It may also allow other architects to assess their own schemes against a common yardstick and facilitate the cost comparison of schemes in more detail than has hitherto been possible in this type of work.

FLUORESCENT



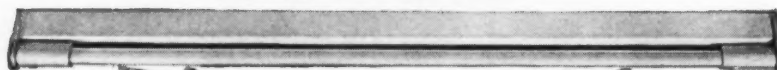
FITTINGS THAT



FIT YOUR

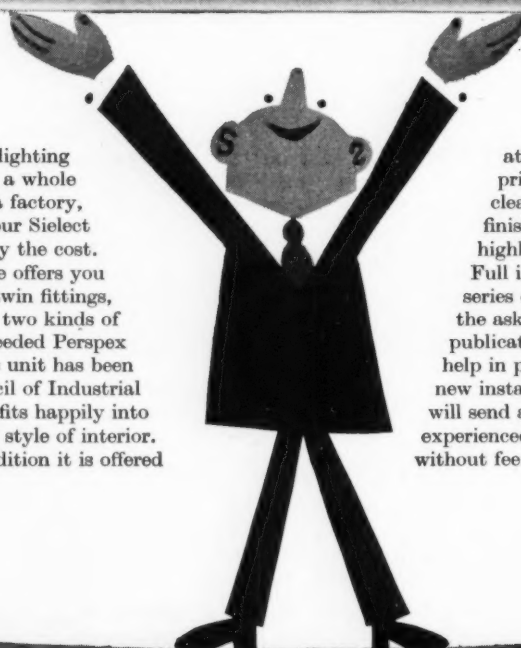


BUDGET



Whether you are choosing lighting fittings for a single room or a whole building, an office block or a factory, send for the facts about our Sielect range—particularly the cost. Briefly, the Sielect range offers you a choice of single or twin fittings, with open tubes, two kinds of reflector, or with reeded Perspex diffusers. The basic unit has been approved by the Council of Industrial Design and the range fits happily into any type or style of interior. In addition it is offered

at an extremely attractive price. Finally, it is easy to service and clean, while the special epoxy resin finish is extremely tough and highly resistant to chemical attack. Full information about the entire series of Sielect fittings is yours for the asking in the Siemens Ediswan publication, PD11/F33. If you want help in planning or estimating for a new installation, let us know and we will send along one of our staff of experienced lighting engineers without fee or obligation.



Associated Electrical Industries Ltd
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CAC 11/83



STB No.

(92)

UDC No.

725-21

SHOP

at QUEEN STREET, CARDIFF
for MESSRS. EVAN ROBERTS LTD.
designed by T. ALWYN LLOYD & GORDON
assistant LEONARD BEAVEN
quantity surveyor L. C. PATTERSON,
W. T. SEATON & CO.

consultants:

structural J. G. VERYARD

heating,

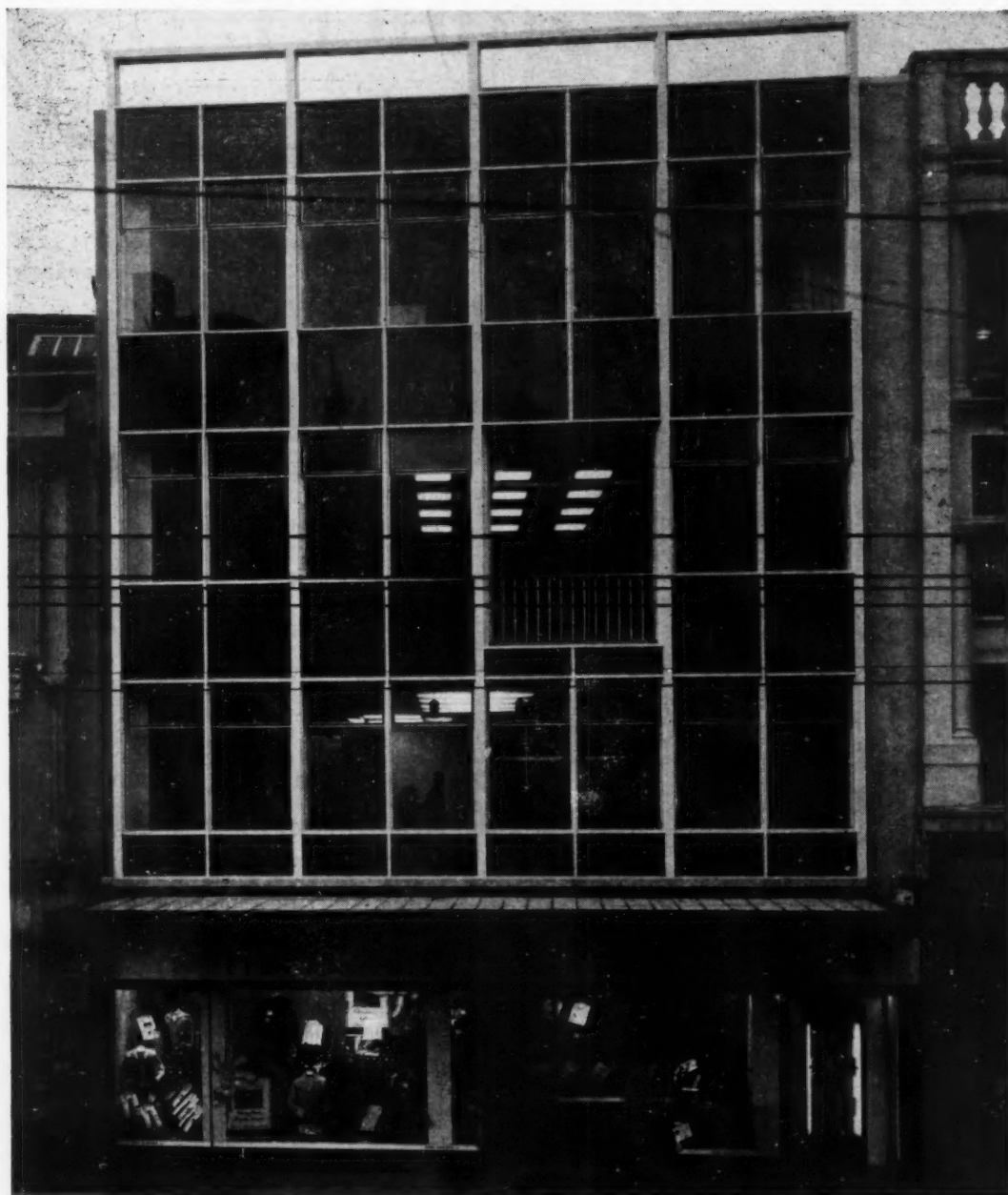
ventilation and

electrical M. MCCANN

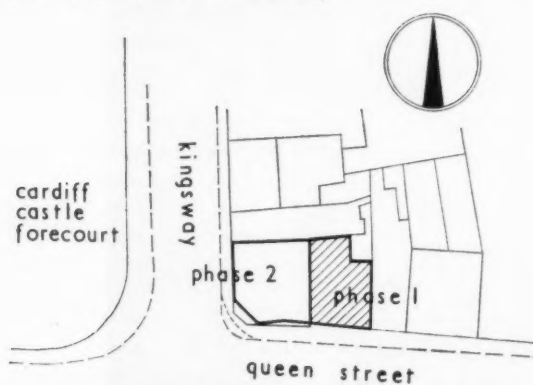
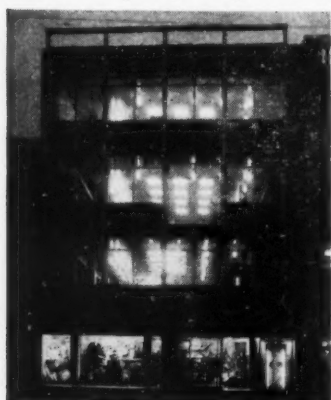
Shops have been fairly rare amongst the many buildings types cost-analysed in THE ARCHITECTS' JOURNAL. This one, the first phase in a larger development in an important part of Cardiff, is illustrated because of its neat appearance and because of a fairly new technical innovation which has been used—factory applied p.v.c. coating to the steel window wall.

"... a reasonable example of two-dimensional street architecture. . ."

building illustrated

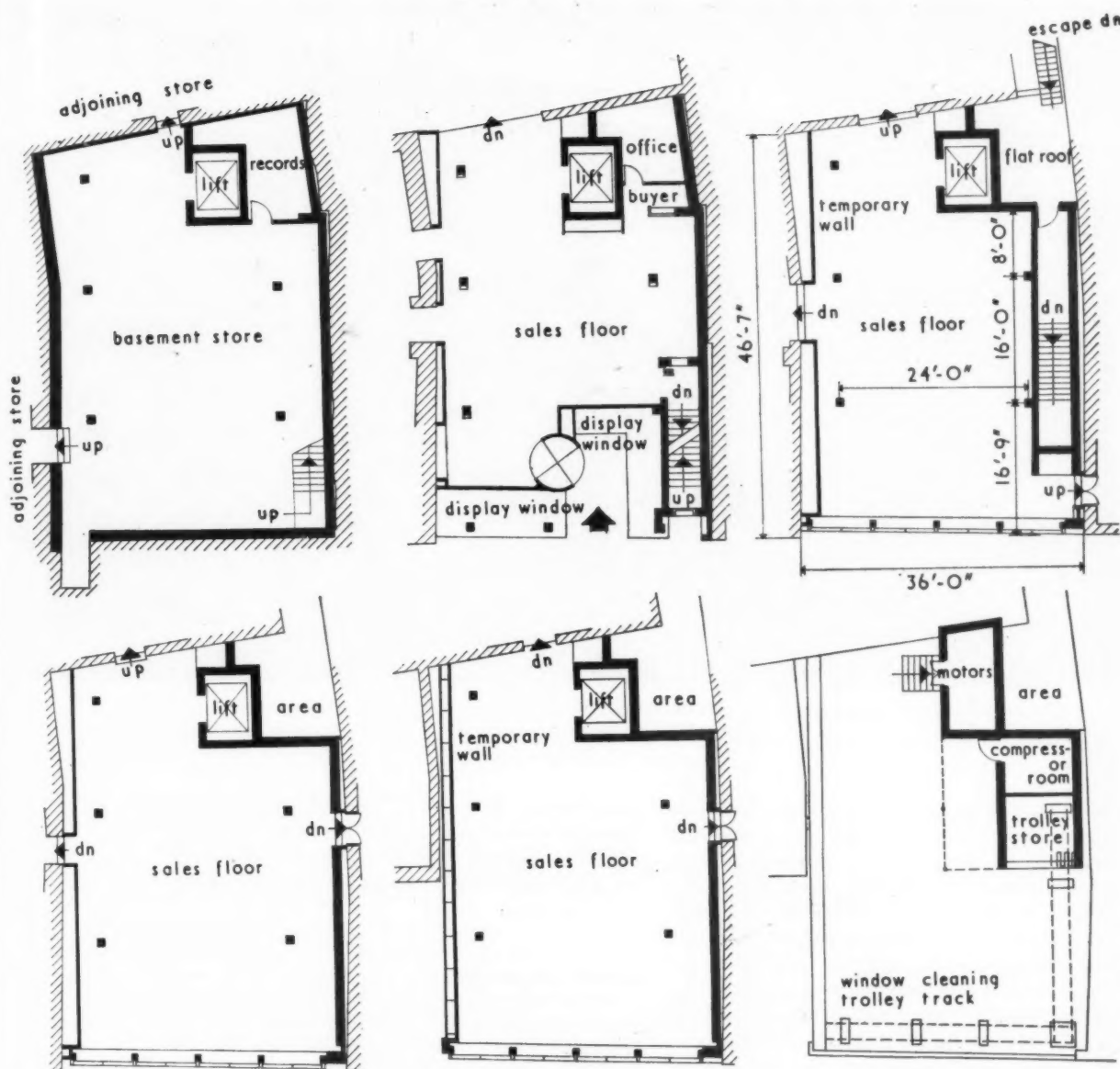


View of the main elevation by day (above) and by night (below) from across Queen Street. Further reconstruction of the existing store will take place gradually as demolition proceeds on the left hand side of the new building.



Site plan. [Scale: 1:2500]

adjoining store



Top left to bottom right: basement, ground, first, second, third floor plans, and roof plan. [Scale: $\frac{1}{8}" = 1' 0"$]

APPRAISAL: This shop in Cardiff is a reasonable example of two-dimensional street architecture. Such development provides the bulk of the rebuilding of commercial centres throughout the country, and results in an appalling pedestrian/shop/traffic relationship which is inefficient, dangerous and frustrating. Although awareness of these problematical relationships is growing, we are still perpetuating in far too many places the errors of the past. In only one or two of the new towns and the rebuilt bombed cities has any effort been made towards a new approach. Oxford Street in London or Queen Street in Cardiff or New Street in Birmingham are all the same, and in terms of future planning they are major tragedies. No matter how good or bad each little bit of development might be each project represents new capital expenditure in a spotty, uncoordinated, inefficient, commercial environment which cannot help but become more

and more inefficient as the traffic and town centre problem get worse. Even in the purely commercial sense of selling goods to people, in the long run this type of development will strangle itself as shopping becomes not a pleasure but a minor hell.

There appears to be little call from the shopkeepers themselves for a new approach. The new town corporations had difficulty in getting the large chain stores to come into the new town centres and Coventry was replanned in the teeth of opposition from the commercial interests. Whether it be pedestrian precincts, separate access levels or arcade arrangements the lead towards better shopping centres will have to come from architects and town planners. This of course has nothing directly to do with nor does it imply any criticism of the architects of the building illustrated, nor for that matter of their clients. Within the terms of reference

building illustrated



The shop windows were designed by the architects and executed by shop-fitting sub-contractors. The fascia is a white marble with gilt lettering; the skirting is polished blue pearl granite. The revolving door is part of the old, demolished shop, rejuvenated and re-erected.

which are inevitable in the present town centre set-up, this shop, as an elevation, is simple, elegant and neat, and when the entire store is completed it will be a very creditable contribution towards a better-looking street; albeit a street planned, like so many others, in terms of immediate opportunism rather than to provide a new, workable answer to a growing problem.

The inside of the shop is by no means as good as the outside. It is difficult to know whether this is an unjust criticism, in that a spectacular improvement might conceivably take place when the whole is redeveloped. One can only hope so. At present the ground floor is a clutter of counters and display shelves which, because of their abundance, completely defeat their own object. Most of this interior fitting has nothing to do with the architects but has been planned presumably by the client and built by direct labour. The resultant fittings have very little to do with the building at all, although they would no doubt be categorised as belonging to the contemporary style. Floors above ground level are finished with carpets of a floral pattern which would be more at home in the drawing-room of a suburban semi-D than in a modern shop.

It is difficult to understand why a client, enlightened enough to employ architects to build a modern and decent building, could not realise that competent design inside is just as important as outside.

Technically the building is interesting because of the application of p.v.c. as a permanent cover to the pressed steel curtain wall. The architects and their clients realised that there was some element of risk in using this new tech-

nique. However as against this marginal risk there is the knowledge that maintenance repainting will be unnecessary and that the accumulated savings on this item over the years will, in the case of failure, mean that little is lost and possibly a great deal saved.

CLIENT'S REQUIREMENTS

The building illustrated is the first phase in the redevelopment of the client's premises on Queen Street and Kingsway. A family outfitter's business, it has grown steadily and occupies several adjoining properties, which has given rise to a rambling disjointed layout, with a variety of different floor levels. The client wished to retain something of the present intimate character of the shop; clientele is mostly regular and the "walk round" casual shopper is not deliberately catered for. This first phase of redevelopment provides a basement and four sales floors each of which had to be easily accessible from the existing buildings, and to be arranged conveniently for the clients to divide and fit out at will.

A new passenger lift was required but no new staircase. However, the architects were required to include for the possibility of building an independent staircase should this be required in the case of the premises being sold as a separate shop.

SITE

In the centre of Cardiff, the site is an important one with a dominating position, with a castle forecourt which will never be built upon, on the opposite side of Kingsway. Although the present development forms part of a terrace of shops, when the second phase is completed the whole



" . . . the inside of the shop is by no means as good as the outside . . . at present the ground floor is a clutter of counters and display shelves . . . "

development, which is visible from some distance along Queen Street, will be a valuable and important part of the street architecture.

PLANNING AIMS

Before detailed planning of the present first-phase work was started, a master plan with elevations was agreed with the local authority to ensure total conformity with planning requirements. This involved the construction of the new fire escape stair which connects the first floor of the back of the existing properties with the ground floor at Queen Street. This stair was built in advance of the main contract. The planning objective for the new sales area was to provide as much free floor space as possible to give the client maximum flexibility of arrangement. Therefore, the new lift was kept to the rear of the new building, where it links with existing other vertical circulation. A light well has been included with the lift to provide means of ventilation and natural light for lavatories should they be required in the future.

SUMMARY

Ground floor area: 1,705 sq. ft.
Total floor area: 8,266 sq. ft.
Type of contract: Fixed price RIBA.
Tender date: September 20, 1958.
Work began: October 20, 1958.
Work finished: September 13, 1959.
Tender price of foundations, superstructure, installations and finishes: £51,000.
Final contract price: £50,980.

Preliminaries and insurances

3 11½

Contingencies

6 0½

Work below ground floor level

7 9½

Excavate for half basement area, reduce existing basement by approximately 2 ft. 0 in. depth; underpin in 13½-in. brick, to existing walls. R.c. foundations to columns and walls, 6-in. r.c. basement floor and 12-in.-thick r.c. retaining wall to pavement at front. Ground floor slab as for upper floors.

Cost includes 3s. 9½d. for underpinning.

STRUCTURAL ELEMENTS

Load-bearing element

9 4½

Internal r.c. columns 12 in. × 12 in. at 16 ft. 0 in. centres, 24 ft. 0 in. apart, 8 in. × 8 in. r.c. columns at 8 ft. 0 in. centres to front facade.

External walls

2 10½

15½-in. cavity brickwork to lightwell, 11-in. cavity brickwork to east party wall and roof buildings, 4½-in. brickwork to west party wall.

solid wall 0.56
Ratio: ————— = —————
floor area *1

Windows

11 1½

Window cladding built up from a framework of vertical m.s. core rails 3½ in. × ½ in. at 4 ft. 0 in. centres secured back at floor lines by welded plates rag-

building illustrated



The second floor sales area is provided with a balcony to enable customers to take samples into the open to judge better their colours. The solid wall below the sill is plastered foam concrete block built 8 in. away from the curtain wall; the resultant gap is closed at sill level with a trough connected to take fluorescent tubes which will be used in conjunction with the venetian blinds to bring night-time excitement to the elevation.

bolted to concrete. Main and secondary mullions, sill transomes and head transomes and the gutter above the canopy are all out of pressed mild steel with factory applied white p.v.c. protective coat. Undersill panels in $\frac{1}{4}$ -in. polished blue pearl granite, each panel supported independently on cranked steel brackets, 4-in. foamed concrete blockwall behind. Opening lights in galvanised standard steel sections, painted.

$$\text{Ratio: } \frac{\text{windows}}{\text{floor area}} = \frac{0.144}{1}$$

External doors (cost included under windows)

Softwood painted, one pair to lifthouse, one fully louvred to compressor room, one 5-leaf sliding/folding door to trolley store. Emergency door to first floor. Note: revolving front entrance door was taken out of existing premises and re-erected.

$$\text{Ratio: } \frac{\text{doors}}{\text{floor area}} = \frac{0.016}{1}$$

Upper floors

10-in.-deep r.c. floors of 2-in. unreinforced slabs on 6-in.-wide reinforced beams at 2 ft. 0 in. centres spanning in both directions. Solid panels at zones of high shear value. Span of bays 24 ft. 0 in. \times 16 ft. 0 in. Design loads: 80 lb. for sales areas. Total area of floors: 6,502 sq. ft.

Staircases

Two reinforced concrete, each 4 ft. 10 in. wide, one rising 10 ft. 6 in., the other 12 ft. 0 in.

Roof construction

Coffered slab similar to upper floors for main roof. 5-in.-thick r.c. slab to lifthouse and ancillaries. Main roof design load 30 lb. per sq. ft., area 1,320 sq. ft. Area of other roofs 425 sq. ft.

Glazing

Main facade fixed lights, $\frac{1}{4}$ in. polished plate. Opening lights 32 oz. clear. Obscured windows in $\frac{1}{4}$ in. stippled.

$$\text{Total of structural elements} = 30s\ 4\frac{1}{2}d$$

PARTITIONS AND FITTINGS**Internal partitions**

9 in. brickwork to fire escape corridor, $4\frac{1}{2}$ in. brickwork at back of display window and between roof stores.

Screens

90 sq. ft. glazed hardwood screen to office on ground floor.

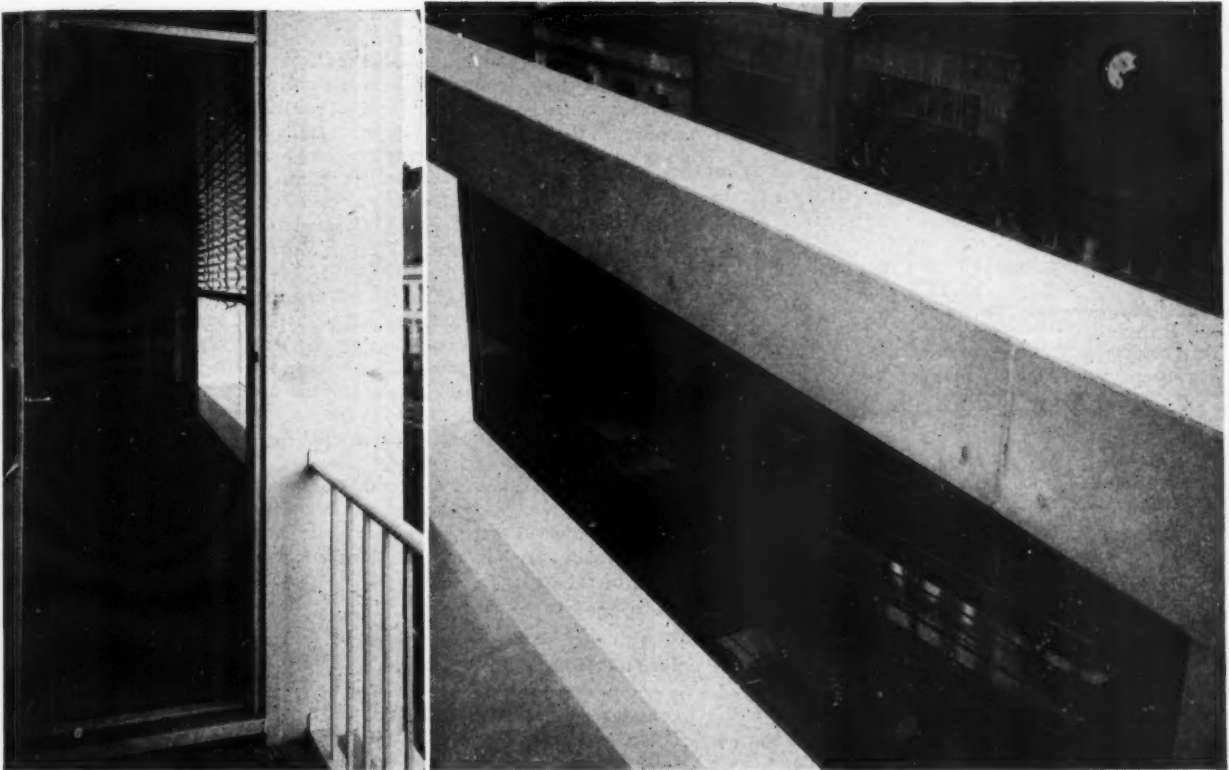
Internal doors

3 double doors, one single door; 2 in. solid core metal faced fire doors, 2 other hardwood faced flush doors.

Ironmongery

Stainless steel handle furniture. Ball and socket holders to fire doors. Cylinder latches to offices and mortice locks to external doors.

Fittings



The pressed steel cladding to the street elevation is covered with a factory-applied coat of white p.v.c. The problems architects are familiar with of how to seal joints and end conditions when materials such as vitreous enamelled steel are used are eased with the p.v.c. because joints can be sealed with a p.v.c. paste which chemically bonds with the coating. Of course the success of the joint relies as ever on good workmanship. One small spot left open to the weather will allow rust to penetrate the steel. Most of the joints examined seemed satisfactory although a certain amount of discoloration underneath the paste joints, which could be the beginnings of rust, could be seen on several of the high level joints.

Total of partitions and fittings = 3s 1d

FINISHES

Floor finishes

| | | |
|---------------------------|------------------|-----|
| 196 sq. yds. granolithic | 12s. 6d. sq. yd. | 2 6 |
| 3 sq. yds. clay tiles | 46s. 6d. sq. yd. | |
| 141 sq. yds. rubber tiles | 46s. 0d. sq. yd. | |
| 15 sq. yds. terrazzo | 40s. 0d. sq. yd. | |

Wall finishes

Generally $\frac{1}{2}$ in. plaster with metal quoin beads. Skirtings ex. 4 in. \times 1 in. idigbo on upper floors. Sills in black bean on upper floors. Basement $\frac{1}{2}$ in. cement/sand render.

Ceiling finishes

Basement in $\frac{1}{2}$ in. asbestos fibre based panels, 2 ft. 0 in. square, on timber framing. (Ceilings on upper floors under heating.)

Roof finishes

2 in. woodwool, minimum 1 in. screed laid to falls with light mesh reinforcement, 3 coats bituminous asphalt. Asbestos based tiles on flat roof in light well. Total area: 1,745 sq. ft.

Decorations

Generally on walls 2 coats emulsion. Softwood primed and three coats gloss oil.

Total of finishes = 7s 5½d

SERVICES

External plumbing

Aluminium rainwater goods.

1 2½

Heating and ventilation

Accelerated low pressure hot water system (with gas fired boilers in adjoining building). Heater coils above radiant aluminium ceiling panels. (Cost includes panels.) Internal temperature 65 deg. F. "U" value of solid walls 0.3. "U" value of glass walls 1.0. "U" value of roof 0.2. Ventilation to basement and ground floor by heater battery and fan, to upper floors by extract fan. Air changes, basement 5, others 3.

11 2½

Electrical installation

| | |
|---|-----|
| Tungsten lighting points | 115 |
| Fluorescent points | 80 |
| 13 amp. wall points | 55 |
| 13 amp. floor points | 29 |
| Emergency lighting | 44 |
| Flood lighting points | 4 |
| Electrical installation for passenger lift. | |

13 8½

Lift

Steel cage and panels, fully automatic 15 passenger capacity to five floors. Cost includes lift shaft in reinforced 9 in. brickwork 8 ft. 6 in. \times 6 ft. 0 in.

13 10

Total of services = 40s 0d

building illustrated

Drainage

Cast iron under building to sewer in roadway.

OTHER ELEMENTS

Demolition of existing shop before rebuilding.

6 5

Shop fitting

Several fixed display cases on the ground floor and the main display windows.

17 0½

Canopy

1 1½

Total of other elements = 24s 6½d

Total cost per sq. ft. of floor area =
£51,000 (net cost including drainage)

8,266 sq. ft. (floor area measured inside
external walls)

= 123s 4½d

COST COMMENTS

The primary function of a shop is to sell goods, and one way to attract custom is by advertisement and display.

The main bulk of the cost in redevelopment has underlined this principle. The result can be seen in the cost analysis under "shop fitting: 17s. 0½d.," in the "fittings and flood-lighting" item under electrical installation and in the main window wall facade. This last element is shown as 11s. 1½d. with ratio of 0.144 giving an actual cost of approximately 77s.

per sq. ft. overall—certainly an expensive frontage, but note the inclusion of granite panels and p.v.c. protection to main window structural components.

One odd feature is the use of painted galvanised opening lights: this is the only item not self-finished and therefore requiring periodic maintenance—especially awkward in a busy street.

Other items of cost which are influenced by shop design and may be considered to be peculiar to this theme are the facade canopy, large 15-passenger lift, heating by radiant ceiling panels and above-average ventilation scheme. The last two items are certainly conducive to compact conditions and also protection to goods influenced by atmospheric change.

The decorations are shown at the surprisingly low figure of 1s. od. per sq. ft., although the absence of internal partitions reduces the wall areas for decoration.

Note that the floor cost includes only areas requiring hard wear, the remainder presumably being carpeted under a separate contract.

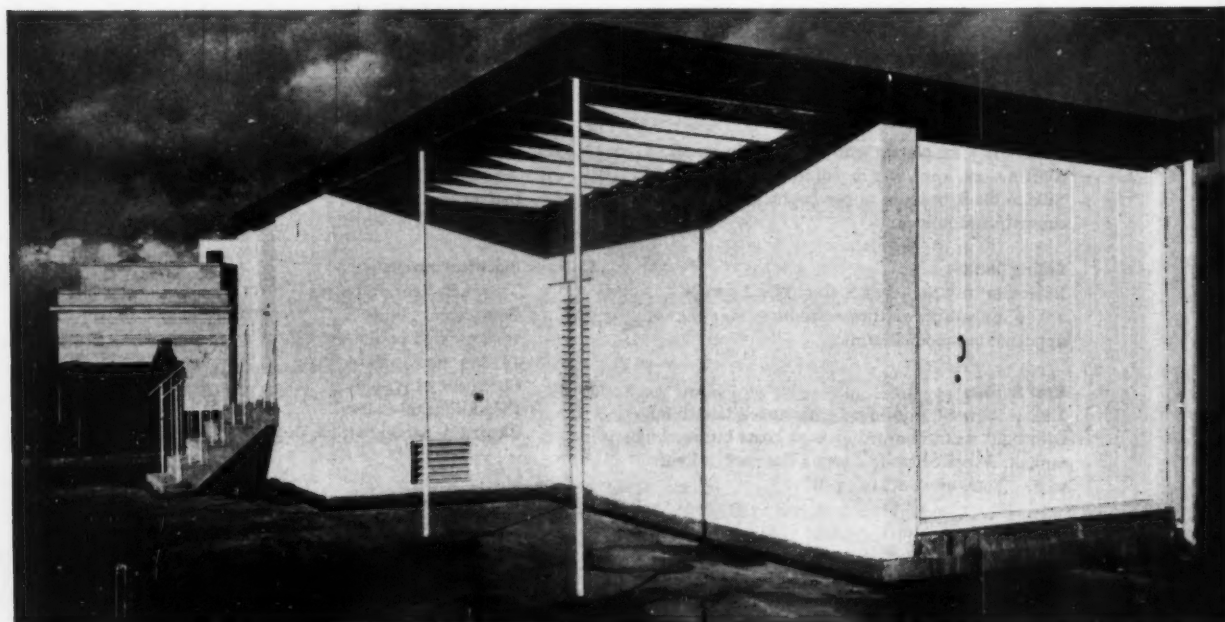
On first inspection the structural components may seem light in cost compared with the overall picture, but support and wall surfaces for existing buildings carry the normally expensive portion of the work: i.e. the external walling and part of the structural load. Demolition and underpinning are to be included in this section of the work as necessary adjuncts, if comparison with an isolated building is contemplated.

To sum up, the analysis of the perhaps breathtaking overall cost of 123s. 4½d. clearly shows how the money has been spent, and emphasises the importance to the client of certain of his requirements. In fact, the client was unusually conscious of the importance of the site and tended to choose expensive materials.

CONTRACTORS

General contractors: Knox and Wells Ltd. *Sub-contractors:* *Lift:* Otis Elevator Co. Ltd. *Shopfittings:* Nash Fisher Ltd. *Heating:* Sulzer Bros. (London) Ltd. *Electrical:* Campbell & Isherwood Ltd. *Windows:* John Williams and Sons Ltd. *Illuminated sign:* The Lettering Centre. *Rubber floors:* Semtex Ltd. *Collapsible gates:* Potter Rax Ltd. *Sliding door gear:* Coburn Engineers Ltd. *Terrazzo paving:* Cardiff Mozaic and Terrazzo Co. Ltd.

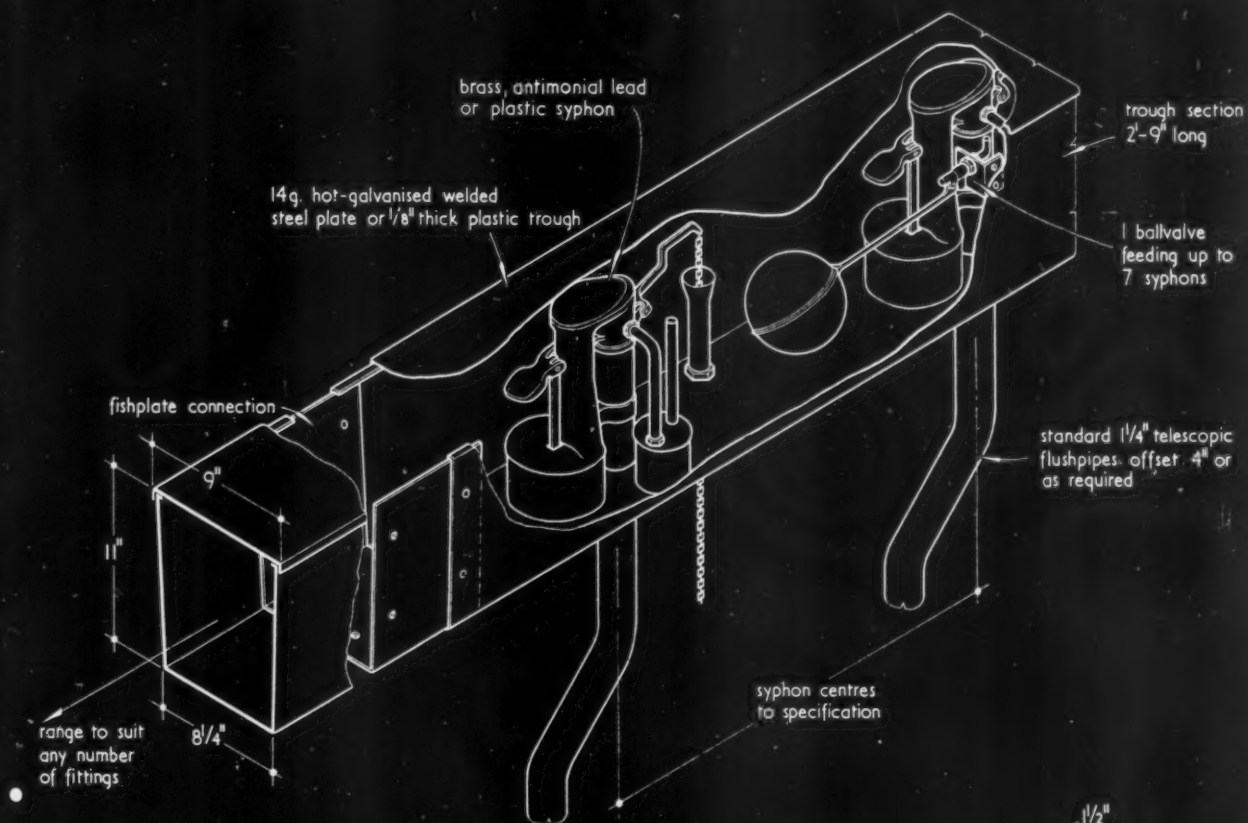
On the roof provision has been made for housing a window cleaning trolley. This was all designed around information available at design stage on a new prototype automatic trolley which proved too expensive at this stage. Consequently at present there is no trolley although one will be added when the rest of the development takes place. In the meantime window-cleaning is a difficult operation. Behind the trolley house are a compressor room and lift motors.



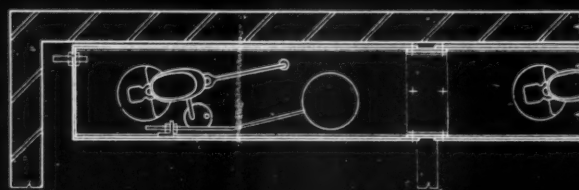
SANITATION | EQUIPMENT | FLUSHING TROUGHS

33.Q4

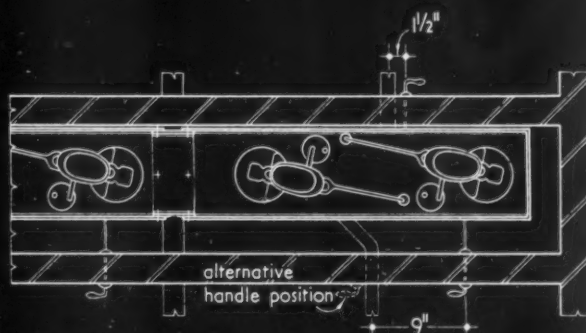
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GENERAL ARRANGEMENT.

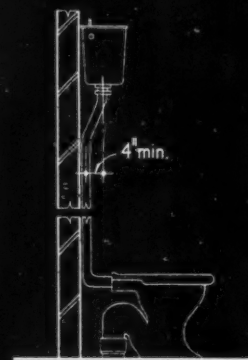


single trough

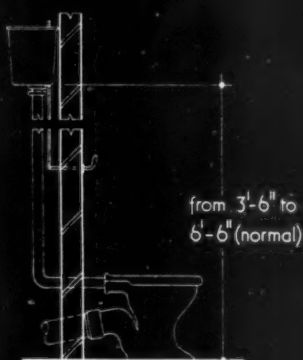


twin trough in duct

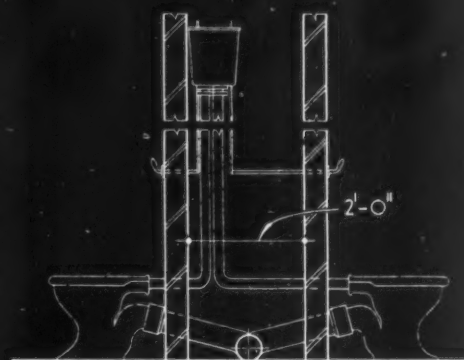
PLANS SHOWING LAYOUT OF SINGLE AND TWIN TROUGHS.



standard pull



remote control lever



twin trough concealed in duct

STANDARD ARRANGEMENTS FOR HIGH-LEVEL TROUGHS.

33.Q4 ·EPIC· CONTINUOUS FLUSHING TROUGH FOR W.C.s

This Sheet describes flushing troughs for w.c.s.

Construction

Troughs: The troughs are constructed from 14 g. rolled steel plate in sections, hot-galvanised after manufacture. The sections are butted together and joined by fish-plate connections.

The troughs can also be supplied in $\frac{1}{4}$ -in. p.v.c. in a variety of colours.

Covers: These are fitted as standard.

Syphons: The syphon units are of brass, antimonial lead or plastic with patented control cup and silencer. Each syphon can be supplied to give the exact amount required between 1 and 3 gallons for each flush. One $\frac{1}{4}$ -in. ballvalve is sufficient for 7 syphons.

Ballvalves: $\frac{1}{4}$ -in. high pressure or low pressure ballvalves are supplied fitted with silence pipes and 6-in. plastic balls. They may be fixed in any position along the trough.

Overflow: 1-in. overflow is supplied suitable for fixing to any connection. It may be fitted in any position in the trough above the water level. It can also be through the bottom of the trough if required.

Drain cocks: These are supplied fitted to the underside of the trough.

Operation

The syphons are operated by chain pulls through the

bottom of the trough or, where the trough is fitted in a duct, by combined chain and remote control levers, or by push button arrangement. Remote control operating levers can be positioned at any convenient height above floor level.

Fixing

Troughs can usually be carried on top of w.c. partitions. They may, however, be suspended by hangers from roof joists or supported on brackets, cantilevered or screwed to the wall.

Compiled from information supplied by:

Adamsez Limited

Head Office: Fireclay Works, Scotswood, Newcastle upon Tyne, 5

Telephone: Newcastle 67-4185-6

Telex: 53-209

London Office: 75, Victoria Street, London, S.W.1

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GENERAL PRACTICE COST ANALYSIS

The Architects' Journal Library of Information Sheets 780. Editor: Cotterell Butler, A.R.I.B.A.

COST ANALYSIS, PLANNING AND CONTROL: 4

This Sheet is the fourth of a series on cost analysis. It is a continuation of Sheet 1.C3 and completes the list of definitions of the elements shown on Sheet 1.C1. Sheet 1.C1 outlines the purpose and method of cost analysis. Sheet 1.C2 describes in detail the preparation of cost analyses and their uses.

Definition of Elements

In Sheet 1.C1 a list of element headings was given, prepared at the request of The Architects' Journal by a group of architects and quantity surveyors for the publication of all types of buildings. This Sheet specifies the components or items of construction that belong under each heading.

General Notes

Descriptions: The element cost should include all its significant component parts as indicated by these definitions. The description of each element should be sufficient to leave no doubt as to which items the cost includes, and should indicate the standard of quality of the work.

In cases where these definitions cannot be followed the description should make clear which items the element cost covers, e.g., if windows in curtain walling are included in External Walls, the element Windows should be marked—"included in External Walls". If there is nothing to be allocated to a particular element, the word "nil" should be inserted against the element heading.

Floor area: The floor area used for calculation of the element costs is to be the gross area of enclosed floor space measured within the internal faces of external walls, over all internal partitions, stairwells, etc., except in the case of multi-storey dwellings in which it is to be the net area of the dwellings only, excluding area of public access space. The analysis should state the gross area.

Costs: The total cost per sq. ft. of floor area should include the cost of drains and of external works.

If the contractor has adjusted his price on the Summary, this should be reflected in each element by proportional adjustment on measured builder's work.

Structural Elements (continued)**Internal structural walls**

Note.—This element only applicable where cross wall construction is used.

Internal cross walls only. Where wall is self-finished this should be stated.

Area of each type of wall (yards super).

Cost of each type of wall per yard super.

"All-in" unit rate per yard super.

Partitions

Internal walls, screens and borrowed lights except where included in "Internal structural walls".
Lintels.

Where wall is self-finished this should be stated.

Where room-dividing cupboards are treated as partitions this should be stated.

Where proprietary partition is used area and cost should be given as a whole, including doors, etc.
Area of each type of wall excluding openings (yards super).

Cost of each type of wall per yard super.

"All-in" unit rate per yard super.

Internal Doors

Doors, frames, linings and architraves.

Fanlights.

Glazing.

Ironmongery where fixed before delivery to site.

Area of clear openings in walls for each type of door (feet super).

Cost of each type of door per foot super.

Number of doors—single, and number of pairs of double doors are to be given separately.

"All-in" unit rates per foot super.

Ironmongery

Supply and fixing of all ironmongery except that which is delivered to site fixed, e.g., ironmongery to metal windows.

Finishes**Wall Finishes**

All preparatory work and finishes applied in situ to the internal wall surfaces.

Surfaces which are self-finished are described under appropriate element, e.g., external walls.

Area of each type of finish (yards super).

Cost of each type of finish per yard super.

"All-in" unit rate per yard super.

Floor finishes

All preparatory work, top finish and labours to form surface.

Skirtings.

Area of each type of finish (yards super).

Cost of each type of finish per yard super.

"All-in" unit rate per yard super.

Ceiling finishes

All preparatory work, finishes applied in situ and labours to form surface.

Suspended ceilings and framings.

Cornices.

If ceiling is mainly for source of heat or light, it is included in appropriate engineering service and reference to this made here.

Area of each type of finish (yards super).

Cost of each type of finish per yard super.

"All-in" unit rate per yard super.

Decorations

All decorations both internally and externally including wall mosaics, murals and sculptures.

Total cost of these latter items or similar are shown separately.

Fittings

All built-in equipment and furniture giving detailed list of items included.

All major or special fittings are listed and priced separately with quantity involved if possible, e.g., cost per ft. run of benching, etc.

1.C4 COST ANALYSIS, PLANNING AND CONTROL: 4

Services

Sanitary fittings

Supply and installation of fittings including taps.
Number, type and quality of each type of fitting.
"All-in" unit rate per fitting.

Waste, soil and overflow pipes

Traps, waste and soil pipes.
Stack pipes as far as gully or joint to drain at ground level.
Overflows.

Cold water services

Rising main, storage tanks, pumps and distribution piping to draw-off points and boilers.
Builder's work in connection is shown separately.
Number of cold draw-off points.

Hot water services

Any system for distribution of hot water including boilers, calorifiers, instantaneous heaters, piping to draw-off points and lagging.
Builder's work in connection is shown separately.
Number of draw-off points.

Heating services

Any system for distribution and emission of heat including boilers, controls, radiators, piping, feed and storage tanks, etc.
If system is gas or electric it is included here.
Cost of the following are shown separately if possible:—
1. Oil fuel tank and feed to boiler.
2. Automatic stoking equipment to boiler.
3. Gas service to boiler.
Builder's work in connection is shown separately.
Heat load in B.t.u. per hour.

Ventilation services

Mechanical ventilation and air treatment plant, ducts and isolated fans.
Builder's work in connection is shown separately.

Gas services

Installation from and including meter and distribution to outlets.
When service is primarily for "heating" or "hot water," it is put under the appropriate element.
Builder's work in connection is shown separately.
Capacity of main intake meter.
Number of outlets.

Electrical services

Installation from and including meter, switchgear, etc., and distribution to outlets and fittings.

Figures are broken down into groups as follows:—

1. Meter and switch gear.
2. Lighting installation.
3. Power installation.
4. Lighting fittings.

Services to such items as lifts, escalators, warning lights, clocks, etc., are shown separately if possible.
Builder's work in connection is shown separately.
Total electrical load of installation.
Number of points for each of above groups.

Special Services

Lifts, escalators, cooking equipment, laboratory equipment, pneumatic tube message systems, sprinkler installation and fire-fighting equipment and service and other similar special services.
Builder's work in connection is shown separately.
The cost of each service installation shown separately in £.
Such information as will indicate the quantity of each service, e.g., lifts—numbers, capacity of each, speed and number of stops.

External Works

Drainage

Soil and surface water drains from foot of stacks to and including last collecting chamber immediately adjacent to building.

Other external works

Roads and paths.
Playgrounds and paved areas.
Fences and gates.
Outbuildings.
External steps.
Site planting and landscape work.
Connections to service mains.
Drains from last collecting chamber immediately adjacent to building to and including sewer connection or disposal plant.
Cost of each group to be shown separately.

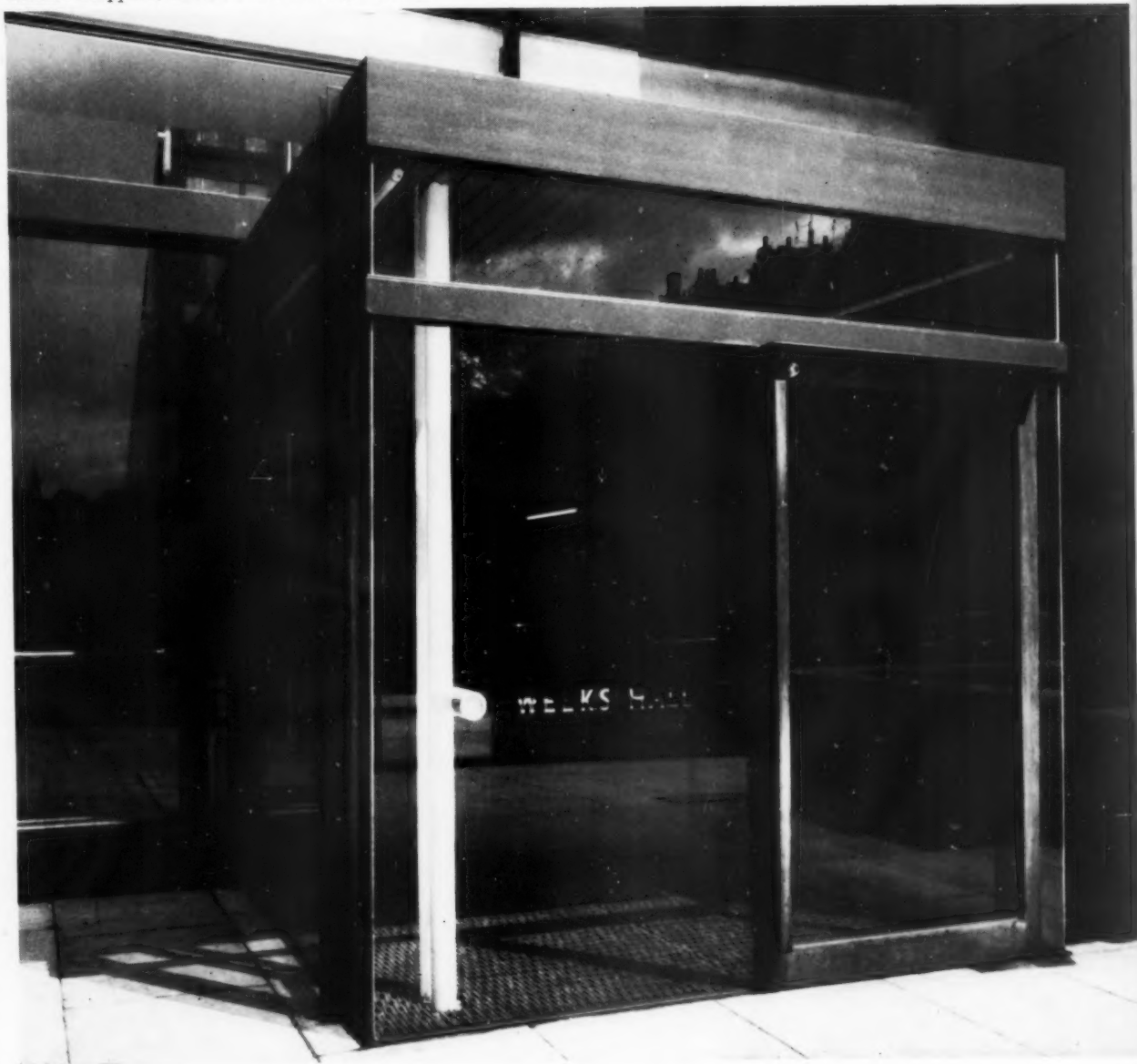
Compiled by John Carter, A.R.I.B.A.

working detail

MISCELLANEOUS: 35

ENTRANCE LOBBY: COLLEGE IN LONDON, S.W.7.

Richard Sheppard, Robson and Partners, architects



This lobby is a good example of the neat effect produced by mitring and welding a steel channel fascia and by cementing plate glass. Note the paired pipes, one an r.w.p. and the other holding the electrical conduit for the bell push.

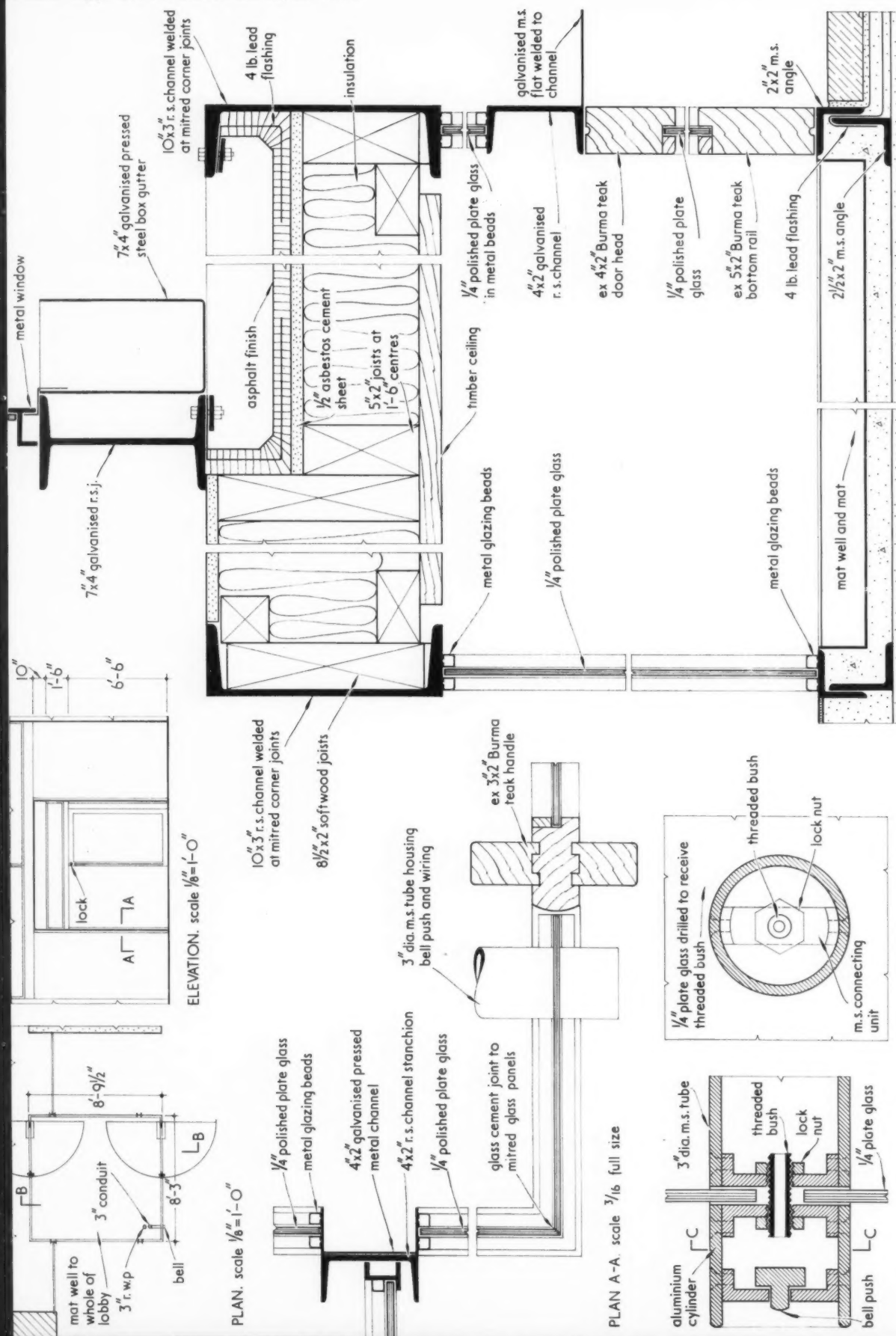
working detail

ENTRANCE LOBBY: COLLEGE IN LONDON, S.W.7.

Richard Sheppard, Robson and Partners, architects

(71)

MISCELLANEOUS: 35





all eyes are on Ferodo non-slip stairtreads



Here's the kind of shapely design that brings a gleam to the eyes of students of modern staircase architecture. Good-looking Ferodo non-slip Stairtreads set new standards of safety . . . protect stairs from wear . . . last for years without maintenance or renovation.

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- * Special orders can be manufactured.



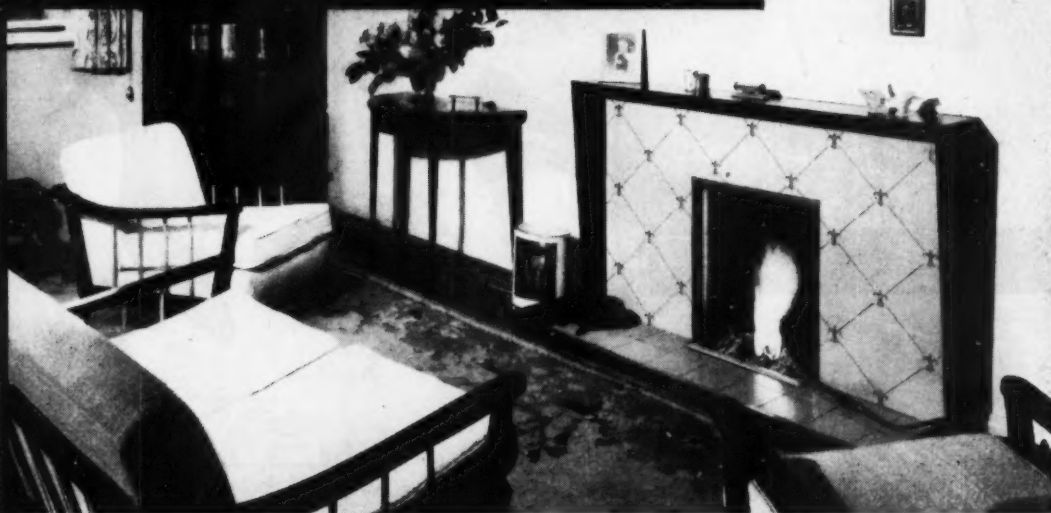
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Photograph by courtesy of Ideal Home Magazine.

At "New Britwell", a house at Maidenhead. Architect: Michael H. H. Bayley, A.R.I.B.A.

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ROOF

Tiles on felt
2-3 inches slag wool.

CEILINGS

Plasterboard and skim coat.

EXTERNAL WALLS

Ground floor: $4\frac{1}{2}$ -in. brickwork,
2-in. cavity, 4-in. Thermalite,
two-coat plaster.
First floor: Tyrolean rendering,
3-in. Thermalite, 2-in. cavity,
4-in. Thermalite, two-coat
plaster.

PRACTICAL CONSIDERATION

The owner writes regarding the efficiency of the Thermal insulation.

"The only further comment that I can add after nearly three years' occupation is that the heating system was unnecessarily large, the bedroom radiators only being used occasionally and it is only during very cold spells that it has to be stoked more than every other day."

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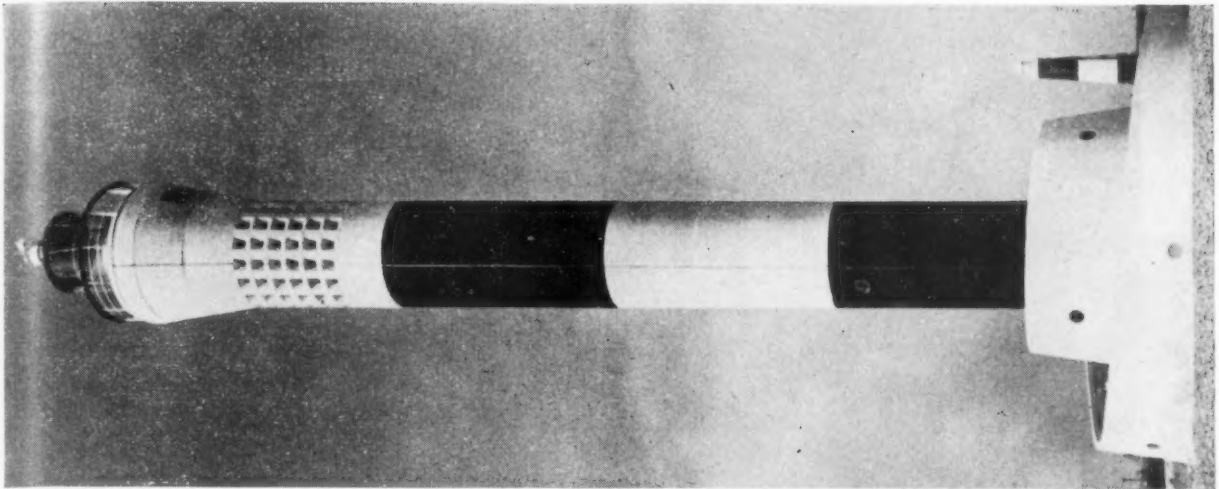
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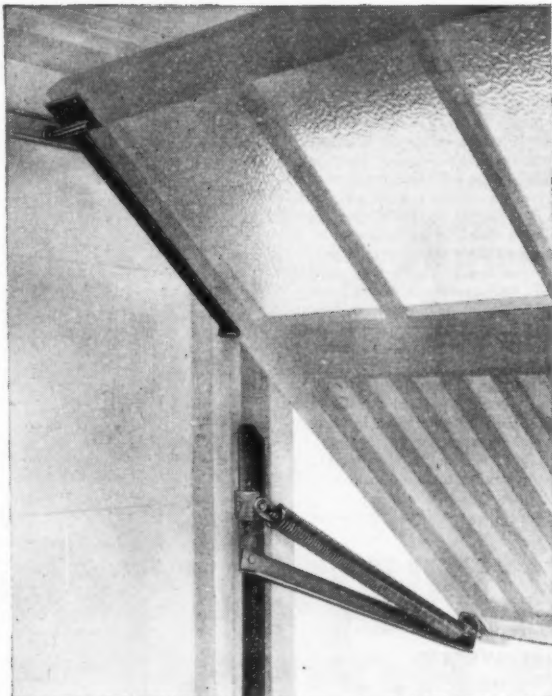
LIGHTHOUSE AT DUNGENESS

The first major new lighthouse to be built for 50 years has just been opened at Dungeness, to replace the old Dungeness lighthouse (visible behind), the light of which will be obscured from some angles by the new atomic power station. The new tower is 130 ft. high and 12 ft. across. The walls are only 6 in. thick. It is constructed of a series of 21 concrete drums, each 5 ft. high, lifted into position by a specially designed crane. High tensile steel prestressing wires were then run through the walls from top to bottom and tensioned to provide the strength required to resist 80 m.p.h. gales. The old lighthouse was banded black and white, and this design has been repeated in the new one by making the drums in black and white concrete. The perforated band towards the top contains the loud speaker units of the fog signal. Both this and the light are entirely automatic and specially designed by Trinity House research staff, whose technicians co-operated throughout the design with the architects, Ronald Ward and Partners.

(continued overleaf)

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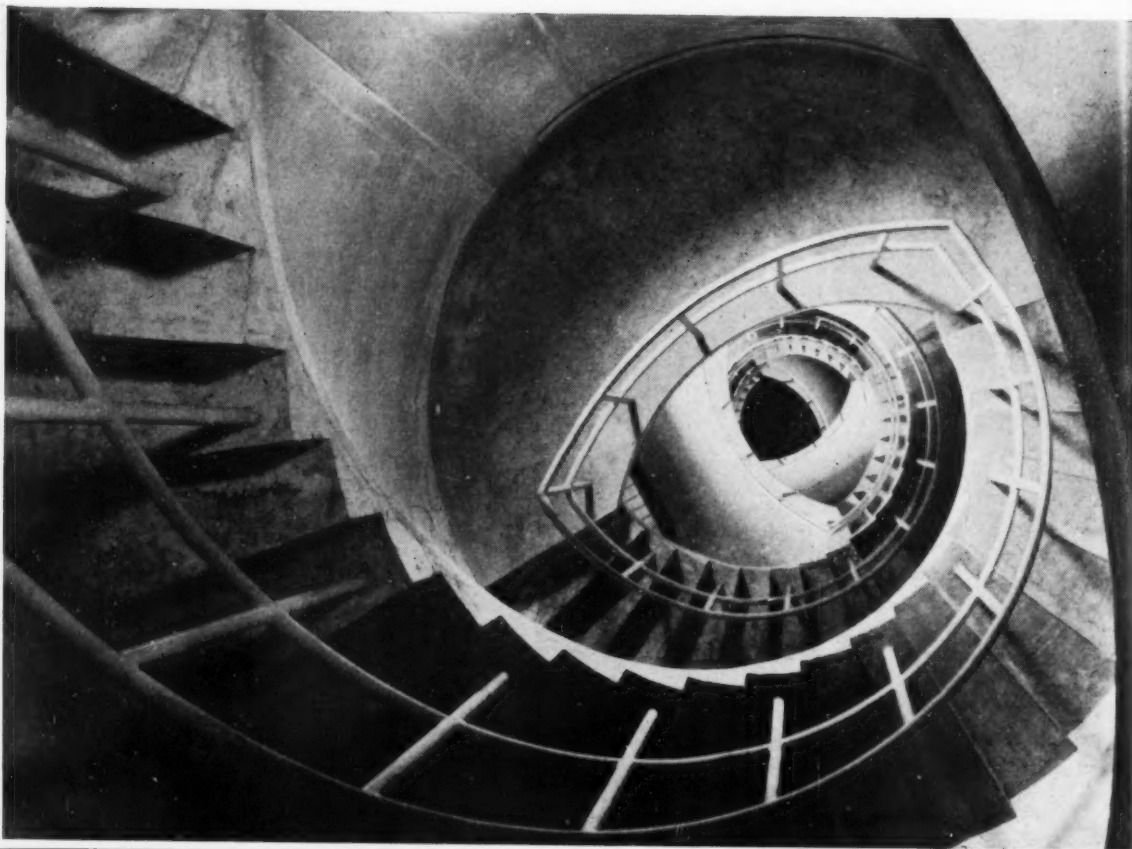
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DUNGENESS (continued)

The staircase inside the tower.



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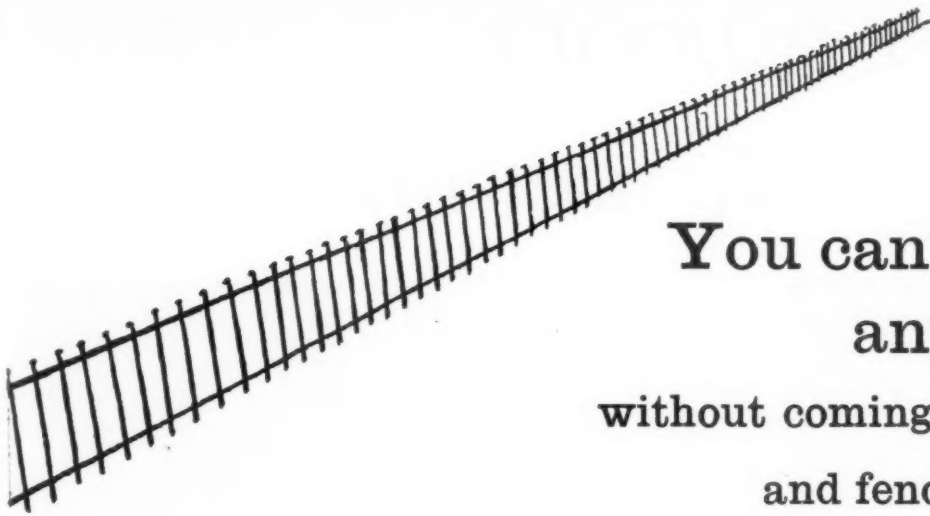
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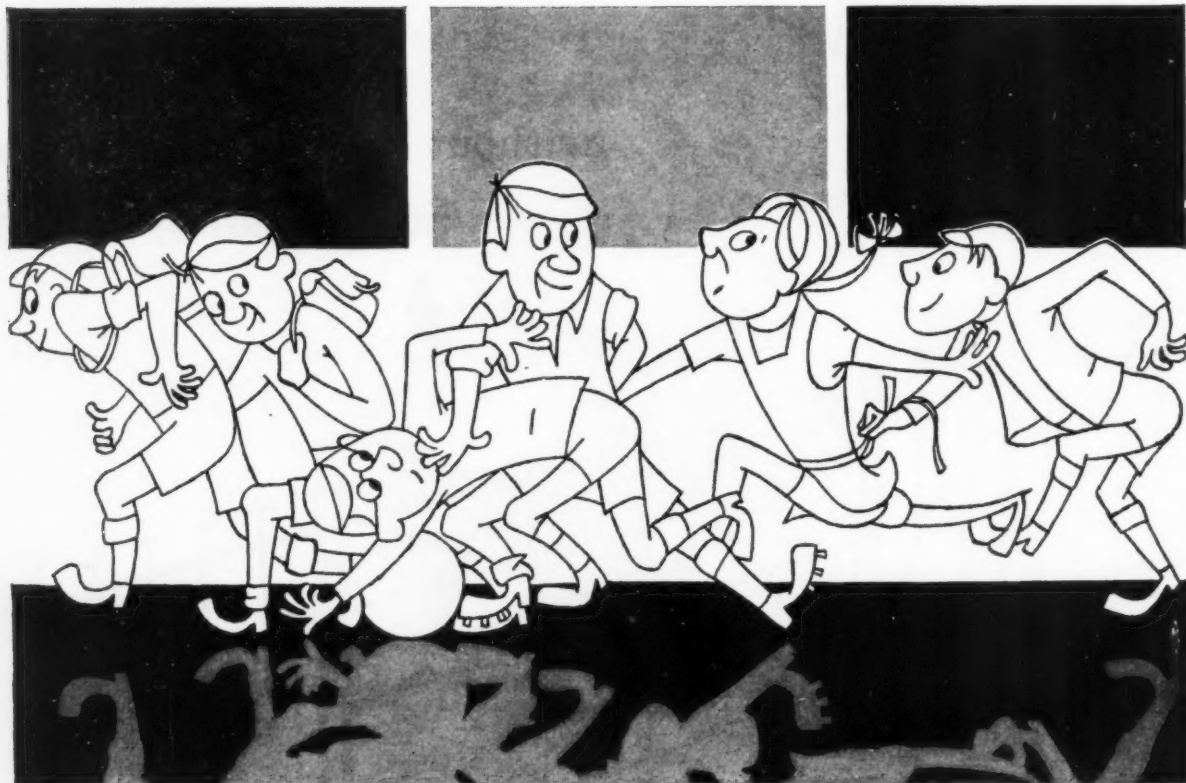
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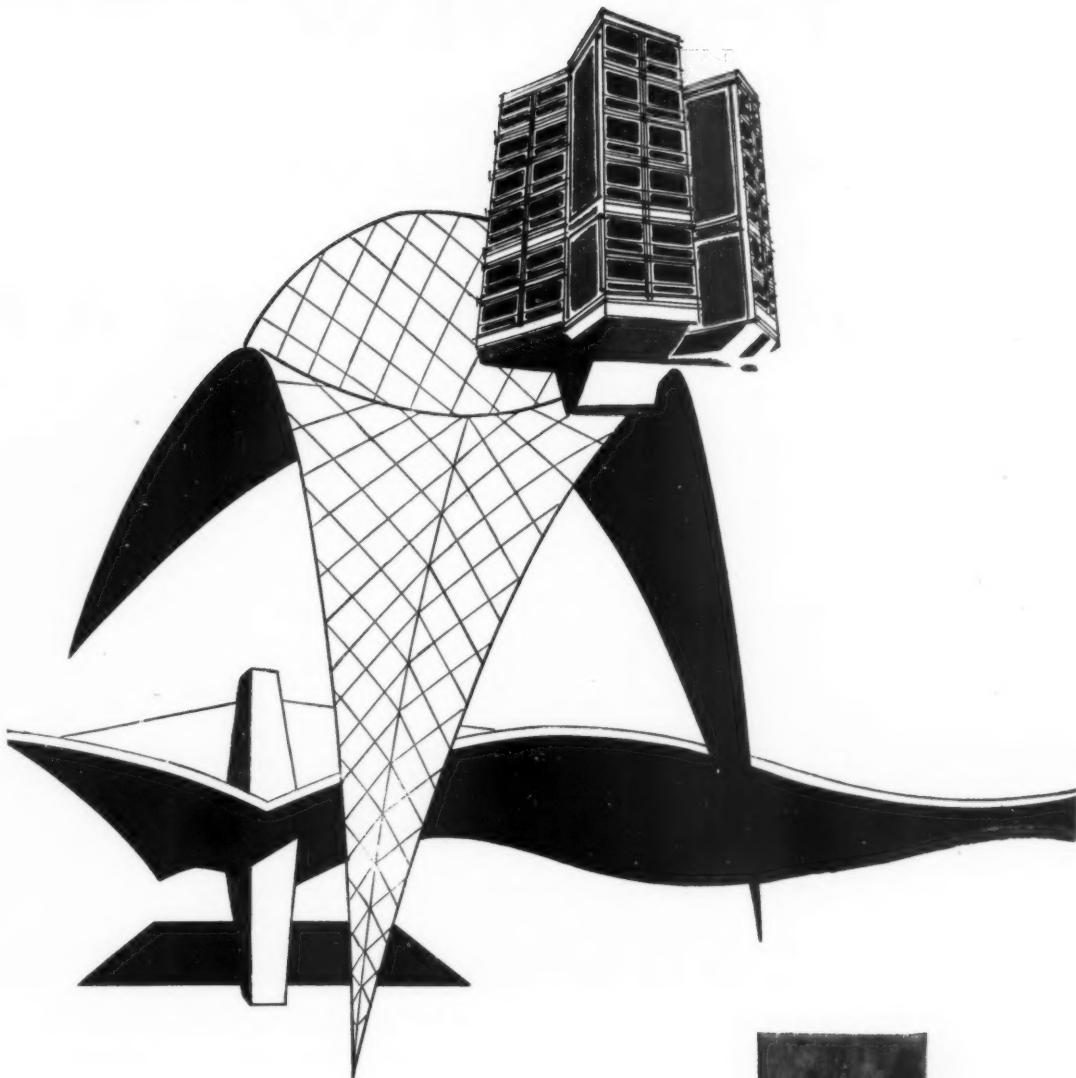
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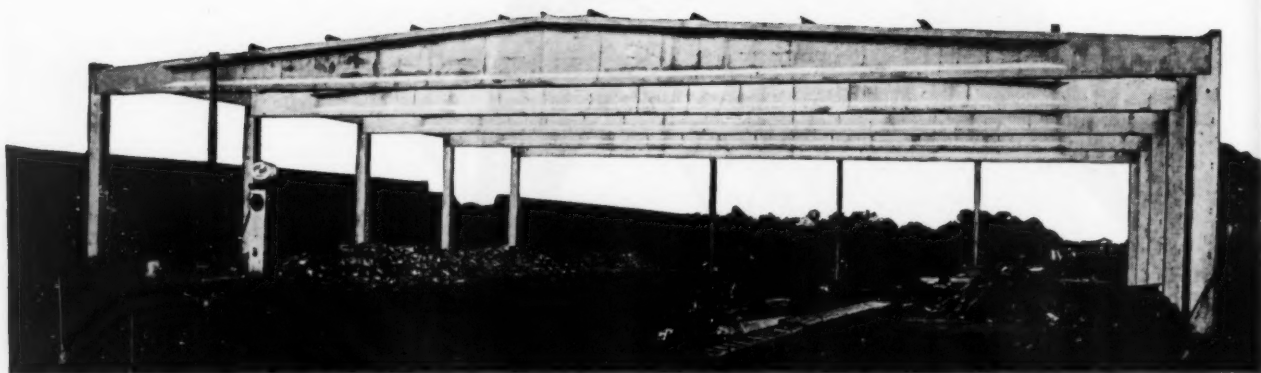
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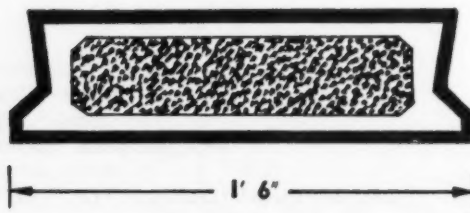
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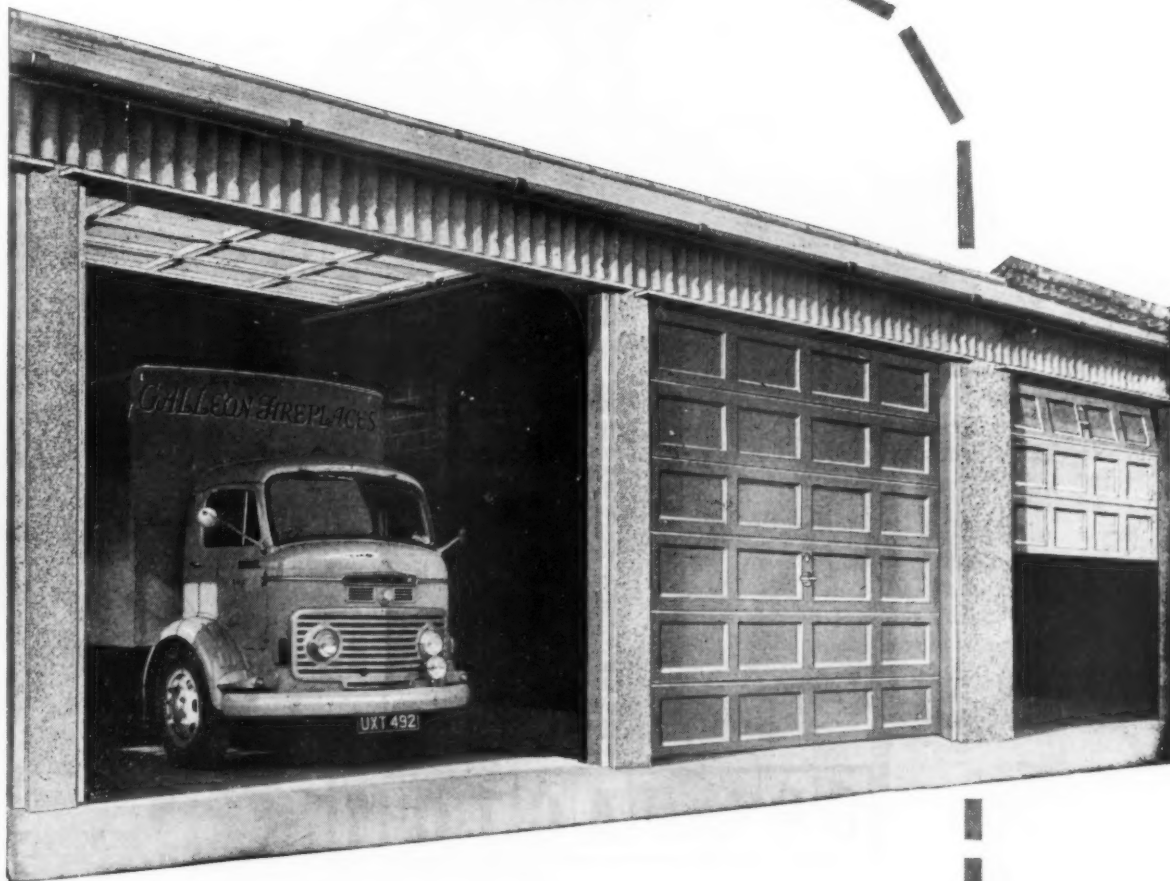
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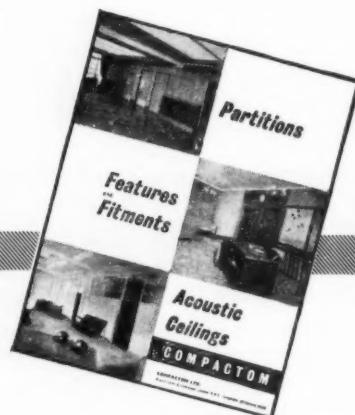
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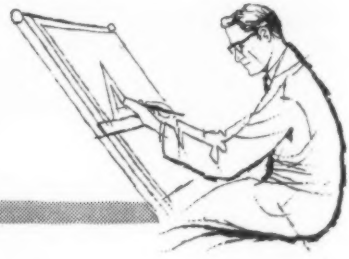


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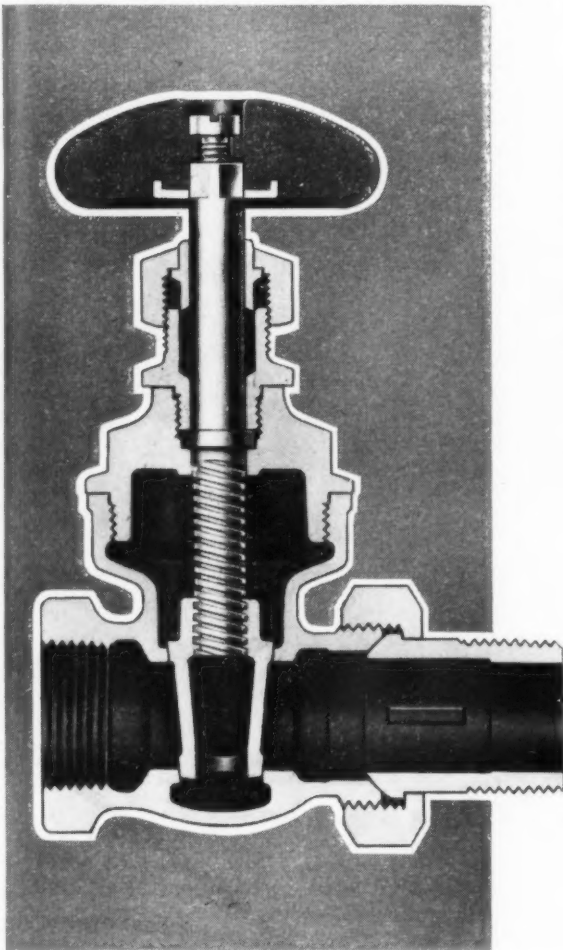
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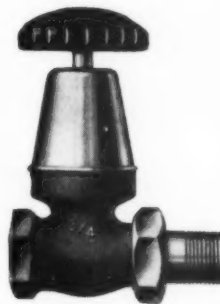
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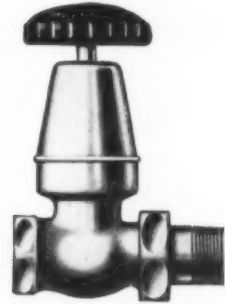
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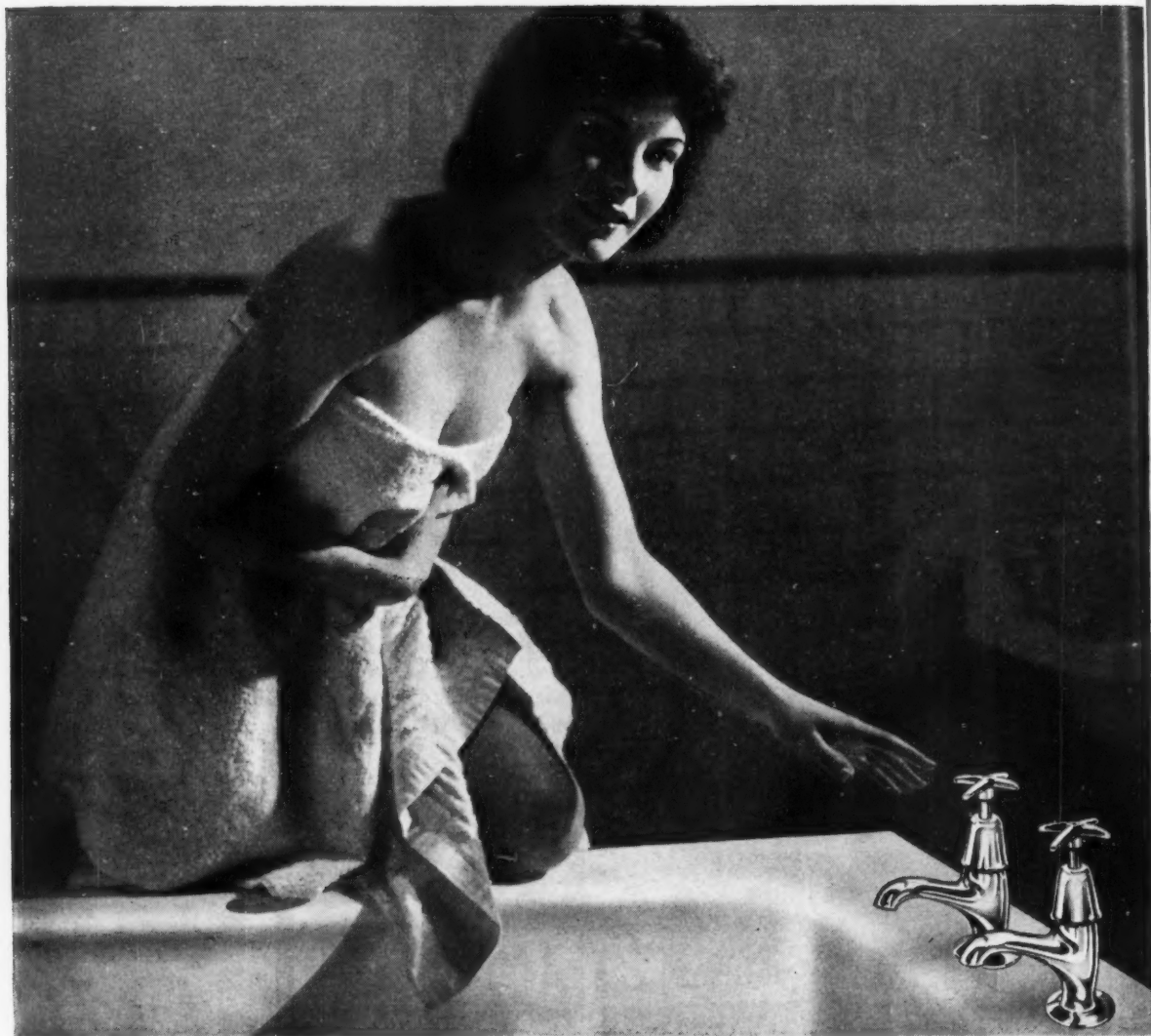
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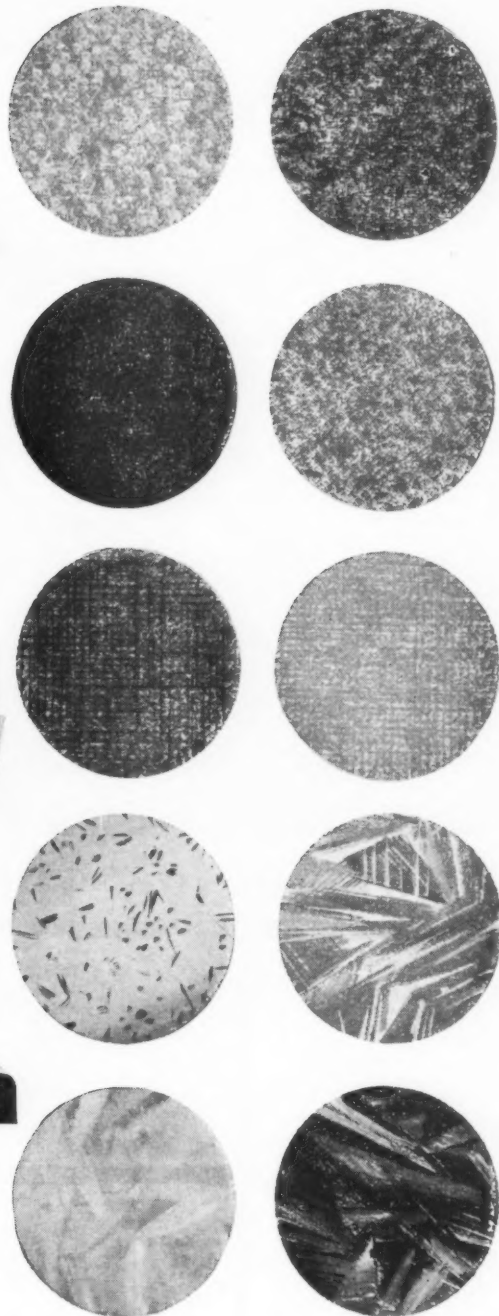
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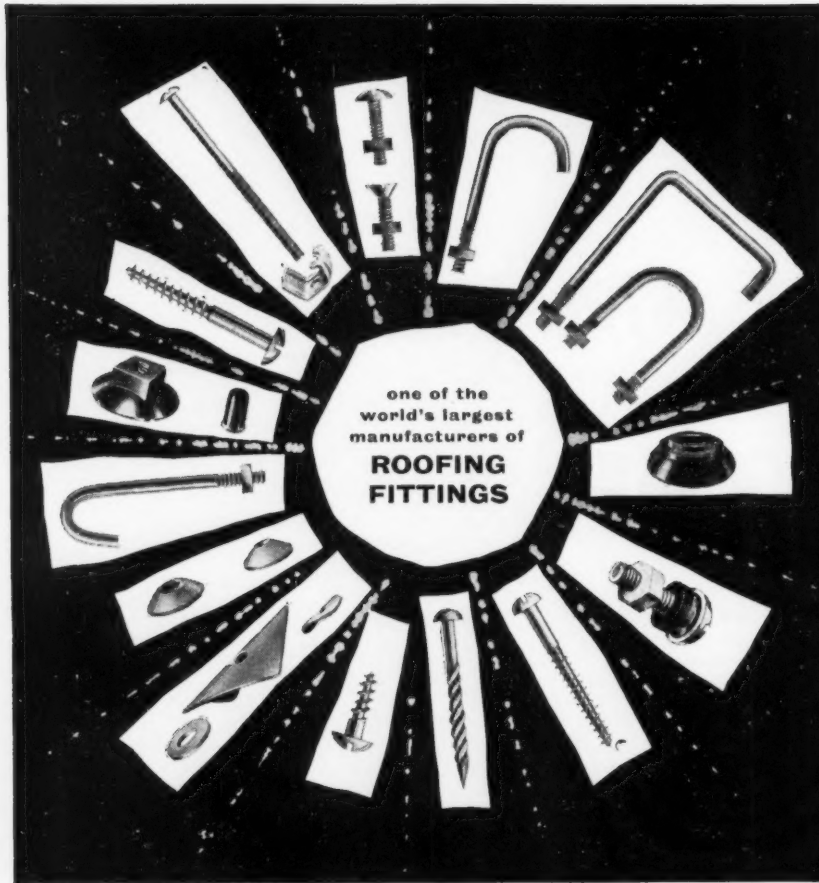
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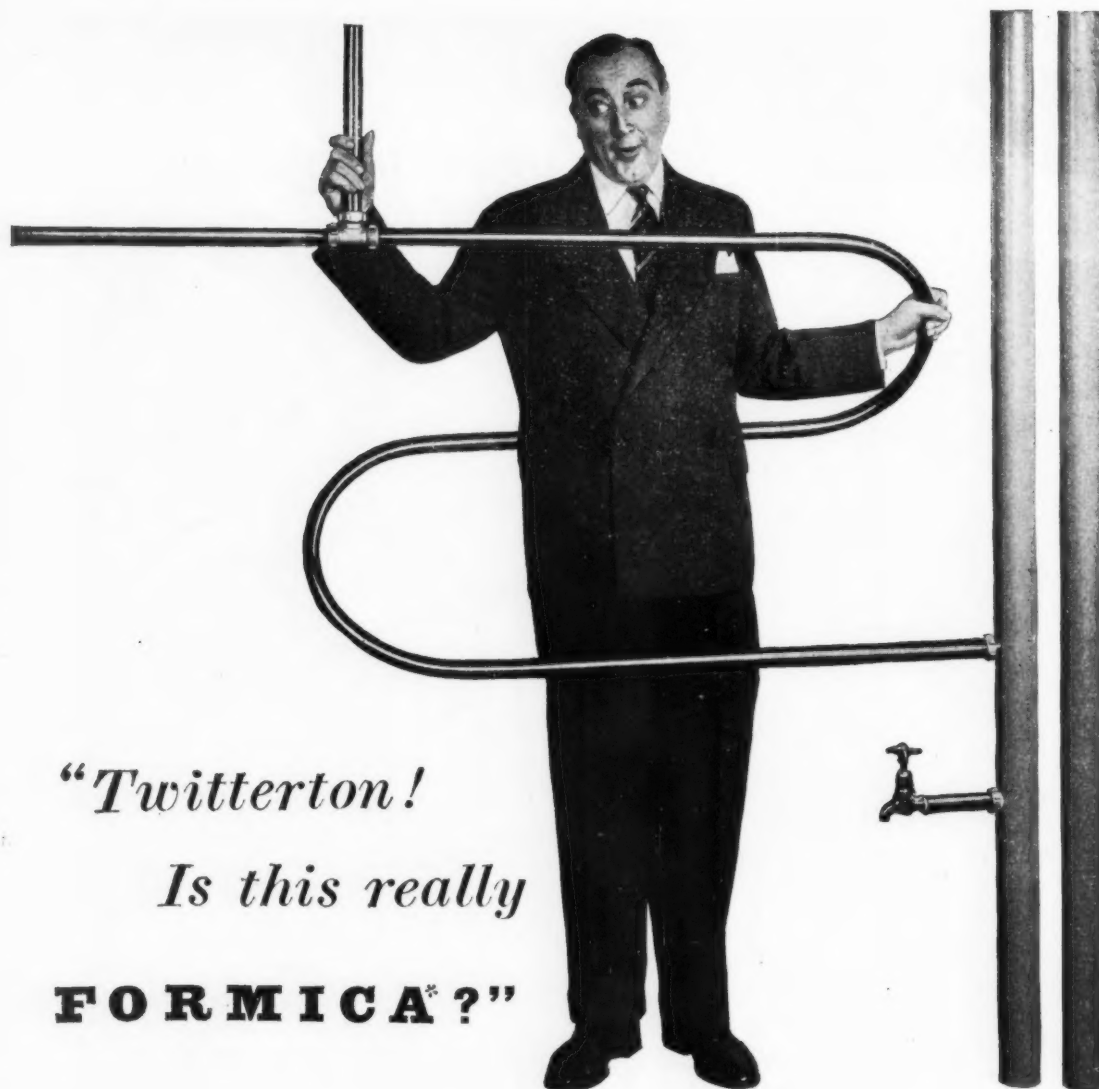
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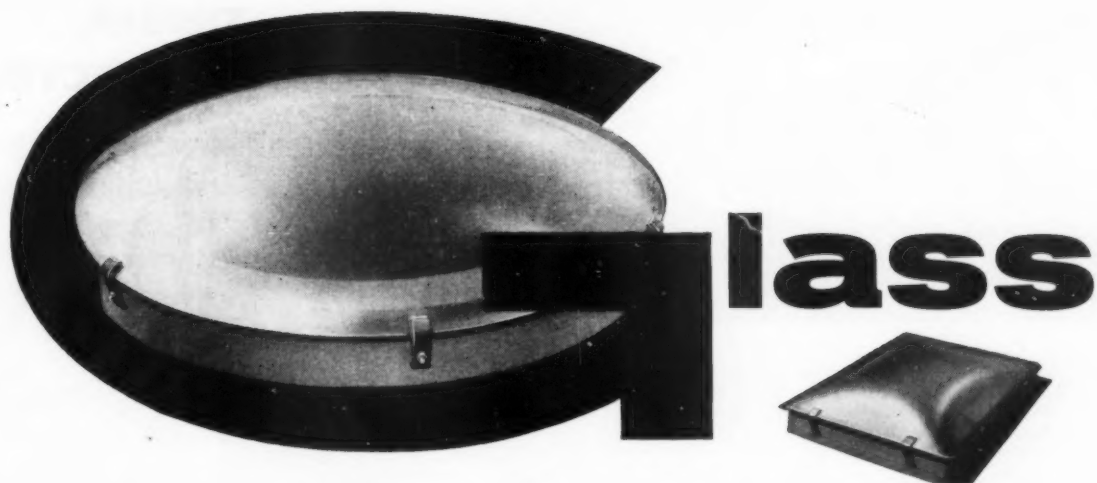
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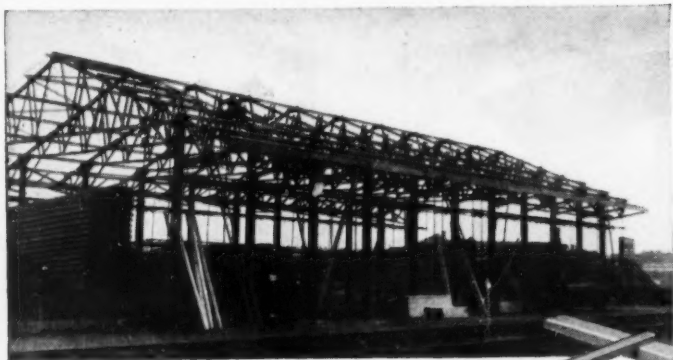
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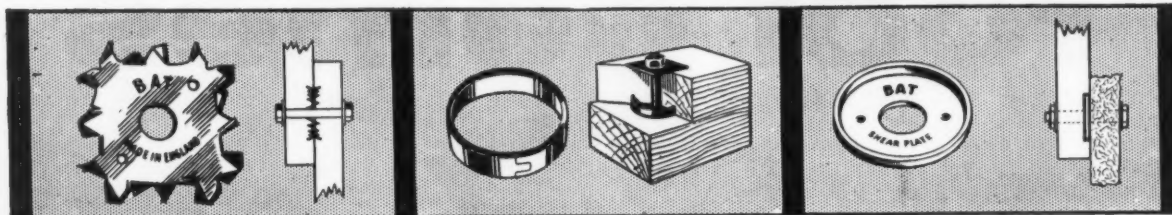
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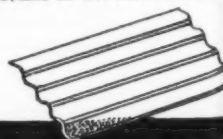
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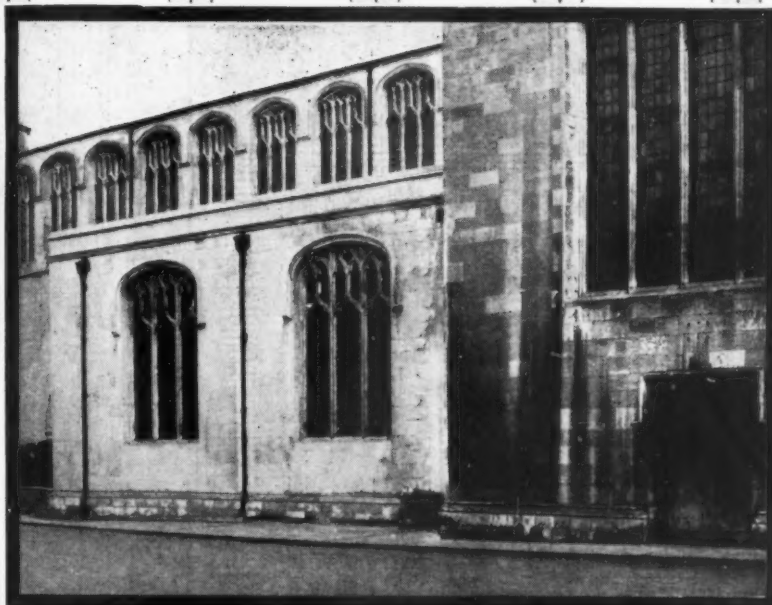
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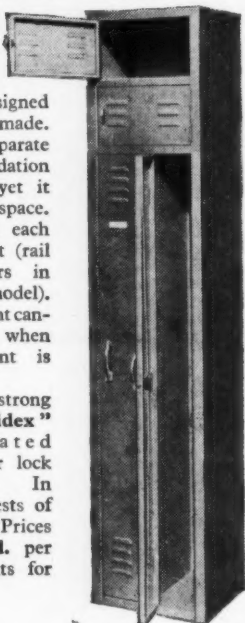
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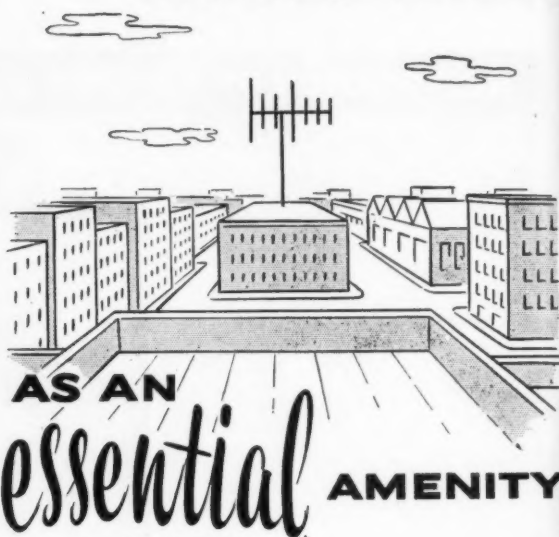
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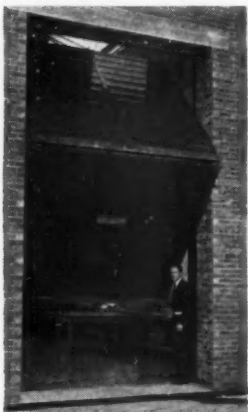


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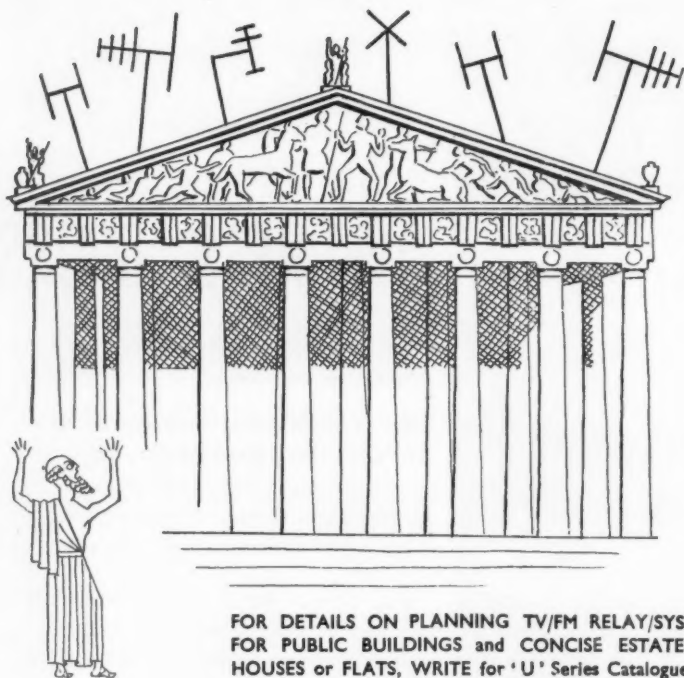
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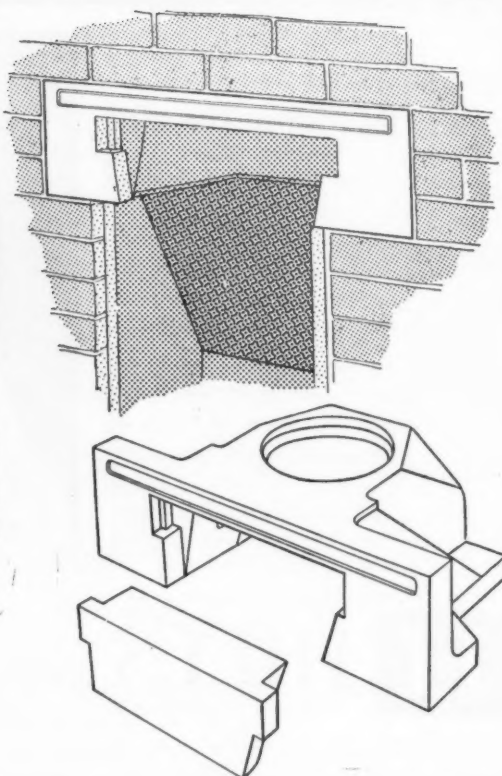
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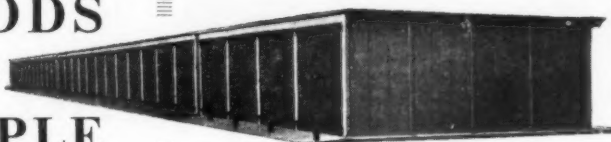
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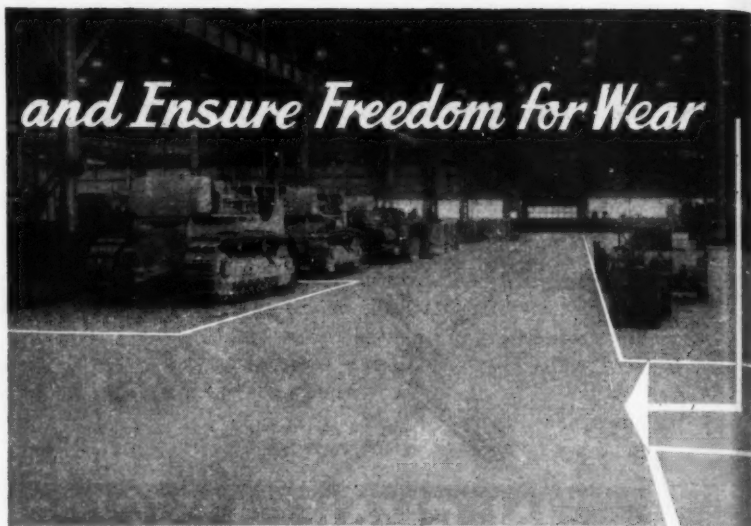
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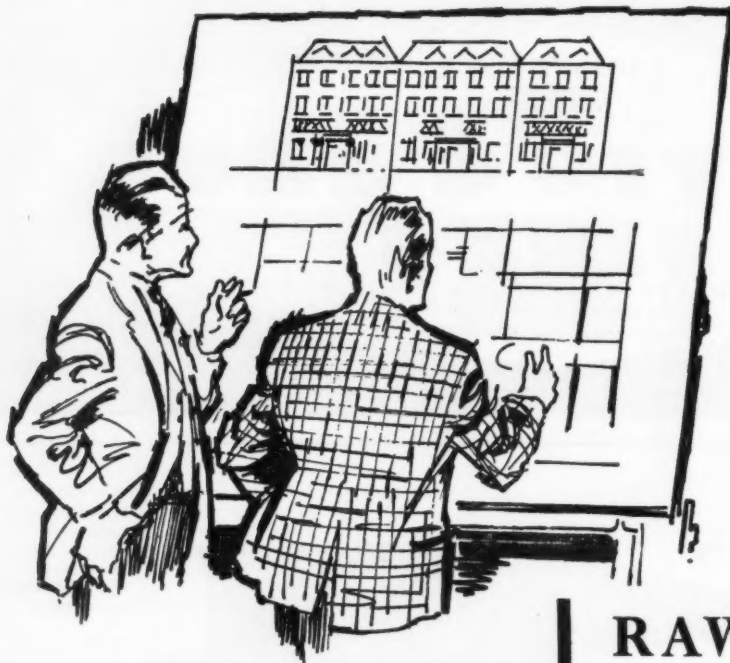
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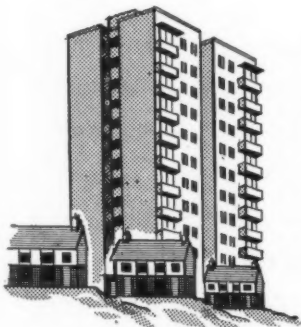
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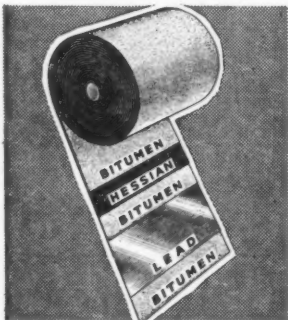
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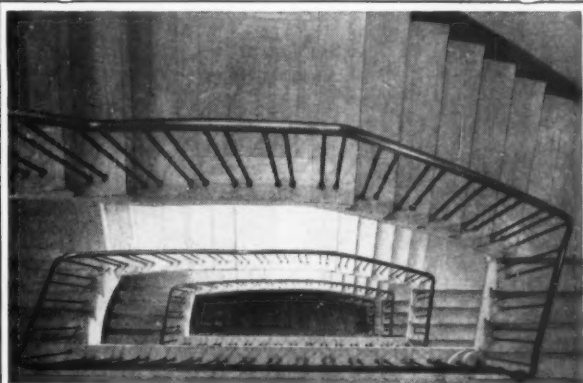
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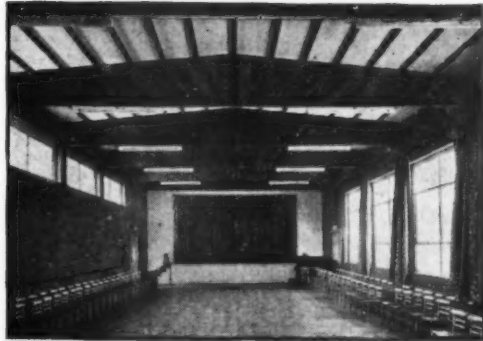
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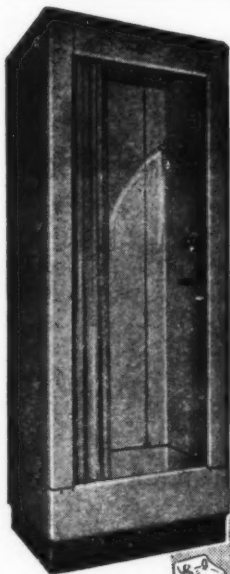


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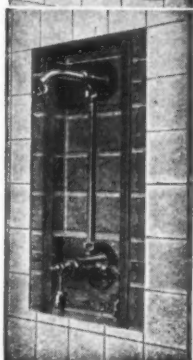


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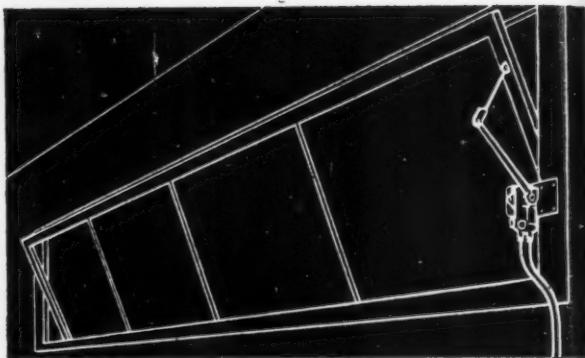


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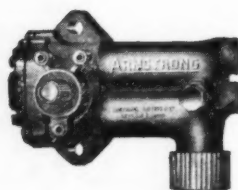
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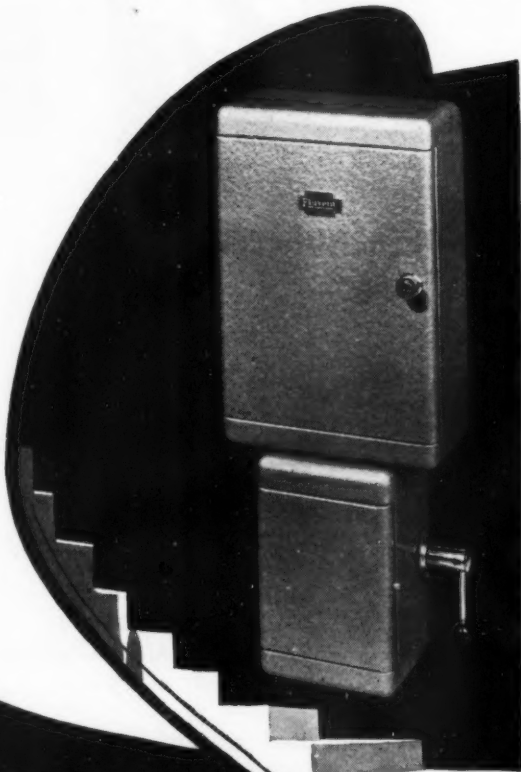
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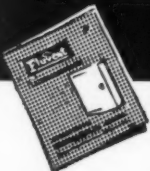
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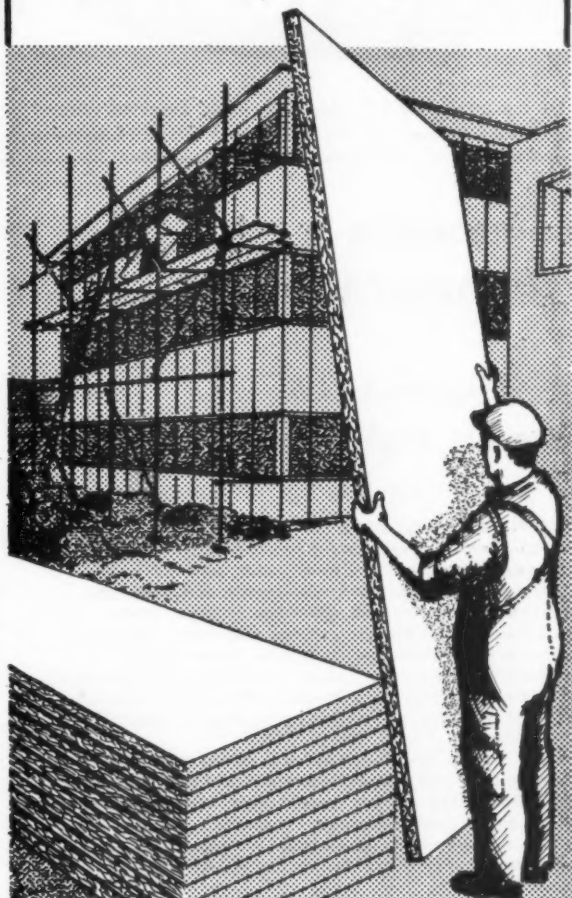
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by T. W. Hendrick F.R.S.A.

Foreword by Hugh Casson

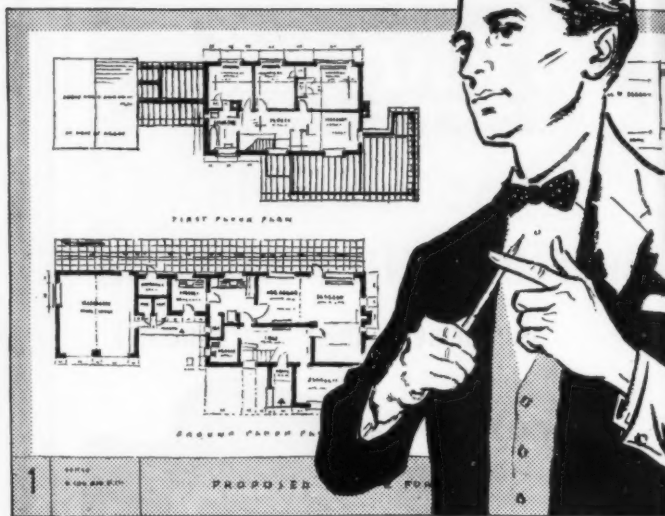
THIS FASCINATING HANDBOOK is the first to deal in full detail with every aspect of the construction of models of modern buildings. The author, himself an expert and experienced model maker, deals with models of all scales, sizes and types, mobile and static, realistic or diagrammatic, as well as their surrounding landscape and impedimenta; careful instructions are given on the construction of every conceivable detail from pylons to potted plants, from glass domes to door handles. The author describes the proper uses and the virtues and vices of traditional materials, plywood, card, glue, and the many new synthetic materials now available, not even forgetting such unorthodox things as dental plaster or cherry sticks.

Architects are increasingly using models to express their projects in a three-dimensional form, and this book will be of invaluable help both to them, their assistants, students, model makers professional and amateur, and all who are intrigued by buildings in miniature.

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CLASSIFIED ADVERTISEMENTS

Advertisements should be addressed to the Advertisement Manager, "The Architects' Journal", 9, 11 and 13, Queen Anne's Gate, Westminster, S.W.1, and should reach there by first post 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.

AIR-MAIL SERVICE available on request. In response to requests from a number of Overseas subscribers for air-mail delivery of Public and Official Appointment details and Other Appointments Vacant, we have been pleased to arrange that cuttings of all such classified advertisements appearing in the A.J., shall be despatched by air-mail on Wednesday of each week (one day prior to A.J. publication date). The cost of this special service to Overseas subscribers will be 5s. for four weeks (1s. 3d. for each additional week) and prepayment should be sent by subscribers wishing to take advantage of this service. The charge we are making represents only the actual cost of the postage involved.

Public and Official Accouncements

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GLASGOW CORPORATION
ASSISTANT ARCHITECTS
TOWN PLANNERS
QUANTITY SURVEYORS

The Architectural and Planning Department of the Corporation of the City of Glasgow has vacancies for a number of qualified Assistants in the above professions.

The Department has in hand a large, varied and interesting programme of works including comprehensive redevelopment, multi-storey flats, schools and civic buildings. The work will provide scope for personal initiative in the preparation of designs and details of schemes upon which construction work will follow.

The salary scale for these Assistantships is up to £1,385 with placing according to experience.

Form of application may be obtained from the Principal Administrative Officer, 20, Trongate, Glasgow, C.1.

A. G. JURY,

City Architect and Planning Officer.
1958

BUILDING SURVEYORS

Architect's Department, L.C.C., has vacancies in Building Regulation Division and District Surveyors Service for work in connection with applications under the London Building Acts and Byelaws. District Surveyors' offices are located in Metropolitan Boroughs and work involves negotiations with developers and supervision of works in progress.

Up to £1,250, commencing according to qualifications and experience. Form and particulars from Hubert Bennett, F.R.I.B.A., Architect to Council (EK/AJ/1637/8), County Hall, S.E.1.

1964

CUMBERLAND COUNTY COUNCIL
APPOINTMENT OF COUNTY ARCHITECT

Applications are invited for the appointment of County Architect for the Administrative County of Cumberland. Salary within the scale £2,780 (1 × £115); (2 × £110)—£3,115 p.a. Application forms, together with further details, may be obtained from the undersigned, to be returned not later than Thursday, 1st September, 1960.

G. N. C. SWIFT,
Clerk of the County Council.

The Courts,
Carlisle.
21st July, 1960. 2526

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies for ARCHITECT/PLANNERS. Tasks include three-dimensional planning in Comprehensive Development Areas and all other important areas of new development throughout London, including those associated with road improvements. Up to £1,250 according to experience and qualifications. Forms and particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council (EK/AJ/1790/8), County Hall, S.E.1.

2180

BRITISH RAILWAYS

ASSISTANT ARCHITECTS

ASSISTANT ARCHITECTS required for the Architect's Office of British Railways, 32, Elmbank Crescent, Glasgow. Good designing ability and A.R.I.B.A. qualifications essential. Commencing salary between £1,100 and £1,200 per annum. Candidates should apply in writing to the Chief Civil Engineer, British Railways, St. Enoch Station, Glasgow, C.1.

2565

COUNTY BOROUGH OF SOUTH SHIELDS

ASSISTANT ARCHITECTS

Applications are invited for the above appointments in the Borough Engineer's Department. Applicants must be suitably qualified and the salary paid will be in accordance with Grade A.P.T. IV (£1,065-£1,220).

Housing accommodation will be made available to successful applicants if necessary and they will be required to pass a medical examination for Superannuation purposes.

Application forms are obtainable from the Borough Engineer, Town Hall, South Shields, and should be returned to him not later than 10 a.m., Monday, 19th September, 1960.

R. S. YOUNG,

Town Clerk

2592

THE SCOTTISH GAS BOARD
(GLASGOW AND WESTERN DIVISION)

INVITE ATTENTION

ARCHITECTS AND DESIGNERS

to the
FOLLOWING DESIGN COMPETITION

An invitation is extended to Architects, Designers, students of the R.I.B.A. and students in the final year at a School of Architecture whose course is recognised for exemption from the R.I.B.A. Final examination, to submit designs in competition for two Stands to be erected at the Modern Homes Exhibition, Kelvin Hall, Season 1960. One Stand will exhibit various types of Central Heating and Domestic Hot Water Installations, the other a comprehensive variety of domestic gas appliances.

Assessors:—Professor Frank Fielden, M.A., F.R.I.B.A., Glasgow.

Jack Howe, Esq., F.R.I.B.A., F.S.I.A., London.

Premiums:—£150, £75, £50, will be paid for completion of drawings and supervision of erection of stands.

Last day for submitting designs:—30th August, 1960.

Conditions may be obtained from the Controller of Sales, The Scottish Gas Board, Glasgow & Western Division, 9, George Square, Glasgow, C.2. 2506

BOROUGH OF WREXHAM

Applications are invited for the following appointments:—

(a) TWO ENGINEERING ASSISTANTS.

Salary A.P.T. Grade IV (range £1,065-

£1,220 per annum).

(b) TWO ARCHITECTURAL ASSISTANTS.

Salary Special Grade (range £785-£1,070

per annum).

Candidates should have passed the Final examination of the Institution of Civil or Municipal Engineers or of the R.I.B.A., as appropriate, and have had experience with a Municipal Authority.

Casual car allowance will be paid on the instructions of the Borough Surveyor and the Council will consider payment of removal expenses.

Housing accommodation provided if required. Forms of application and particulars of duties and works in hand obtainable from the Borough Surveyor, 31, Chester Street, Wrexham.

Applications to be returned to the undersigned by not later than 12 noon, 22nd August, 1960.

PHILIP J. WALTERS,

Town Clerk.

Guildhall,
Wrexham.
July, 1960. 2517

BOROUGH OF KING'S LYNN

APPOINTMENT OF ASSISTANT QUANTITY SURVEYOR

Applications are invited for the above appointment. Salary within Grades A.P.T. II-III (£765-£1,065). Housing accommodation provided. Removal expenses paid.

Further particulars may be obtained from G. Holmes, A.R.I.B.A., Housing Architect, Clifton House, Queen Street, King's Lynn.

Closing date, 30th August, 1960.

E. W. GOCHER,

Town Clerk.

Town Hall,
King's Lynn,
Norfolk. 2648

BOROUGH OF WARWICK

APPOINTMENT OF CHIEF ASSISTANT ARCHITECT

Applications are invited from Qualified Architects for the above appointment within the special grade £785-£1,070.

Applications together with names and addresses of two persons to whom reference may be made must be delivered to my office not later than the 29th of August, 1960.

Housing accommodation will be provided if necessary and removal expenses paid.

C. E. BROWN, A.M.I.Mun.E.,
Borough Engineer & Surveyor.

23, Jury Street,
Warwick. 2599

CITY AND COUNTY OF

NEWCASTLE UPON TYNE

ARCHITECT'S DEPARTMENT

Consequent upon revisions in the establishment of his Department the City Architect is now able to offer vacancies in the following senior posts in the Department and will be pleased to hear from Architects who are keen to take part in an exciting and extensive programme of high quality architectural work:—

(a) One PRINCIPAL ASSISTANT ARCHITECT

(GENERAL SECTION). J.N.C. Scale "C"

(£1,385-£1,520 per annum).

(b) Two PRINCIPAL ASSISTANT ARCHITECTS

(HOUSING SECTION AND RE-HOUSING

SECTION). J.N.C. Scale "B" (£1,255-£1,485

per annum).

Further details of the posts and Forms of Application may be obtained from George Kenyon, A.R.I.B.A., A.M.T.P.I., City Architect, 12, Cloth Market, Newcastle upon Tyne, 1. Applicants must state the Section of the Department and post applied for when requesting particulars.

Closing date for completed applications, Saturday, 3rd September, 1960.

JOHN ATKINSON,

Town Clerk.

Town Hall,
Newcastle upon Tyne, 1.
29th July 1960. 2588

BEESTON AND STAPLEFORD URBAN

DISTRICT COUNCIL

TEMPORARY ARCHITECTURAL ASSISTANTS
£1,500 per annum will be paid to suitably qualified Architects required for work in connection with the design and planning of a Covered Swimming Bath comprising two Pools.

Candidates should have good design ability, with experience in contemporary design and detailing.

Applications stating age, qualifications and experience, together with particulars of present and previous appointments and names and addresses of two referees, must be received by the Housing Architect, Town Hall, Beeston, Nottingham, not later than the 29th August, 1960.

H. D. JEFFRIES,

Clerk.

2617

CITY AND COUNTY OF

NEWCASTLE UPON TYNE

APPOINTMENT OF CHIEF ASSISTANT ARCHITECT (GENERAL)

Applications are invited for the appointment of Chief Assistant Architect (General) in the City Architect's Department at a salary in accordance with J.N.C. Scale E (£1,655 per annum, rising by annual increments to a maximum of £1,885 per annum).

Applicants must be Fellows or Associates of the Royal Institute of British Architects and should have received a sound architectural training, preferably at a recognised School of Architecture. The Officer appointed will be responsible, under the direction of the City Architect, for the control of all building work undertaken by the Department for all Committees of the Corporation other than Housing and Education.

Further details of the post and Forms of Application may be obtained from George Kenyon, A.R.I.B.A., A.M.T.P.I., City Architect, 12, Cloth Market, Newcastle upon Tyne, 1.

Closing date for completed applications: Saturday, 3rd September, 1960.

JOHN ATKINSON,

Town Clerk.

Town Hall,
Newcastle upon Tyne, 1.
28th July, 1960. 2587

BOROUGH OF WILLESDEN

Applications are invited for the following permanent appointments:—

(a) ASSISTANT ARCHITECT within Grade

A.P.T. I (£1,065-£1,220 p.a.).

(b) ASSISTANT ARCHITECT within Special

Grade (£785-£1,070 p.a.).

(c) ARCHITECTURAL ASSISTANT within Grade

A.P.T. II (£765-£880 p.a.).

(d) ARCHITECTURAL ASSISTANT within Grade

A.P.T. I (£610-£765 p.a.).

London weighting is payable in addition to the above salaries.

Candidates for posts (a) and (b) must be Associates of the R.I.B.A. and should have a high ability in design, capable of supervising contracts and experience of multi-storey flats.

For one post experience of redevelopment schemes will be an advantage.

Candidates for posts (c) and (d) should have passed the Intermediate Examination of the R.I.B.A.

A programme of interesting and varied works is expected to continue for many years and opportunities are offered to imaginative designers of any age with a contemporary and practical outlook.

The appointments will be superannuable and subject to the National Conditions of Service.

The Council is unable to assist with housing accommodation.

Forms of application and conditions of appointment may be obtained from the Borough Engineer & Surveyor, Town Hall, Dyne Road, Kilburn, N.W.6.

Applications to be returned to the undersigned not later than 10 a.m. on Thursday, 1st September, 1960.

R. S. FORSTER,

Town Clerk.

2586

ADMIRALTY

TEMPORARY ASSISTANT ARCHITECTS

(Basic Grade)

Assistant Architects required in newly formed Architects Branch of Navy Works Department of Admiralty at Headquarters (Pinner, Middlesex). Duties embrace design of sleeping, messing and recreation buildings for single officers and men, houses, flats and housing estates, instructional buildings, office blocks, hospitals and industrial buildings. Assistant Architects at Headquarters work under control of main grade and/or Senior Architects and expected to lead group of Architectural Assistants. Qualifications: A.R.I.B.A. Must be British subjects with first class design ability and sound working knowledge of up-to-date forms of construction, material and costs. Scope for development and application of new ideas in design of Naval buildings. Posts in basic grade with salaries starting from £530 per annum (London Rate) at age 25 to £1,125 per annum (London Rate) at age 34 or over. Maximum of London Scale is £1,300 p.a. Posts offered are non-pensionable with opportunities for establishment promotion to main grade (salary maximum £1,730 National Rate) and higher posts. Five-day week. Annual Leave allowance 22 days, rising to 25 days after 10 years and 30 days after 20 years' service. Forms quoting reference F.275/CA from Ministry of Labour, Technical and Scientific Register (K), Almack House, 26, King Street, London, S.W.1.

2509

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BRACKNELL DEVELOPMENT CORPORATION

Applications are invited for the following appointments:

(a) Senior Architect

Grade VIII (£1392 x £57(4) - £1620)

The development of the New Town of Bracknell, begun in 1950, is now in a very interesting stage, and a Senior Architect is required to take charge of planning aspects, under the Chief Architect, and to work out in detail important central areas of the present Master Plan and probably to plan the extension of the Designated Area from 1,850 to 3,050 acres and the population from 25,000 to 40,000, regarding which the Minister is in statutory consultation with the County and Local Authorities.

Applicants should be Corporate Members of the R.I.B.A. and the T.P.I. with a high degree of skill in the following duties:—

- the preparation of Central Area and Neighbourhood plans.
- the examination of planning applications, in conjunction with County and Local Authorities, and giving evidence at Inquiries.
- the preparation of preliminary housing layouts and basic house design.

The post offers considerable scope in a variety of interesting work.

(b) Assistant Architects

(2) Grade IV (£1065 x £55 x £50(2) - £1220)

Applicants should be Corporate Members of the R.I.B.A. and will be required to assist with the above planning and in the general work of the Department.

Superannuation schemes, medical examination. Good housing accommodation available for each post.

Applications, stating the post applied for and giving age, education, qualifications, experience and appointments held (with dates and salaries) should be addressed to the

General Manager (A)
Bracknell Development Corporation,
Farley Hall, Bracknell, Berks.

to be received not later than the 31st August 1960.

ARCHITECTS' JOURNAL
Housing and applications
26th August

Town Hall,
Peterborough
July, 1960.

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Town Hall,
27th July,

CITY OF PETERBOROUGH
ARCHITECTURAL ASSISTANT, Grade I A.P.T.
 Housing accommodation provided. Details from
 and applications to City Engineer. Closing date:
 26th August, 1960.

C. PETER CLARKE,
Town Clerk.

Town Hall,
 Peterborough.
 July, 1960. 2618

KENT COUNTY COUNCIL
ARCHITECTS are required in the office of the
 County Architect to assist with the Council's
 expanding building programme which includes
 schools, colleges, residential homes and other
 public buildings. The salary range extends to
 £1,375 a year, the starting grade and salary
 depending on qualifications, ability and experi-
 ence. Application forms and further details from
 the County Architect, Springfield, Maidstone.
 Closing date 30th August, 1960. 2679

COUNTY BOROUGH OF SOUTHEND-ON-SEA
BOROUGH ARCHITECTS' DEPARTMENT
ASSISTANT ARCHITECTS

A house will be available and removal expenses
 paid to Assistant Architects with initiative and
 enthusiasm to be appointed according to experi-
 ence within grades A.P.T. III to V (£880-£1,375).
 Applications with usual particulars and the
 names of referees, should be sent to the Borough
 Architect, 30, Alexandra Street, Southend-on-Sea,
 by Monday, 29th August, 1960.

ARCHIBALD GLEN, *Town Clerk.* 2676

COUNTY BOROUGH OF SOUTHAMPTON
 Applications are invited for the following
 appointments:

- (a) **SENIOR ASSISTANT ARCHITECT, Grade**
A.P.T. V (£1,220-£1,375), for duties in connec-
 tion with an extensive and varied programme
 of housing development including multi-storey
 flats. Applicants must hold the qualification
 A.R.I.B.A. with wide experience in the design
 and administration of major building works.
- (b) **ASSISTANT ARCHITECT, Grade A.P.T.**
III/IV (£880-£1,220), for duties in connection
 with housing estate development. Applicants
 must have passed Parts I and II of the
 R.I.B.A. final examination. Commencing
 salary according to experience and qualifi-
 cations.

The appointments are subject to N.J.C. condi-
 tions of service.

Housing accommodation available in approved
 cases and approved removal expenses reimburs-
 able up to a maximum of £50.

Apply on application forms obtainable from the
 Borough Engineer and Surveyor, Civic Centre,
 Southampton, returnable by Monday, 29th August,
 1960. 2652

BOROUGH OF CHATHAM
 Applications are invited for—
 (a) **JUNIOR ENGINEERING ASSISTANT**
 (within A.P.T. II £765-£880).

- (b) **ARCHITECTURAL DRAUGHTSMAN**
 (within General Division £210-£295, or
 Grade A.P.T. I £610-£765), according to age
 and experience.

Applicants for (a) should have been trained in
 a Municipal Engineer's office, and housing accom-
 modation will be made available in an appropriate
 case.

Applications with copies of two testimonials,
 or the names and addresses of two referees, should
 be delivered to the Borough Engineer and Sur-
 veyor, Town Hall, Chatham, not later than
 Saturday, 27th August, 1960.

The appointment will be—
 (a) in accordance with the National Scheme of
 Conditions of Service.

- (b) terminable by one month's notice on either
 side.
- (c) superannuable, subject to satisfactory medi-
 cal report.

In accordance with their usual practice the
 Council will require the successful candidate to
 give an undertaking to remain in the Council's
 service for two years.

ROWLAND NEWNES,
Town Clerk.

Town Hall,
 CHATHAM.
 11th August, 1960. 2663

COUNTY BOROUGH OF DEWSBURY
BOROUGH ARCHITECT AND BUILDINGS
SURVEYOR'S DEPARTMENT

Applications are invited for the following
 appointments within the scope of the grades
 stated:—

- (a) **PRINCIPAL ASSISTANT ARCHITECT**
 (Housing and General Section), A.P.T. Grade
 V (£1,220-£1,375 p.a.). Applicants should be
 A.R.I.B.A.
- (b) **QUANTITY SURVEYING ASSISTANT,**
 A.P.T. Grade I (£610-£765 p.a.).

Housing accommodation may be made available
 if required. The appointments will be subject to
 one month's notice on either side and to the pro-
 visions of the Local Government Superannuation
 Acts.

Applications stating age, education, qualifica-
 tions, full particulars of training and experience,
 together with copies of two recent testimonials,
 should be sent to the undersigned not later than
 Monday, 29th August, 1960, in envelopes endorsed
 "Appointment of"

A. NORMAN JAMES,
Town Clerk.

Town Hall, Dewsbury.
 27th July, 1960. 2604

CITY OF LEEDS
CITY ARCHITECT'S DEPARTMENT
 Applications are invited from persons holding
 appropriate professional qualifications for the
 following permanent posts:—

- (a) **ASSISTANT CITY ARCHITECT (HOUSING).**
- (b) **ASSISTANT CITY ARCHITECT (EDUCA-
 TION AND GENERAL).**

Salary Scale £1,790-£2,085 per annum, Grade
 F.

The Assistant City Architect (Housing) will be
 responsible under my control for large house
 building programmes and should have had a wide
 experience of all forms of housing layout, com-
 prehensive developments and multi-storey flats.

The Assistant City Architect (Education &
 General) will be responsible under my control for
 major educational building projects and large
 public buildings, e.g. multi-storey college, munici-
 pal office block, abattoir, swimming baths, etc.

Both posts carry great responsibilities and offer
 worthwhile opportunities to those who are keenly
 interested in design and the planning and
 organisation of extensive municipal building
 schemes.

Further details and application forms may be
 obtained from the undersigned.

Applications are also invited for the following
 permanent posts in (a) Housing and (b) Educa-
 tion & General sections of the department.

- Post No. 1. **PRINCIPAL ARCHITECTS, Grade C,**
 Salary Scale £1,385-£1,620.
2. **ASSISTANT PRINCIPAL ARCHITECTS, B,**
 £1,320-£1,485.
3. **SENIOR ASSISTANT ARCHITECTS, A.P.T. V,**
 £1,220-£1,375.
4. **SENIOR ASSISTANT ARCHITECTS, A.P.T. IV,**
 £1,065-£1,220.
5. **ASSISTANT ARCHITECTS, A.P.T. III, £880-**
 £1,065.
6. **ARCHITECTURAL ASSISTANTS, A.P.T. II,**
 £765-£880.

Applicants for the senior posts must hold appro-
 priate professional qualifications and should have
 had a wide experience in either housing, education
 or other types of large public building work and
 will be required to design and work on these pro-
 jects to completion. Applicants will be considered
 on their capability for design, experience, con-
 temporary outlook and suitability.

The appointments are superannuable—medical
 examination.

Application forms obtainable from the under-
 signed, are to be returned by 12 noon on Monday,
 5th September 1960.

Canvassing disqualified.

J. R. SHERIDAN-SHEDDEN,
City Architect.

Priestley House,
 Quarry Hill,
 Leeds, 9. 2695

CITY OF LEEDS
CITY ARCHITECT'S DEPARTMENT
QUANTITY SURVEYING STAFF

A number of vacancies occur in the Quantity
 Surveying Section which deals with the prepara-
 tion of bills of quantities and other work in con-
 nection with the large building programmes of the
 department. These programmes include schools,
 housing with multi-storey flats, hostels and other
 interesting projects and the posts offer oppor-
 tunities to work as part of a team in a pro-
 gressive office.

- Post No. 1. **SENIOR ASSISTANT QUANTITY**
SURVEYOR, Grade B, Salary scale £1,320-
 £1,485. Applicants should have wide experience
 in the preparation of bills of quantities for
 major works including schools.
2. **SENIOR ASSISTANT QUANTITY SURVEYOR,**
 A. £1,310-£1,420. Applicants should have con-
 siderable experience in taking off and preference
 will be given to those with experience in
 cost analysis and cost planning.
3. **SENIOR ASSISTANT QUANTITY SURVEY-**
ORS, A.P.T. V, £1,220-£1,375. Applicants
 should have considerable experience in taking
 off, in the measurement of work in progress
 and the settlement of final accounts for major
 schemes.
4. **SENIOR ASSISTANT QUANTITY SURVEY-**
ORS, A.P.T. IV, £1,065-£1,220.
5. **SENIOR ASSISTANT QUANTITY SURVEY-**
ORS, A.P.T. III, £880-£1,065.

Applicants for posts Nos. 4 and 5 should be
 experienced in the measurement of variations
 and the settlement of final accounts for large
 schemes and should have some experience of
 taking off.

6. **SENIOR WORKER-UP, A.P.T. III, £880-£1,065.**
 It is essential that applicants for this post
 should have the ability to write a good bill
 for major schemes and should have wide ex-
 perience of this type of work in a professional
 office.

Applicants for posts Nos. 1, 2 and 3 should hold
 appropriate professional qualifications and ap-
 plicants for posts Nos. 4 and 5 should have reached
 the appropriate standard of qualification and
 preference will be given to those qualifying for
 the Quantities sub-division of the R.I.C.S.

The appointments are superannuable—medical
 examination.

Further details and application forms may be
 obtained from the undersigned and applications
 should be returned by 12 noon on Monday, 5th
 September, 1960.

Canvassing disqualified.

J. R. SHERIDAN-SHEDDEN,
City Architect.

Priestley House,
 Quarry Hill,
 Leeds, 9. 2696

WARWICKSHIRE COUNTY COUNCIL
ARCHITECT'S DEPARTMENT
 (a) **DEPUTY GROUP ARCHITECTS (TWO),**
 Grade A.P.T. IV-V (£1,065-£1,375).

Applications are invited from qualified and ex-
 perience architects for these posts, which are for
 the groups handling projects for the Council's
 education building programme.

In each case the post is one of responsibility
 requiring a high degree of initiative and design
 ability in up-to-date forms of construction, use of
 materials, control of costs, job planning and
 organisation.

The successful applicant will also be expected to
 deputise generally for the group architect.

- (b) **ARCHITECTS, SPECIAL GRADE (£785-**
 £1,070).

Applications are invited from architects who
 have passed Part I and II of the R.I.B.A. Final
 or Special examination or their equivalent at one
 of the recognised schools of architecture. The suc-
 cessful applicants will work in groups on large
 projects, and an opportunity will be given to men
 with enthusiasm and ability to design and carry
 out projects under a group architect.

- (c) **ARCHITECTURAL ASSISTANTS, Grade**
A.P.T. II (£765-£880).

Vacancies exist for Assistants who are up to
 Intermediate R.I.B.A. standard and who require
 experience in a variety of interesting projects.

The commencing salary can be within the grade
 according to ability and experience. Five-day
 week worked. The Council have schemes for the
 payment of removal expenses and a lodging allow-
 ance to married officers. Application forms and
 full conditions applicable to the appointments can
 be obtained from Eric Davies, F.R.I.B.A.,
 A.M.T.P.I., County Architect, Shire Hall, War-
 wick.

L. EDGAR STEPHENS,
Clerk of the Council.

Shire Hall,
 Warwick.
 July, 1960. 2597

DEPARTMENT OF MUNICIPAL AFFAIRS
AND SUPPLY

PROVINCE OF NEWFOUNDLAND, CANADA

Appointment of
SENIOR PLANNING ASSISTANT

Applications are invited from suitably qualified
 and experienced persons for the above appoint-
 ment in the Provincial Planning Division of the
 Department of Municipal Affairs and Supply in
 St. John's. The appointment will be contractual
 for a period of two years and subject to satis-
 factory service will be established at the end of
 that time. Salary will be within the salary
 scale \$5,390 x \$100-\$5,830.

Duties will include the preparation of Municipal
 and Regional Plans including detailed designs
 for communities and districts throughout the
 Province, and the control of development in ac-
 cordance with various Provincial regulations.

The office is situated in St. John's but some
 travelling within the Province will be required.

Candidates must have appropriate professional
 qualifications in Town Planning together with con-
 siderable practical post graduate experience. Ex-
 perience in public relations and ability to address
 meetings of different types is very necessary.

Conditions of service, full details of which are
 available on request, provide free passage of
 applicant and family to St. John's.

Applications giving full details of candidate's
 age, education, professional qualifications, appoint-
 ments held, professional experience, together with
 the names of two referees should be sent to J. T.
 Allston, Director of Urban and Rural Planning,
 Department of Municipal Affairs and Supply,
 Confederation Building, St. John's, Newfoundland.
 Applications should be postmarked not later than
 31st August, 1960.

C. W. POWELL,
Deputy Minister of Municipal Affairs. 2651

BOROUGH OF BILSTON
HOUSING DIRECTOR'S DEPARTMENT
 Applications are invited for the positions of:—

- (a) **DEPUTY HOUSING DIRECTOR (£1,192-**
 £1,391).
- (b) **CHIEF ARCHITECTURAL ASSISTANT—**
 Grade IV (£1,065-£1,220).
- (c) **ARCHITECTURAL ASSISTANT, Grade III**
 (£880-£1,065).

Applicants for posts (a) and (b) must be qual-
 ified members of the R.I.B.A. and should have
 had experience in Municipal Housing.

The appointments will be subject to the National
 Scheme of Conditions of Service, medical examina-
 tion and the Local Government Superannuation
 Acts 1937 and 1953.

Housing accommodation will be made available
 if desired.

Applications in writing, stating post applied
 for, giving age, qualifications and previous ex-
 perience together with the names and addresses
 of two referees should be sent to the Housing
 Director, Municipal Buildings, Hall Street, Bilston,
 not later than Saturday, 27th August.

A. M. WILLIAMS,
Town Clerk. 2649

3rd August, 1960.

CITY OF ROCHESTER
ARCHITECTURAL ASSISTANT, Grade A.P.T. I
 Applications are invited for the above appointment in the City Surveyor's Department.
 Minimum qualification: Intermediate R.I.B.A. or equivalent standard. Commencing salary according to qualifications and experience.
 Housing accommodation available if required.
 Approved removal expenses paid after one year in appointment.

Applications, stating age, training, qualifications, present and previous appointments and experience, together with the names and addresses of two persons to whom reference may be made, should be delivered to J. A. Peel, A.M.I.C.E., M.I.Mun.E., City Surveyor, 66, Maidstone Road, Rochester, not later than Tuesday, 30th August, 1960.

PHILIP H. BARTLETT,
Town Clerk.

Guildhall,
 Rochester.
 27th July, 1960. 2603

UNIVERSITY OF CAMBRIDGE
ASSISTANT LECTURER IN ARCHITECTURE
 Applications are invited for the post of Assistant Lecturer in the School of Architecture from 1st January, 1961. The duties will consist mainly of instruction in the studios.

Particulars may be obtained from the Secretary of the Appointments Committee of the Faculty of Fine Arts, 1, Scoopie Terrace, Cambridge. Applications should be submitted by 10th September, 1960.

28th July, 1960. 2585

HUYTON-WITH-ROBY URBAN DISTRICT COUNCIL
ARCHITECTURAL AND HOUSING DEPARTMENT

Applications are invited for posts in the above Department as follows:—
 (a) SENIOR ASSISTANT ARCHITECT, Grade A.P.T. IV (£1,065-£1,220).
 (b) ARCHITECTURAL ASSISTANT, Grade A.P.T. II (£765-£880).

Candidates for post (a) should be Associate Members of the R.I.B.A., and candidates for post (b) should have passed the Intermediate Examination of the R.I.B.A.

The work of the Department consists of a large Housing and Capital Works programme. The appointments will be subject to the Local Government Superannuation Acts and the National Conditions of Service, and will be terminable by one calendar month's notice in writing on either side.

Applications stating age, qualifications and experience, together with the names of two persons to whom reference can be made should reach R. F. Chappelle, A.R.I.B.A., Architect and Housing Director, Archway Road, Huyton, not later than 22nd August, 1960.

Canvassing disqualifies.

D. WILLGOOSE,
Clerk of the Council.

Council Offices,
 Derby Road,
 Huyton. 2638

COUNTY BOROUGH OF SUNDERLAND
 Applications are invited for architectural staff appointments in the Borough Architect's Department. GRADES: J.N.C. SCALE "A," A.P.T. V, A.P.T. IV, A.P.T. II AND GENERAL DIVISION. Salaries according to experience and qualifications. Application forms obtainable from Borough Architect, Grange House, Stockton Road, Sunderland. Applications, in the envelope provided, must be received at my office, Town Hall, not later than 30th August, 1960. Canvassing will disqualify.

G. S. MCINTIRE,
Town Clerk.
 2690

COUNTY BOROUGH OF SOUTH SHIELDS
PRINCIPAL ASSISTANT QUANTITY SURVEYOR

Applications are invited for the above appointment in the Borough Engineer's Department. Applicants must be suitably qualified and the salary paid will be in accordance with Grade APT V (£1,220-£1,375).

Housing accommodation will be made available to successful applicant if necessary and he will be required to pass a medical examination for Superannuation purposes.

Application forms are obtainable from the Borough Engineer, Town Hall, South Shields, and should be returned to him not later than 10 a.m., Monday, 19th September, 1960.

R. S. YOUNG,
Town Clerk.
 2683

BOROUGH OF WALLSEND
 Applications are invited from suitably qualified persons for the following posts in the Borough Surveyor's Department:

(a) ARCHITECTURAL ASSISTANT.
 (b) ENGINEERING ASSISTANT.
 Salaries will be on the special grade (£785-£1,070) commencing at points on the scale appropriate to qualifications and experience.

The Council will be prepared to assist with housing accommodation for married applicants. Applications giving details of experience and qualifications together with the names and addresses of two referees to be forwarded to the undersigned by 27th August.

JOHN STOKER,
Town Clerk.

Town Hall,
 Wallsend. 2681

EAST SUSSEX COUNTY COUNCIL
 Applications are invited for the appointment of an ASSISTANT ARCHITECT, Special Grade, £785-£1,070, on the permanent staff of the Architect's Department.

Applications, giving the names of two persons to whom reference may be made to be sent to the County Architect, County Hall, Lewes, by the 26th August, 1960. 2598

BOROUGH OF MANSFIELD
BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT

Applications are invited from suitably qualified persons for the following vacancies in the Borough Engineer and Surveyor's Department (Architect's Section).

(a) JUNIOR ARCHITECTURAL ASSISTANT, Grade A.P.T. I (£610-£765).
 (b) QUANTITY SURVEYING ASSISTANT, Special Grade (£765-£1,070).
 (c) TRACER-DRAUGHTSMAN (Architectural and Civil Engineering), General Division (£210-£595).

The commencing salary in each case will depend on age and qualifications and experience.

Applications, stating age, training, qualifications, present and past appointments and experience and the names of three referees, should be sent to the Borough Engineer and Surveyor, Carr Bank, Mansfield, appropriately endorsed to arrive not later than Tuesday, the 6th September, 1960.

A. C. SHEPHERD,
Town Clerk.
 2759

LONDON COUNTY COUNCIL
ARCHITECTS' DEPARTMENT

ARCHITECTS (up to £1,250) required for Housing, Schools, General and Special Works Divisions. Full and varied programme of new work including schools, multi-storey flats and town development. Starting salaries according to qualifications and experience. Particulars and form from Hubert Bennett, F.R.I.B.A., Architect to Council (EK/AJ/169/8), County Hall, S.E.1. 1874

COUNTY BOROUGH OF BLACKPOOL
 Applications are invited for ASSISTANT QUANTITY SURVEYORS, Special Scale (£785-£1,070 p.a.).

Forms, etc., from Arthur Hamilton, B.Sc., A.R.I.B.A. (Borough Surveyor), P.O. Box 17, Municipal Offices, Blackpool. 2306

LONDON ELECTRICITY BOARD
ARCHITECTURAL DRAUGHTSMAN

Applications are invited for the above position in the Architect's Section of the Construction Branch of the Chief Engineer's Department at Lesco House, Stamford Street, S.E.1.

Applicants should be neat draughtsmen and preferably have had several years' experience in an Architect's office.

Pending determination as to the grading of the post within Schedule B of the National Joint Board Agreement, the salary will be in the provisional range £755 per annum rising to £855 per annum, inclusive of London Allowance.

Application form obtainable from the Personnel Officer, 46, New Broad Street, London, E.C.2, to be returned completed within 14 days of the publication date of this notice. Please quote ref. PER/V/3054/A. 2704

BIRMINGHAM REGIONAL HOSPITAL BOARD

APPOINTMENT OF ARCHITECTURAL STAFF
 The Board envisage an expansion in their hospital building programme. A large proportion of the work will be designed and supervised by the staff of the Regional Architect's Department and a number of new appointments have recently been made. Further appointments are now proposed and applications are invited for the following:—

1. SENIOR ASSISTANT ARCHITECTS—Salary scale £1,300 to £1,600. Qualifications: Registered Architect by examination. (Arch. 12)
 2. ASSISTANT ARCHITECTS—Salary scale £905 to £1,310. Qualifications: Registered Architect by examination. (Arch. 13)
 3. SENIOR ASSISTANT LAND SURVEYOR—Salary scale £1,300 to £1,600. Qualifications: Corporate membership of the R.I.C.S. (Arch. 14)
 4. LAND SURVEYING ASSISTANT—Salary scale £625 to £900. Qualifications: Intermediate Examination of the R.I.C.S. or an examination giving exemption therefrom. (Arch. 15)
 5. ASSISTANT QUANTITY SURVEYORS—Salary scale £905 to £1,310. Qualifications: Corporate membership of the R.I.C.S. (Arch. 16)
 6. ARCHITECTURAL DRAUGHTSMEN—Salary scale £475 to £685. Qualifications: Suitable training, including three years' technical experience in architectural drawing office. (Arch. 17)

These posts are not necessarily restricted to those with previous hospital experience. They offer opportunities for gaining knowledge and experience of the whole field of hospital architecture, ranging from adaptation schemes to comprehensive new hospital projects and including ward units, operating theatres, outpatient departments, maternity units, X-ray departments, kitchens, boilerhouses, staff housing accommodation and numerous other types of building.

All posts superannuable, five-day week, generous annual leave. Applications quoting appropriate reference, to Secretary, Birmingham Regional Hospital Board, 10, Augustus Road, Edgbaston, Birmingham, 15, by 12th September, 1960, stating qualifications, age, experience, present position and salary, and names of two referees. 2737

SALOP COUNTY ARCHITECT'S DEPARTMENT

There is a vacancy on the established staff for a qualified ASSISTANT ARCHITECT. Salary Grade £785-£1,070 p.a., commencing point depending on ability and experience. N.J.C. Conditions. Five-day week. A disturbance allowance or weekly separation allowance may be paid to a married man taking up this appointment. Conditions of service and application forms obtainable from Ralph Crowe, A.A.Oip., A.R.I.B.A., A.M.T.P.I., County Architect, Colum House, London Road, Shrewsbury. Closing date 3rd September, 1960. 2736

COUNTY BOROUGH OF WEST HAM
BOROUGH ARCHITECT & PLANNING OFFICER'S DEPARTMENT

Applications invited for established posts as follows:—

GROUP ARCHITECT—£1,065-£1,220 p.a.
 DEPUTY GROUP ARCHITECT—£785-£1,070 p.a.
 ARCHITECTURAL ASSISTANT—£610-£765 p.a. (London Allowance in addition.)

Commencing salary according to qualifications and experience.

Applications to: Borough Architect & Planning Officer, 70, West Ham Lane, Stratford, E.15.

OXFORDSHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following:—

(a) ASSISTANT QUANTITY SURVEYOR A.P.T. Grade III (£880-£1,065).
 (b) ASSISTANT QUANTITY SURVEYOR A.P.T. Grade II (£765-£880).
 (c) QUANTITY SURVEYOR'S ASSISTANT Misc. Div. V (£650-£715).

Applicants for appointment (a) must have passed a suitable professional final examination, for (b) must have passed the appropriate intermediate examination, and for (c) must have experience in abstracting, billing, interim valuations and final accounts.

Applications giving two referees and one recent testimonial must give details of qualifications, education, experience, age and relevant particulars, must reach the County Architect, Park End Street Offices, Oxford, within fourteen days of the appearance of this advertisement.

GERALD GALE BURKITT,
Clerk of the Council.

County Hall,
 Oxford.
 August, 1960. 2803

LANCASHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

SENIOR ASSISTANT ARCHITECTS—£1,320 to £1,485 according to experience, and covered by Lancashire County Council Superannuation Scheme.

The Governors of Salford College of Advanced Technology are proceeding with a major expansion of the College. This project is to be of advanced design, offering opportunity for experience in the design of buildings to meet the needs of pioneer scientific processes, which are estimated to cost £3,000,000.

The team for this scheme will work with Messrs. Ove Arup & Partners, Structural Consultants, and will include Quantity Surveyors and Mechanical Engineers. The team will work in the County Architect's Office at Preston.

On completion of the project, architects will be engaged on a wide variety of new buildings for the Lancashire County Council.

Application forms and details of appointment from: The County Architect, P.O. Box 28, County Hall, Preston, returnable by 1st September, quoting reference A/J.

BOROUGH OF RADCLIFFE
APPOINTMENT OF

SENIOR ARCHITECTURAL ASSISTANT
 Applications are invited for the above-mentioned permanent appointment, at a salary in accordance with Grade A.P.T. II.

The person appointed must be experienced in the preparation of plans, specifications, etc., for housing, public buildings and general municipal work, and must have a thorough knowledge of present-day building.

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

A Council house will be made available if required.

Applications, stating age, qualifications and experience, and the names of two persons to whom reference may be made, must be received not later than first post Tuesday, 30th August, 1960.

Canvassing will disqualify.

H. A. FOX,
Town Clerk.

Town Hall,
 Radcliffe. 2781

URBAN DISTRICT COUNCIL OF BASILDON
 (Population 80,000-27,000 acres—rapidly developing District.)

ESTABLISHED POSTS

(a) SENIOR ASSISTANT ARCHITECT—within A.P.T. IV (£1,065-£1,220 p.a.).
 (b) ARCHITECTURAL ASSISTANT—within A.P.T. II (£765-£880 p.a.).

Applicants for (a) must be fully qualified and experienced architects and those for (b) should have Intermediate R.I.B.A. or equivalent and practical experience.

Housing accommodation considered. Five-day week.

Full particulars and application form from and returnable to the Engineer & Surveyor, Council Offices, 88, Town Square, Basildon, Essex. Closing 31st August.

BEDLINGTONSHIRE URBAN DISTRICT COUNCIL**ARCHITECTURAL ASSISTANT**

Applications are invited for the undermentioned appointment in the Surveyor's Department.

ARCHITECTURAL ASSISTANT, salary in accordance with Special Grade (£785-£1,070).

Applicants must have passed the Intermediate Examination of the Royal Institute of British Architects, or its equivalent, and have had considerable experience in architectural work, particularly housing and shop redevelopment. Housing accommodation will be made available in approved circumstances.

Applications, accompanied by names of three referees, to be delivered to the undersigned not later than Friday, the 2nd September, 1960.

F. S. FORSTER,

Clerk to the District Council.

Council Offices,
Bedlington,
Northumberland.
8th August, 1960.

2757

COUNTY COUNCIL OF STIRLING**COUNTY ARCHITECT'S DEPARTMENT**

Applications are invited to fill a number of vacancies in the School and Housing Sections. The vacancies provide excellent opportunities for Assistants with good experience in contemporary design and construction.

(a) **SENIOR ASSISTANT ARCHITECT**. Salary £1,260 to £1,512. Applicants must hold A.R.I.B.A. and have had wide experience in preparation of working drawings, taking complete responsibility and handling building contracts.

(b) **ASSISTANT ARCHITECTS**. Salary £1,150 to £1,320. Applicants must hold A.R.I.B.A. and have good general experience.

(c) **PROFESSIONAL ASSISTANTS' GRADE**. Salary £795 to £1,075. Applicants must hold A.R.I.B.A., and placing will be in accordance with experience.

(d) **ASSISTANT QUANTITY SURVEYOR**. Salary £1,150 to £1,320. Applicants must hold A.R.I.C.S., and have wide scheduling experience.

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

Applications, stating age, qualifications and experience, together with names of two referees, should be lodged with A. J. Smith, A.R.I.B.A., F.R.I.A.S., County Architect, Spittal Street, Stirling, not later than 5th September, 1960.

JAMES D. KENNEDY,

County Clerk.

Viewforth,
Stirling.

2716

LANDSCAPING AND GROUNDWORK ASSISTANTS for preparation of working drawings and specifications and supervision of contracts on new parks, gardens and playing fields. Good background in horticulture valuable.

Up to £950 a year in the first instance according to qualifications and experience. Prospects of higher pay and promotion according to ability and output.

Also vacancies for **ARCHITECTURAL ASSISTANTS** at similar rates of pay.

Apply Chief Officer (A1/AJ/2111/8), Parks Department, County Hall, London, S.E.1. (WATERLOO 5000, ext. 8076.)

2783

COUNTY OF ANGUS**APPOINTMENT OF ASSISTANT ARCHITECT**

Applications are invited for appointment as **ASSISTANT ARCHITECT** in the Department of the County Architect and Planning Officer. Duties will include work on new schools and other Council projects.

Applicants should be Associates of the R.I.B.A. and the salary scale will be £795 rising to £1,075 (special grade), with a car allowance. Housing accommodation will be available in due course in appropriate cases.

Application forms, together with full particulars of the Conditions of Appointment, can be obtained from the undersigned.

IAN A. MACKNIGHT,

County Clerk.

County Buildings,

Forfar.

5th August, 1960.

2712

NORTHAMPTONSHIRE COUNTY COUNCIL**COUNTY ARCHITECT'S DEPARTMENT****HEATING ENGINEERING ASSISTANT**

A.P.T. II (£765-£980 per annum)

Applications are invited from candidates who have had experience in the design of schemes and the preparation of drawings and specifications for heating and hot and cold water supplies in schools and other large buildings. A car travelling allowance will be payable in accordance with the County Council's approved scale.

A weekly sum of 25s. by way of temporary additional salary will be payable, subject to review quarterly, to a married officer unable to find a house locally.

Details, giving age, education, qualifications and experience, with a copy of a recent testimonial, should be sent in an envelope marked "Engineering Assistant" to the County Architect, County Hall, Northampton, by 30th August, 1960.

J. ALAN TURNER,

Clerk of the County Council.

County Hall,

Northampton.

2769

ARCHITECTS AND MAINTENANCE SURVEYORS. Pensionable posts for men and women at least 25 and under 35 on 1.1.60 (extension for regular Forces service, Overseas Civil Service, established civil service and temporary Government service as Architect or Maintenance Surveyor). Candidates must be registered Architects or, alternatively, for Maintenance Surveyor posts, have achieved Corporate membership of R.I.C.S. (Building Section), or have passed examinations necessary for attaining Corporate membership. Salary (men, London) £830-£1,125 according to age, rising to £1,300. Promotion prospects. Write Civil Service Commission, 17, North Audley Street, London, W.1, for application form quoting S/60-61.

2791

COUNTY BOROUGH OF NORTHAMPTON**3 SENIOR ASSISTANT ARCHITECTS**

A.P.T. IV/V (£1,065-£1,375)

Applications are invited for these appointments in Northampton which has an interesting programme of new schools, Municipal buildings and multi-storey flats in redevelopment schemes.

Commencing salaries will depend upon ability and experience.

Full particulars and application forms, returnable by 5th September, from Borough Architect, Guildhall, Northampton.

C. E. VIVIAN ROWE, Town Clerk.

2801

COUNTY BOROUGH OF CROYDON**ARCHITECTURAL STAFF**

Applications are invited for these appointments on the Corporation's Housing and General Architectural work which includes a considerable variety of large interesting projects.

(a) **ASSISTANT ARCHITECTS** (Team Leaders),

R.I.B.A. Final required, A.P.T. V (£1,265-£1,420 including "London weighting").

(b) **ARCHITECTURAL ASSISTANTS**, A.P.T. I/II/III/IV (£610-£1,220) plus "London weighting" up to £45.

"Essential user" car allowance payable for appointments (a); similar allowance for appointments (b) when graded in A.P.T. IV with R.I.B.A. Final.

Pensionable posts; commencing salaries according to qualifications and experience. Five-day week (38 hours).

Housing.-Advances up to 100 per cent. of Borough Valuer's valuation will be made available where needed for the purchase of suitable houses in Croydon by successful applicants.

Further particulars and application forms from the Borough Engineer, Town Hall, Croydon. Closing date 1st September, 1960.

E. TABERNER,

Town Clerk.

2755

The SUPAPAK

FULLY AUTOMATIC PACKAGE BOILER

- ★ Treblepass Danks patented "Interflo" design boiler
- ★ Fully Automatic
- ★ Accessibility top and bottom
- ★ Over 80% efficiency
- ★ CO₂ 13% to 14% over entire modulating range
- ★ All welded construction up to 250 p.s.i.

Patent No. 736020

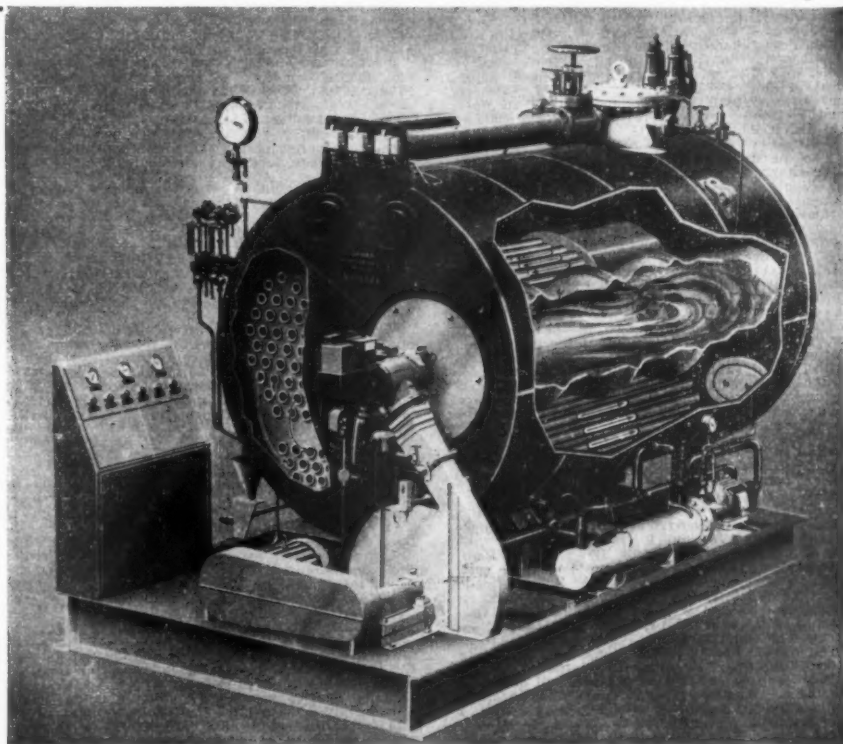
For full details contact :

DANKS

OF NETHERTON LIMITED

NETHERTON. Nr. Dudley. Worcs. Tel. Cradley Heath 66417

London Office : Bank Chambers, 329 High Holborn, W.C.1. Tel. HOLborn 2065



ARCHITECTURAL ASSISTANT

Required by NYASALAND GOVERNMENT PUBLIC WORKS DEPARTMENT on contract for one tour of 24-36 months in first instance. Commencing salary according to age and experience in scale £985 rising to £1,540 a year. Gratuity at rate of 10% of total salary drawn. Outfit allowance £30. Free passages. Liberal leave on full salary.

Candidates 25-35, should have passed Inter R.I.B.A., have had at least 5 years' experience in Architects Office, have a good standard of draughtsmanship and possess a sound knowledge of building construction, and be capable of carrying out site surveys including topographical work.

Write to the CROWN AGENTS, 4, Millbank, London, S.W.1. State age, name in block letters, qualifications and experience and quote M213/51066/AG.

MONMOUTHSHIRE COUNTY COUNCIL COUNTY ARCHITECTS' DEPARTMENT APPOINTMENT OF ARCHITECTURAL

Applications are invited for the appointments of ARCHITECTS on the following grades and salaries:—

- (i) Salary in accordance with maximum of Scale A, £1,420 per annum.
- (ii) Salary in accordance with grade A.P.T. V, £1,220 to £1,375 per annum.
- (iii) Salary in accordance with grade A.P.T. IV, £1,065 to £1,220 per annum.

The post will be subject to the provision of the Local Government Superannuation Act.

Forms of application and particulars of the posts and Conditions of Service may be obtained from S. Leyshon, A.R.I.B.A., County Architect, Queen's Hill, Newport, to whom the application, together with the names of at least two referees, must be returned not later than Monday, 29th August, 1960.

VERNON LAWRENCE,
Clerk of the Council.

County Hall,
Newport, Mon. 2749

COUNTY COUNCIL OF ESSEX COUNTY PLANNING DEPARTMENT

Applications are invited for the following posts:—

- (a) SENIOR PLANNING OFFICER, A.P.T. Grade V (£1,220-£1,375).

The successful candidate will be required to work as one of two sub-section leaders in the Development Plan and Control Section at Headquarters directly under the Principal Planning Officer, who is responsible for the work in connection with the production and progressing, through all stages, of reviews of the County Development Plan, with additional Town Maps and Comprehensive Development Areas, together with Headquarters work on Development Control, including Minerals and Control Section at Headquarters, and on footpaths and amenities generally. They must be Corporate Members of the Town Planning Institute, should hold an additional appropriate professional qualification and be suitably experienced both in development plan and development control work in the office of a large local planning authority.

- (b) SENIOR PLANNING OFFICER, A.P.T. Grade V (£1,220-£1,375).

The successful candidate will be required to take charge of a small section in an Area Office at Romford to deal mainly with redevelopment schemes for central areas, including civic design projects. Candidates should be Corporate Members of the Royal Institution of British Architects and the Town Planning Institute, and have had considerable allied architectural and planning experience in large redevelopment and central area schemes.

- (c) CHIEF CLERK, A.P.T. Grade IV (£1,065-£1,220).

Candidates should be versed in the work and procedures of a local planning authority; be experienced in general administration, particularly with regard to matters relating to service conditions, recruiting and management of staff; and in preparation of annual estimates and budgetary control. They should also possess an appropriate qualification.

- (d) SENIOR PLANNING ASSISTANTS, A.P.T. Grade IV

- (ii) PLANNING ASSISTANTS, Special Grade (£785-£1,070); and

- (iii) A.P.T. Grade I (£610-£765).

Vacancies exist in the various Area Planning Offices of this Department for the above mentioned posts for work in connection with Development Control and/or Development Plan. Candidates for the Grade IV posts must be suitably qualified and experienced. The Special Grade posts offer interesting opportunities to work on the design aspects of planning proposals in connection with Town Maps, town centre redevelopment and Village Plans; preference for these posts will be given to those candidates who have passed the Final Examination of the Royal Institution of British Architects or are well advanced in their studies towards that qualification. University graduates or other suitably trained persons with planning experience will be considered for the Grade I posts and further training will be given.

Five-day week; medical examination; superannuation. Day release facilities in appropriate cases. Canvassing directly or indirectly disqualified.

Applications, with names of three referees, should be sent to the County Planning Adviser, Broomfield Place, Broomfield, Chelmsford, Essex, by 8th September, 1960.

CORPORATION OF LONDON CITY PLANNING OFFICE

Has vacancy for a PLANNING ASSISTANT—salary scale £915 to £1,220—in Civic Design Section, point of entry to scale dependent on experience and qualifications.

This Section is engaged primarily in design of large (e.g. Barbican, Tower Hill) and small scale developments in the City of London, and guiding applicants under the Town and Country Planning Acts. General drawing office work, modelling and advertisement control work is also undertaken.

Applicants should be qualified architects with a sound approach to design problems, and good draughtsmen. Planning experience or training an advantage.

Local Act Superannuation. Medical examination.

Applications, with details of age, training, experience, present salary, and copies of two recent references, to City Planning Officer, Guildhall, E.C.2, within 14 days.

CHESTERFIELD RURAL DISTRICT COUNCIL ASSISTANT ARCHITECT—GRADE A.P.T. IV (£1,065-£1,220)

Applications are invited for the above appointment in the Department of the Engineer and Surveyor, J. B. Wikeley, M.Eng., M.I.C.E., Barrister at Law.

Candidates must have passed the Final Examination of the Royal Institution of British Architects or the equivalent at a recognised school of architecture.

National conditions of service and alternate Saturday morning leave.

The Council is prepared to assist with housing accommodation and will reimburse house removal expenses.

Detailed application including the names and addresses of two referees to be received by the undersigned not later than the 29th August, 1960.

H. O. HAWKINS,
Clerk of the Council.

Rural Council House,
Saltergate,
Chesterfield. 2762

FAREHAM U.D.C.—HAMPSHIRE

Invites applications for the following posts in the Architects' Section of the Engineer and Surveyor's Department:—

- (1) SENIOR ASSISTANT ARCHITECT, Special Grade (£785-£1,070 per annum), for responsible work of a thoroughly progressive nature. Housing accommodation can be made available if required. Car allowance on Casual User's scale will apply.

- (2) JUNIOR ASSISTANT ARCHITECT, Assistant, General Division (£240-£395 per annum). Suitable for a student wishing to gain useful experience.

Fareham is a lively South Coast town rapidly approaching 60,000 population, with schemes in hand which include a substantial housing programme and possibly an indoor swimming pool. Please Note:—N.J.C. Conditions of Service; one month's notice. Superannuation; medical examination. Salaries commencing at a point on the scale commensurate with age and experience. Further details available on request.

Applications, giving age, full details of education and experience, and the names and addresses of two referees, to me by 3rd September, 1960.

B. W. RANDS,
Clerk to the Council.

"Merton,"
5, Grove Road,
Fareham, Hants. 2763

BOROUGH OF CASTLEFORD APPOINTMENTS IN THE BOROUGH ENGINEER'S DEPARTMENT

Applications are invited for the following appointments:—

SENIOR ASSISTANT ENGINEER. Salary—Special Grade: commencing salary according to qualifications and experience but not less than £905 per annum, rising to £1,070 per annum. Applicants must be Corporate Members of the Institution of Municipal and/or Civil Engineers, and have had experience in a Municipal Engineer's office.

ASSISTANT ENGINEER. Salary—Grade A.P.T. II (£765-£880). Applicants should have completed a recognised form of training as Municipal Engineers and should preferably have passed the Joint Part I Examination of the Institution of Municipal and/or Civil Engineers.

SENIOR ASSISTANT ARCHITECT. Salary—Special Grade: commencing salary according to qualifications and experience but not less than £905 per annum, rising to £1,070 per annum. Applicants must be Associate Members of the R.I.B.A. and/or Registered Architects, and have had some years' practical experience.

ARCHITECTURAL ASSISTANT. Salary—Grade A.P.T. I (£765-£880). Applicants should have passed the Intermediate Examination of the R.I.B.A. or its equivalent at one of the recognised Schools of Architecture.

N.J.C. Service conditions; superannuation; terminable by one month's notice on either side. The successful applicants will be required to pass satisfactorily a medical examination. If required housing accommodation will be provided for successful married applicants.

Applications, on forms obtainable from me, to be returned by the 31st August, 1960. Canvassing disqualified.

ERNEST HUTCHINSON,
Town Clerk.

Town Hall,
Castleford. 2744

MODERNISATION OF BRITISH RAILWAYS THE WESTERN REGION

requires the following technical staff:

CIVIL ENGINEERING ARCHITECTURAL BUILDING HEATING & VENTILATING SOIL MECHANICS

Interesting work in pleasant conditions with promotion on MERIT; Superannuation Fund; reduced rates of travel and other concessions. Commencing salaries up to £1,000 according to ability. A limited number of posts in range between £1,150 and £1,695. Five-day week.

Applications in the first instance, giving qualifications and experience, to:—

Chief Civil Engineer
British Railways
Western Region
Paddington Station
London, W.2.

METROPOLITAN BOROUGH OF GREENWICH APPOINTMENT OF

JUNIOR ARCHITECTURAL ASSISTANT

Applications are invited for the position of Junior Architectural Assistant in the Borough Engineer and Surveyor's Department. Salary: A.P.T. I (£610 to £765 per annum, plus London weighting). Commencing salary in accordance with experience.

Preference will be given to applicants with experience of architectural drawing who have made suitable progress towards completion of the examination of the R.I.B.A. or R.I.C.E. Facilities available for studies on one day per week.

Form of application obtainable from the undersigned and returnable by noon on Thursday, 8th September, 1960.

G. C. TURK,
Town Clerk.

Town Hall,
Greenwich, S.E.10.
August, 1960. 2734

METROPOLITAN BOROUGH OF GREENWICH APPOINTMENT OF

PRINCIPAL ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of a Principal Architectural Assistant in the Borough Engineer and Surveyor's Department. Salary grade A.P.T. IV (£1,085-£1,220 per annum, plus London weighting). Commencing salary in accordance with qualifications and experience. Candidates must be Registered Architects, preferably Associates of the R.I.B.A., with considerable experience in housing and other municipal projects.

Application forms obtainable from the undersigned, to be returned by noon on Thursday, 8th September, 1960.

G. C. TURK,
Town Clerk.

Town Hall,
Greenwich, S.E.10.
August, 1960. 2733

DEVON COUNTY COUNCIL

COUNTY PLANNING DEPARTMENT

Applications are invited from suitably qualified persons for the following post:—

PLANNING ASSISTANT, Special Scale (£785-£1,070).

The post is in the Eastern Divisional Office at Exeter. Applicants should be A.M.T.P.I. Persons having a degree in Geography or Economics and some experience in a Planning Department will be considered also.

The post is classified as an essential car user. In approved cases, loans for house purchase and removal expense are available, also lodging allowance of 50s. per week for married officers whilst seeking accommodation.

Forms of application, giving further details and returnable by Thursday, 1st September, 1960, from:—County Planning Officer, "Bellair," Topsham Road, Exeter.

CUMBERNAULD NEW TOWN

The population target of the new town has been increased to 70,000 and the building programme is to be expanded. The following staff are required urgently in the department of the Chief Architect and Planning Officer (L. Hugh Wilson) for work on a variety of interesting projects including industrial buildings and housing of all types:

- (a) TWO ASSISTANT ARCHITECTS, Grade B, A.P.T. V/VI (£1,220-£1,390). A.R.I.B.A. required.

- (b) TWO ASSISTANT ARCHITECTS, Grade C, A.P.T. III (£880-£1,065). A.R.I.B.A. required.

- (c) FOUR ARCHITECTURAL ASSISTANTS, Grade D, A.P.T. I/II (£610-£880). Intermediate R.I.B.A. required.

- (d) THREE ASSISTANT PLANNING OFFICERS, Grade C, A.P.T. III (£880-£1,065). A.R.I.B.A. and A.M.T.P.I. required.

- (e) ONE ASSISTANT LANDSCAPE ARCHITECT, A.P.T. II (£765-£880). Intermediate I.L.A. required.

Commencing salary within the above grades will be fixed according to qualifications and experience.

Assistance with housing in appropriate cases. Five-day week.

Local Government Superannuation subject to medical examination.

Application forms, which may be obtained from the General Manager, Cumbernauld Development Corporation, Cumbernauld House, Cumbernauld Glasgow, should be returned completed not later than Monday, 5th September, 1960.

CITY OF LEEDS DEPARTMENT OF CITY ENGINEER AND PLANNING OFFICER

APPOINTMENTS FOR PROFESSIONAL STAFF
The Corporation invite applications for a number of professional posts in the department of the City Engineer and Planning Officer for important and interesting work in Town Planning and Engineering. This includes the review of the Development Plan, the preparation of detailed planning proposals for areas of comprehensive development, the planning and design of major engineering projects including roads, bridges and engineering structures, main drainage and sewage disposal works and the supervision of contract works.

Preference will be given in the more senior appointments to candidates who not only have appropriate qualifications and an adequate breadth of experience but also the enthusiasm, energy and leadership which will enable them to make an effective contribution towards meeting the challenge which redevelopment and new engineering works will present.

This advertisement relates to the following permanent appointments:—

TOWN PLANNING DIVISION

PRINCIPAL ASSISTANT, Grade C (£1,385—£1,620).

PRINCIPAL ASSISTANT, Grade B (£1,320—£1,485).

SENIOR ASSISTANT PLANNING OFFICERS, A.P.T. IV (£1,065—£1,220).

ASSISTANT PLANNING OFFICERS, Special II/III (£785—£1,070).

ASSISTANT PLANNING OFFICERS, A.P.T. I/II (£610—£880).

The appointment of a Principal Assistant in Grade C is next in order of seniority to the Chief Assistant in charge of the Division.

ROADS AND GENERAL ENGINEERING DIVISION

CHIEF ENGINEERING ASSISTANT, Grade D (£1,520—£1,755).

PRINCIPAL ASSISTANT, Grade B (£1,320—£1,485).

SENIOR ENGINEERING ASSISTANTS, A.P.T. IV (£1,065—£1,220).

ASSISTANT ENGINEERS, Special II/III (£785—£1,070).

ASSISTANT ENGINEERS, A.P.T. I/II (£610—£880).

Under the amended establishment recently approved by the Corporation this Division will deal with all civil and structural engineering works other than main drainage and water-courses.

MAIN DRAINAGE DIVISION

PRINCIPAL ASSISTANT, Grade B (£1,320—£1,485).

SENIOR ENGINEERING ASSISTANT, A.P.T. V (£1,220—£1,375).

ASSISTANT ENGINEERS, Special II/III (£785—£1,070).

ASSISTANT ENGINEERS, A.P.T. I/II (£610—£880).

Applications, accompanied by copies of three recent testimonials, should be delivered to the undersigned not later than September 9th, 1960. Applicants must state for which post they are applying.

Canvassing in any form, either directly or indirectly, will be a disqualification.

D. CURRIE, M.I.C.E.,
City Engineer.

Civic Hall,
Leeds, 1. 2760

CITY AND COUNTY OF NEWCASTLE UPON TYNE

CITY ARCHITECT'S DEPARTMENT

Consequent upon revisions to the Establishment of his Department, the City Architect is now able to offer vacancies in the various Architectural Sections of the Department and will be pleased to hear from architects who are keen to take part in an exciting and extensive programme of high quality architectural work.

SENIOR ASSISTANT ARCHITECTS (General, New Town Hall, Education, Housing and Re-housing Sections), A.P.T. V, £1,220—£1,375 per annum.

SENIOR ASSISTANT ARCHITECTS (General, New Town Hall and Housing Sections), A.P.T. IV, £1,065—£1,220 per annum.

SENIOR ASSISTANT ARCHITECTS (Housing and Re-housing Sections), A.P.T. III, £880—£1,065 per annum.

ASSISTANT ARCHITECT (Re-housing Section), A.P.T. II, £765—£880 per annum.

ARCHITECTURAL ASSISTANTS (Education and Re-housing Sections), A.P.T. I, £610—£765 per annum.

Work has now commenced on the superstructure of the New Town Hall and there are interesting schemes in preparation for Colleges of Further Education, Multi-storey Flats and other building works of a major nature. There is, too, the prospect of stimulating work in the near future on redevelopment of the City Centre.

Further details of the above posts and Forms of Application may be obtained from George Kenyon, A.R.I.B.A., A.M.T.P.I., City Architect, 18, Cloth Market, Newcastle upon Tyne, 1. Applicants must state the Section of the Department and the post and grade applied for when requesting particulars.

Closing date for completed applications: Saturday, 10th September, 1960.

JOHN ATKINSON,
Town Clerk.

Town Hall,
Newcastle upon Tyne, 1. 2768

10th August, 1960.

COUNTY BOROUGH OF GLOUCESTER

CITY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:—

(a) ASSISTANT ARCHITECTS, A.P.T. Grade IV £1,065—£1,220 (Senior) and Grade III £880—£1,065; Parts I and II, R.I.B.A., Final and appropriate experience.

(b) ARCHITECTURAL ASSISTANTS within the Grades A.P.T. I £610—£765 and A.P.T. II £765—£880; Intermediate R.I.B.A.

(c) JUNIOR ARCHITECTURAL ASSISTANT, the General Division of Salaries according to age and experience; eligible for Probationership R.I.B.A.

Applicants to have the appropriate qualifications as quoted and salaries above the minimum of the Grade may be considered.

Interesting, contemporary work, Superannuable posts, Medical examination. Municipal experience not essential.

Full particulars to City Architect, Suffolk House, Greyfriars, Gloucester, not later than Tuesday, 30th August, 1960. 2770

CITY OF ELY URBAN DISTRICT COUNCIL

ARCHITECTURAL ASSISTANT

(A.P.T. GRADE IV, £1,065 to £1,220)

The Council invite applications for the above appointment in the Engineer & Surveyor's Department at a salary in accordance with A.P.T. Grade IV.

Candidates should be well trained and experienced in design and preparation of schemes and supervising contracts in connection with Council housing work.

The appointment will be superannuable subject to the National Conditions of Service and to the selected candidate passing a medical examination.

Housing accommodation available (if required). Applications, stating age, qualifications, previous and present appointments and salaries and full particulars, together with names and addresses of two referees, should reach the undersigned not later than 31st August, 1960.

J. E. WATKINS,
Clerk of the Council.

Urban Council Offices,
Lynn Road,
Ely, Cambs. 2765

LANCASHIRE COUNTY COUNCIL

COUNTY ARCHITECT'S DEPARTMENT

SENIOR ASSISTANT ARCHITECTS—£1,320 to £1,485 according to experience.

Applications are invited from experienced, registered architects to deal with a wide variety of buildings, including Magistrates' Courts, Police Training Schools and Technical Colleges. Application forms and details of appointment from: The County Architect, P.O. Box 26, County Hall, Preston, returnable by 1st September, quoting reference A/AJ. 2778

LANCASHIRE COUNTY COUNCIL

COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments on the permanent staff. The Quantity Surveying Branch of the Department undertakes work in all stages, from Cost Planning to Final Accounts, and the programme is both interesting and varied.

(a) SENIOR ASSISTANT QUANTITY SURVEYOR—N.J.C. Grade "B" (£1,320—£1,485). Applicants should be Chartered Quantity Surveyors and capable of taking charge of a small team of Surveyors working on major projects.

(b) SENIOR ASSISTANT QUANTITY SURVEYOR—A.P.T. V (£1,220—£1,375). Applicants should be Chartered Quantity Surveyors and the person appointed will be a senior member of a team of Surveyors.

(c) QUANTITY SURVEYING ASSISTANT—A.P.T. II (£765—£880). Applicants should have passed the Intermediate Examination of the R.I.C.S.

(d) QUANTITY SURVEYING ASSISTANT—A.P.T. I (£610—£765). Applicants should have passed the First Examination of the R.I.C.S.

Forms of application obtainable from and returnable to the County Architect, P.O. Box 26, County Hall, Preston, by 1st September. 2779

BERKSHIRE COUNTY COUNCIL

Applications invited for appointment of PLANNING ASSISTANT. Salary on A.P.T. Grades I (£610—£765 p.a.) or II (£765—£880 p.a.) according to qualifications.

Duties primarily to assist in the preparation of the survey and development plan for the County.

Application forms obtainable on receipt of stamped addressed envelope from County Planning Officer, 7, Abbot's Walk, Reading, to whom completed applications must be delivered not later than 10 days from the date of this advertisement. 2742

GOVERNMENT OF NORTHERN IRELAND

ASSISTANT ARCHITECT, CLASS II

Applications invited from Registered Architects by examination with at least two years' experience in an Architect's office in preparing working drawings for pensionable post in Chief Architect's Branch, Ministry of Finance. Salary scale: £805 (at age 25)—£1,095 (age 34 and over)—£1,260. Existing pension rights may, in certain circumstances, be transferred. Preference for ex-Servicemen. Application forms obtainable from Secretary, Civil Service Commission, Stormont, Belfast, 4, must be returned by 31st August, 1960. 2752

CORPORATION OF LONDON

Applications are invited for temporary appointments in the City Engineer's Department:—

ASSISTANT SITE ARCHITECT: £1,325 per annum.

ASSISTANT ARCHITECT: £1,120 per annum.

In connection with the construction under contract of a large municipal building; for the duration of the works estimated at 1½ years.

Candidates should be Corporate Members of the R.I.B.A. and have had good general experience in preparation of working detail and site supervision.

Applications, stating age, appointments held and experience, together with names of two referees, to The City Engineer, Guildhall, London, E.C.2, by September 5th, 1960. 2754

CITY OF MANCHESTER—HOUSING COMMITTEE

Applications are invited from suitably qualified persons for the post of SENIOR ASSISTANT ARCHITECT Grade APT.V £1,220—£1,375 per annum.

Applicants must be good designers, interested in large scale projects, including redevelopment of slum clearance areas and overspill schemes, involving the production of new house type plans of all kinds, including multi-storey flats, etc., and responsibility for supervision of contracts.

Full details of age, qualifications and experience to the Director of Housing, Town Hall, Manchester 2, by 31st August, 1960.

Consideration will be given to the provision of housing accommodation for the successful candidate. 2807

COUNTY BOROUGH OF HASTINGS

APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of Architectural Assistant, Grade A.P.T. I (£610—£765 per annum) in the Borough Engineer's Department.

Housing accommodation will be made available if required.

Applications, stating age, qualifications, present and previous appointments and salary, experience, and the names of three referees, to be delivered to the Borough Engineer, 37, Wellington Square, Hastings, not later than Monday, 29th August, 1960.

Canvassing will disqualify.

N. P. LESTER,
Town Clerk. 2747

Hastings.

CORBY DEVELOPMENT CORPORATION

ARCHITECTURAL STAFF

There are vacancies on the staff of the Chief Architect for SENIOR ASSISTANTS and ARCHITECTURAL ASSISTANTS.

For the former appointments the salary will be within A.P.T. Grade V (£1,220—£1,375) and candidates must possess A.R.I.B.A. or an equivalent qualification.

For the latter appointments the salary will be within A.P.T. Grade II (£765—£880) and candidates will be expected to have passed the Intermediate Examination of the R.I.B.A., or an equivalent examination.

For both appointments the commencing salary within the Grade will depend upon qualifications and experience.

The appointments are within the Local Government Superannuation Scheme.

Housing is available and removal expenses will be paid.

Applications, stating age, education, training, qualifications, experience, appointments held and salaries, together with the names of two referees, must reach the undersigned by Monday, the 5th September, 1960.

F. R. BROOKS GRUNDY,
General Manager.

Corby Development Corporation,
Spencer House,
Corby, Northants. 2792

BRIXTON SCHOOL OF BUILDING

Required September: THREE ASSISTANTS, GRADE B, for Dept. of Architecture and Surveying. Should be corporate members of either R.I.B.A. or R.I.C.S., preferably with one of the following interests: (a) Construction, (b) Services, (c) Law and Economics.

Salary scale—£700 × £27.10s. to £1,150 plus London allowance and additions for training and qualifications. Increments within scale for experience.

Application forms (foolscap s.a.e.) from Secretary at the School (FEB/AJ/2100/8), Ferndale Road, S.W.4. Closing date September 1st. 2793

METROPOLITAN BOROUGH OF HAMPSTEAD

Applications are invited for following vacancies in Housing Architect's Department:—

(1) JUNIOR ARCHITECTURAL ASSISTANT (Permanent), General Division (£210—£730 p.a. plus London weighting).

(2) ARCHITECTURAL ASSISTANT (Temporary) on A.P.T. Grades I/II (£610—£880 p.a. plus London weighting) for Intermediate R.I.B.A. or Special Scale (£785—£1,070 plus London weighting) for Final R.I.B.A.

Commencing salaries according to qualifications and experience.

Applications, giving training, experience, previous appointments and names of two referees, to Town Clerk (AJ), Town Hall, Haverstock Hill, N.W.3, by 7th September, 1960. No housing provided. 2794

CITY ARCHITECT'S OFFICE, MANCHESTER

Applications are invited for the following appointments on the Permanent Staff:

- (i) SENIOR ASSISTANT ARCHITECT. Salary A.P.T. V. £1,220 to £1,375 per annum. Must be A.R.I.B.A. with considerable office experience.
- (ii) ASSISTANT ARCHITECT. Salary A.P.T. IV. £1,065 to £1,220 per annum. Must be A.R.I.B.A.
- (iii) ASSISTANT ARCHITECT / ARCHITECTURAL ASSISTANT. Salary Special Grade. £785 to £1,070 per annum. Must have passed parts 1 and 2 of the R.I.B.A. Final Examination or equivalent and have had five years' experience including the period spent in theoretical training.
- (iv) ARCHITECTURAL ASSISTANT. Salary A.P.T. I/II. £610 to £880 per annum. Must have passed the Intermediate Examination of the R.I.B.A. or hold equivalent qualifications.

Five-day week. Housing accommodation may be provided for a limited period for successful candidates for appointments (i) to (iii). Removal expenses allowed.

Forms of application from the City Architect, Town Hall. Returnable by 31st August, 1960.

WEST END OFFICE requires ASSISTANT ARCHITECTS of Final and Intermediate standards for interesting Industrial projects in Home Counties. Good salaries offered to men with initiative and ability. Bonus Scheme, five-day week, holiday arrangements honoured. Box 2039.

ARCHITECTURAL ASSISTANTS required, salaries £600 to £1,000. W. Leslie Jones & Partners, 8, Acresfield, Bolton, Lancs., and 241A, High Street, Poole, Dorset. 2454

LEICESTER—SENIOR ARCHITECTS and ASSISTANTS required for general practice. Appropriate salary paid. Five-day week. Apply by telephone or in writing for an interview to Herbert, Son & Sawday, 18, Friar Lane, Leicester. Tel. 56478. 2413

INTERMEDIATE to Final standard. Design-conscious expanding practice engaged large scale commercial projects requires ARCHITECTURAL ASSISTANTS with initiative and perspective ability. Good salaries according to capabilities. Five-day week. L. V. Raymond Spradley & Partners, 9, Hertford Street, Park Lane, W.1. GRO 1532. 2338

ARCHITECTURAL ASSISTANT, qualified or unqualified, with practical experience, required for busy, interesting and varied practice. Salary up to £1,000. Box 2347.

ELIE MAYORCIS requires ARCHITECTURAL ASSISTANTS, preferably with some office experience, for interesting work. Write, giving particulars of architectural education and experience, and salary required to: 13, David Mews, Baker Street, W.1. 2214

CROYDON. Varied and interesting experience offered in progressive and growing practice to SENIOR and JUNIOR ASSISTANTS. Holiday arrangements respected. Five-day week. Please write or telephone: L. A. Macintosh & Haines, A.A.R.I.B.A., 33/35, High Street, Croydon. CRO 5780/9992. 2362

OSCAR GARRY and PARTNERS have immediate vacancies for Senior and Junior ASSISTANTS for work on major design projects. Good salary, luncheon vouchers, travelling expenses. Apply: 66 Gloucester Place, W.1. WELbeck 2507. 2137

£850—£1,400. ARCHITECTURAL ASSISTANTS with imagination and designing ability required to assist with large and important new developments in the central London Area. Telephone or write—Trehearne & Norman, Preston & Partners, 83 Kingsway, W.C.2. HOLborn 4071. 2185

DONALD ROWSWELL urgently requires capable ASSISTANTS of various grades for Croydon office. Salary by agreement. Holiday arrangements honoured. Apply with full details to 54, Friends Road, Croydon, or telephone CROYdon 4080. 1046

BRYAN & NORMAN WESTWOOD & PARTNERS require SENIOR ASSISTANTS. Please apply at 21, Suffolk Street, S.W.1. Trafalgar 4411. 9214

ARCHITECTS AND ASSISTANTS REQUIRED for work on interesting Industrial Project affording first class design and technical experience. Apply in writing to: Sir William Halcrow & Partners, (B.A. Architects' Section), 47, Park Lane, London, W.1. 1752

WATKINS, GRAY & PARTNERS, 57, Catherine Place, S.W.1, require SENIOR and JUNIOR ASSISTANTS for work on large hospital projects. Excellent opportunities for those seeking first hand experience in this most interesting and rapidly developing field. Luncheon Vouchers and pension scheme in operation. Write giving full particulars. 1524

SENIOR ASSISTANT ARCHITECT required by Devereux and Davies. Good salary to applicant with the requisite ability and experience. 3, Gower Street, Bedford Square, London, W.C.1. 1733

CLIFFORD CULPIN requires experienced qualified and "post-Intermediate" ASSISTANTS to work on a wide variety of schemes including luxury flats, an office building, a comprehensive school, London banks, a town hall and a Civic Centre. Opportunities to take responsibility. Paid holiday this year. Phone CHANCery 5395 or write 39, Doughy Street, W.C.1. 1596

ARCHITECTURAL ASSISTANTS required by busy Architect's Dept. of large multiple firm. Applicants should be experienced in preparation of working drawings and details. Good salary and prospects to suitable applicants. Five-day week. Pension Scheme and canteen facilities. Apply Box 1947.

F. W. WOOLWORTH AND CO. LIMITED ARCHITECT'S DEPT. KING STREET, DUDLEY WORCS.

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ASSISTANT ARCHITECTS. Good salaries, five-day week, luncheon vouchers, and other benefits available to capable Assistant Architects of all grades. Reply stating age, experience and qualifications to Box 2570.

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SEELY AND PAGET, 41, Cloth Fair, E.C.1, require experienced ASSISTANT (2 or more years' experience). Education at least to Intermediate R.I.B.A. standard. Luncheon voucher scheme in operation. Your holiday arrangements respected. Pay according to qualifications. Annual salary review. General varied practice. Easily accessible office in quiet part of City. Telephone MET 851 or write to above address. 257

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WANTED—ARCHITECTURAL ASSISTANT. Intermediate standard. Facilities for part-time schooling. Private practice. Stockport, Cheshire. Please apply, stating age, experience and salary required. Box 2611.

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STOCK, PAGE & STOCK F.F.R.I.B.A. urgently require SENIOR and JUNIOR assistants. Full qualifications an advantage but not essential. Five-day week. Flat available if required. Salary range £800—£1,200 according to qualifications and experience. Write giving full details to FANSHAW HOUSE, FANSHAW STREET, N.1. 2675

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R. G. WILLIAMS,
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2706

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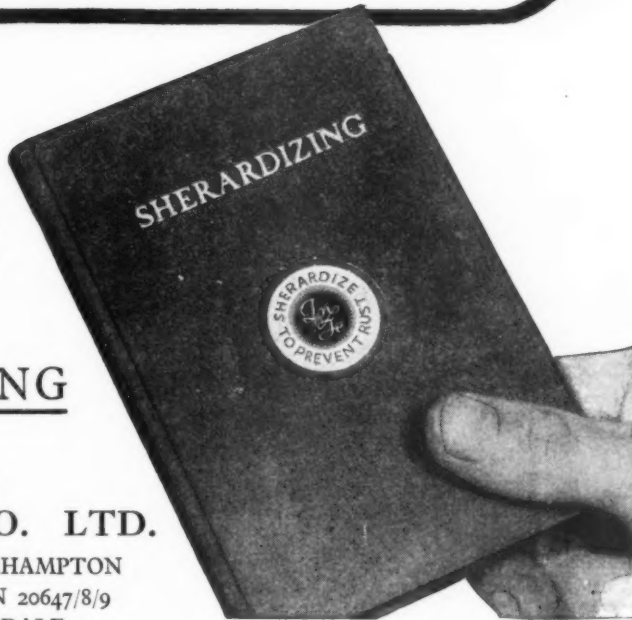
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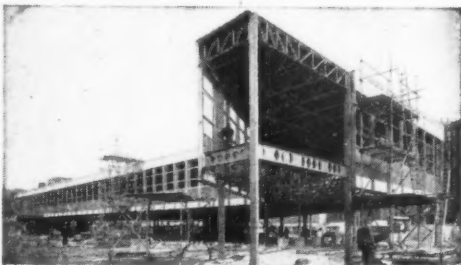
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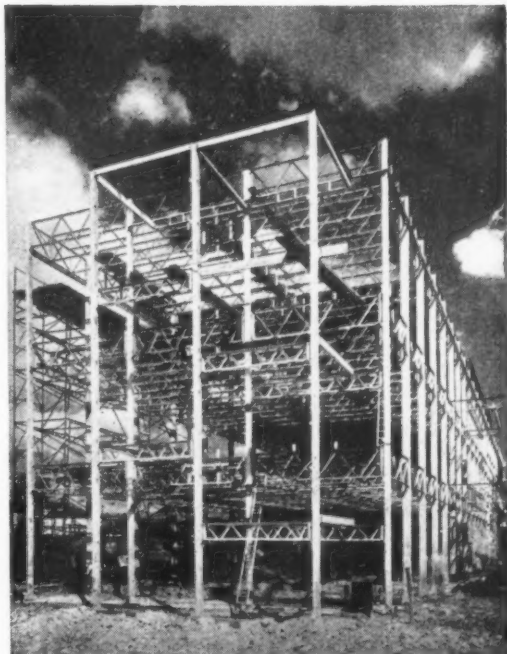
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