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The Architects' JOURNAL for December 12, 1957

THE ARCHITECTS' JOURNAL

standard contents

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

No. 3276] [Vol. 126

THE ARCHITECTURAL PRESS

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Registered as a Newspaper.

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

AA	Architectural Association, 34/6, Bedford Square, W.C.1.	Museum 0974
AAI	Association of Art Institutions. Secy.: W. L. Stevenson, College of Art, Hope Street, Liverpool 1.	Royal 1826
ABS	Architects' Benevolent Society. 66, Portland Place, W.1.	Langham 5721
ABT	Association of Building Technicians. 1, Ashley Place, S.W.1.	Victoria 0447-8
ACGB	Arts Council of Great Britain. 4, St. James' Square, S.W.1.	Whitehall 9737
ADA	Aluminium Development Association. 33, Grosvenor Street, W.1.	Mayfair 7501/8
ARCUK	Architects' Registration Council. 78, Wimpole Street, W.1.	Welbeck 2915
BAE	Board of Architectural Education. 66, Portland Place, W.1.	Langham 5721
BATC	Building Apprenticeship and Training Council. Lambeth Bridge House, S.E.1.	Reliance 7611, Ext. 1706
BC	Building Centre. 26, Store Street, Tottenham Court Road, W.C.1.	Museum 5400
BCC	British Colour Council. 13, Portland 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
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
BTE	Building Trades Exhibition. 32, Millbank, S.W.1.	Tate Gallery 8134
CABAS	City and Borough Architects Society. C/o Johnson Blackett, F.R.I.B.A., Civic Centre, Newport, Mon.	Newport 65491
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
CCP	Council for Codes of Practice. Lambeth Bridge House, S.E.1.	Reliance 7611 Ext. 1284
CDA	Copper Development Association. 55, South Audley Street, W.1.	Grosvenor 8811
CIAM	Congrès Internationaux d'Architecture Moderne. Doldertal, 7. Zurich, Switzerland	
COID	Council of Industrial Design. 28, Haymarket, S.W.1.	Trafalgar 8000
CPRE	Council for the Preservation of Rural England. 4, Hobart Place, S.W.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
DGW	Directorate General of Works, Ministry of Works, Lambeth Bridge House, S.E.1.	Reliance 7611
DIA	Design and Industries Association. 13, Suffolk Street, S.W.1.	Whitehall 0540
DPT	Department of Overseas Trade. Horseguards Avenue, Whitehall, S.W.1.	Trafalgar 8855
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), 47, Princes Gate, Kensington, S.W.7.	Kensington 4577
FBI	Federation of British Industries. 21, Tothill Street, S.W.1.	Whitehall 6711
FC	Forestry Commission. 25, Savile Row, W.1.	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. 26, Great Ormond Street, Holborn, W.C.1.	Chancery 7583
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.	Sloane 4554
GG	Georgian Group. 2, Chester Street, S.W.1.	Belgravia 3081
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Whitehall 2881
IAAS	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.	Temple Bar 7676
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

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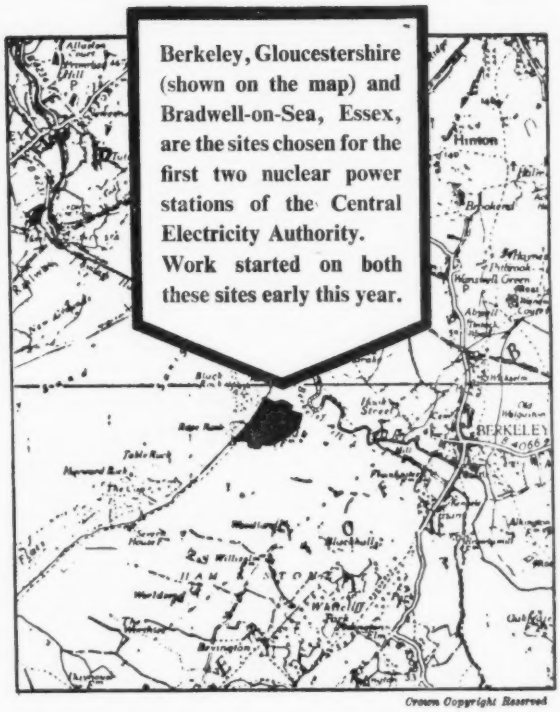

The growing need for power

As Britain's industrial efficiency increases, so does the need for power. The demand for power doubles every ten years. The Central Electricity Authority has already met the doubled demand since 1st April, 1948, and has made provision for a similar expansion in the next decade.

Work on the first two nuclear power stations, at Berkeley in Gloucestershire and Bradwell in Essex, was started in January, and on the third in England, at Hinkley Point in Somersetshire, in September. These three stations will have an aggregate of some 850,000 kilowatts.

The Government's revised nuclear power station programme provides for enough nuclear power stations to be completed in the next decade to provide 5/6 million kilowatts of generating capacity. Provision is also being made for the construction of new main transmission lines and the extension of the distribution network.

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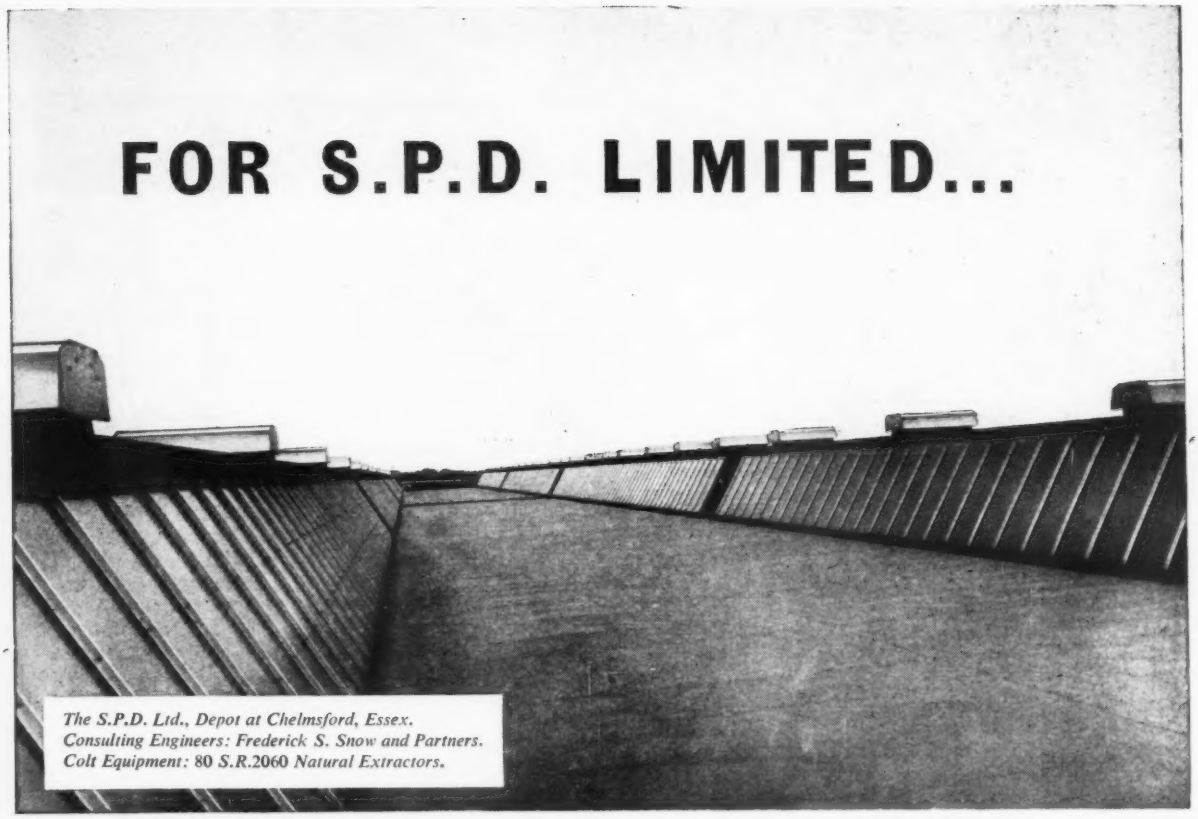

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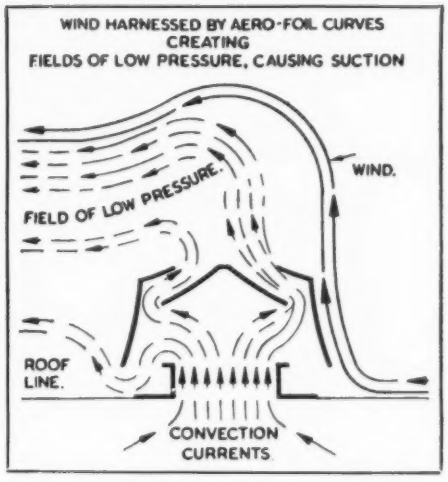

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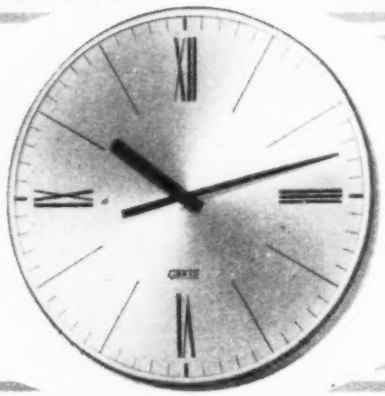

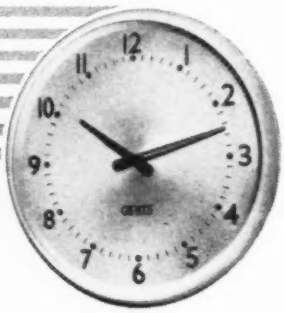

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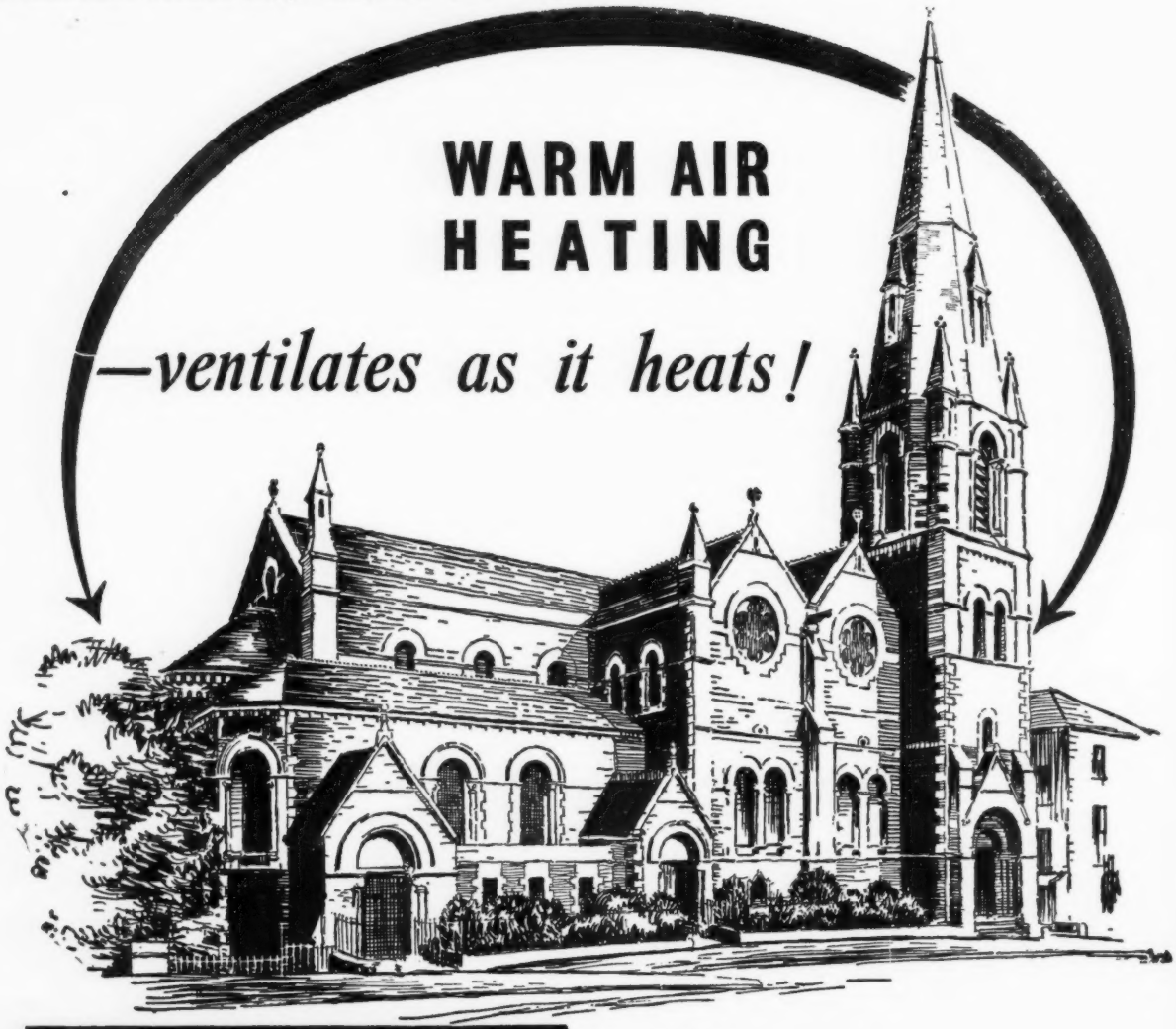

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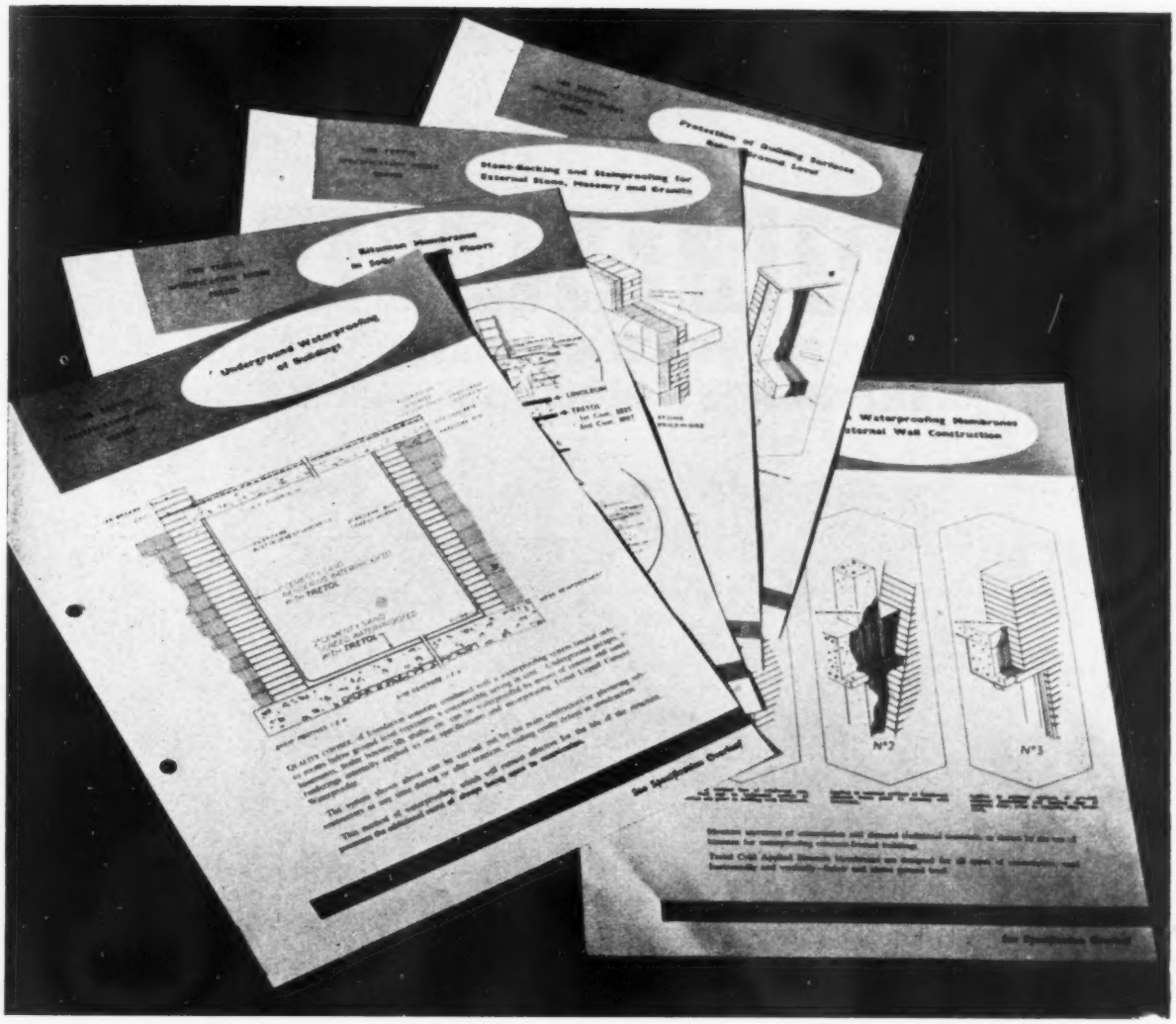

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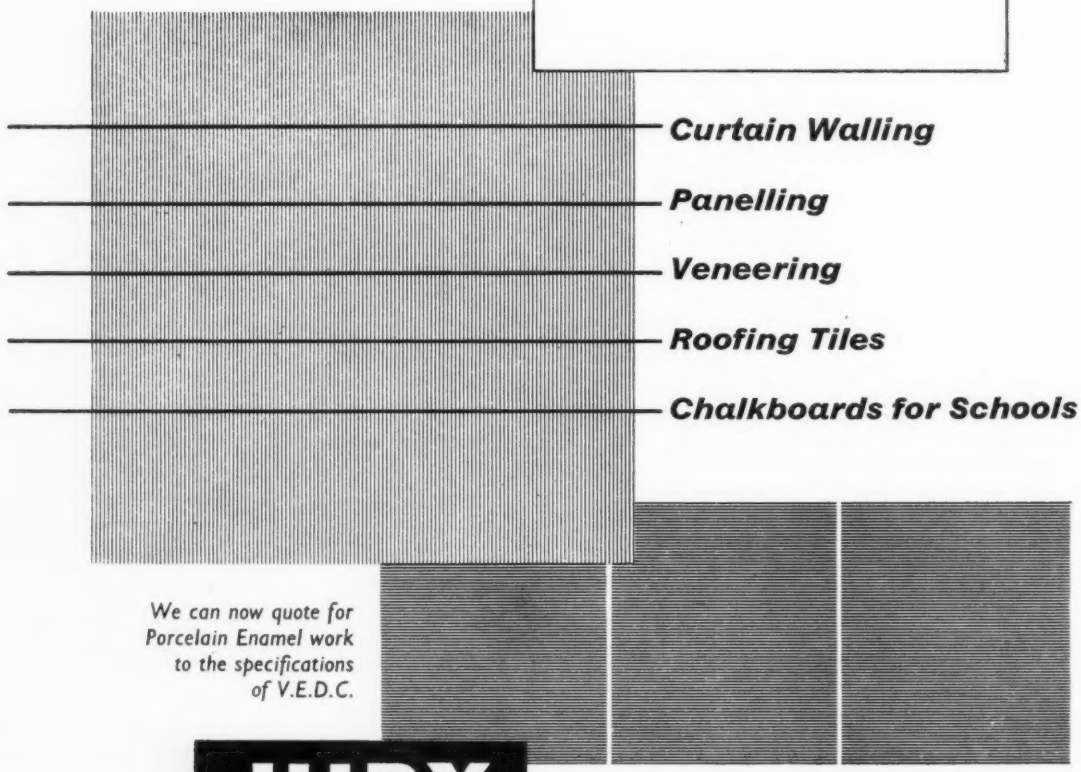

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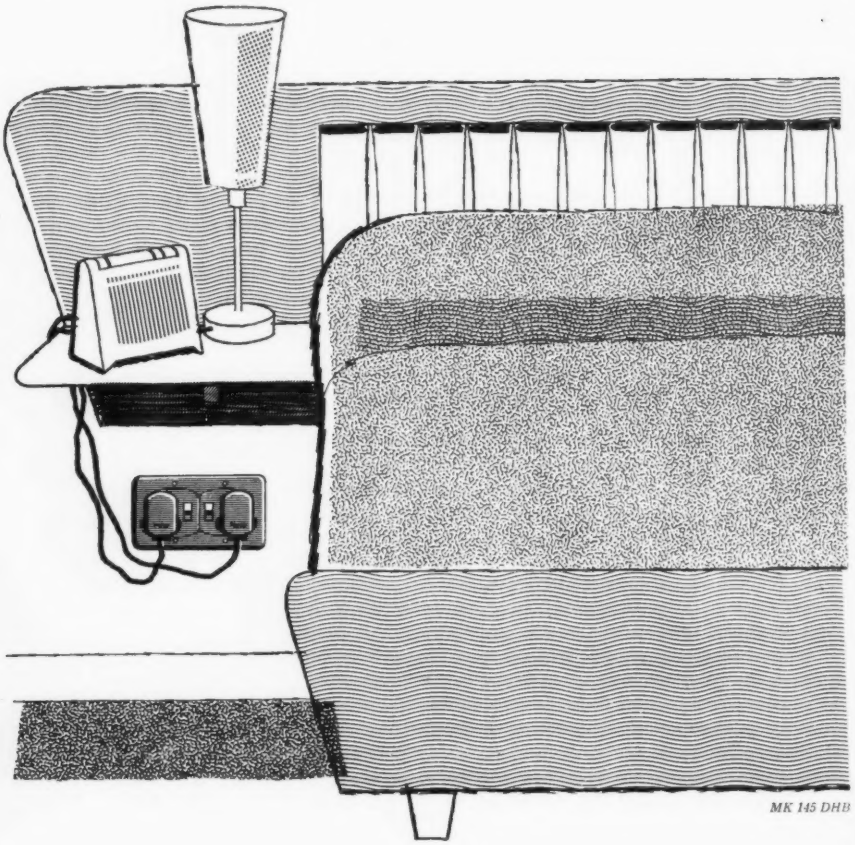

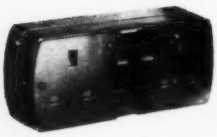

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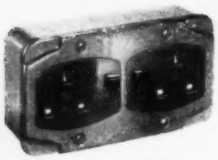

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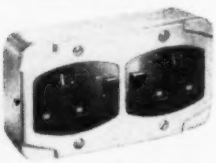

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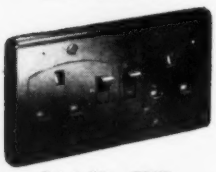

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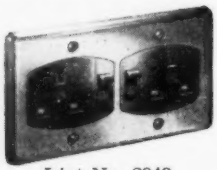

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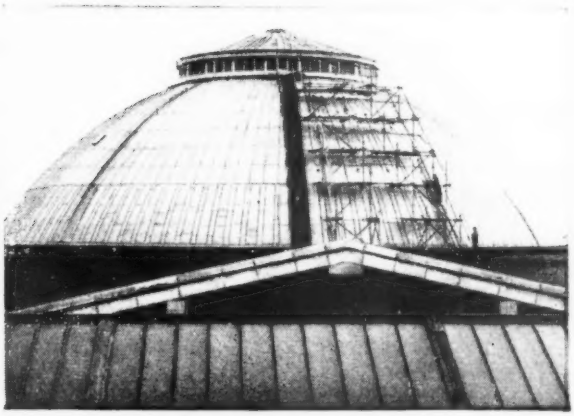

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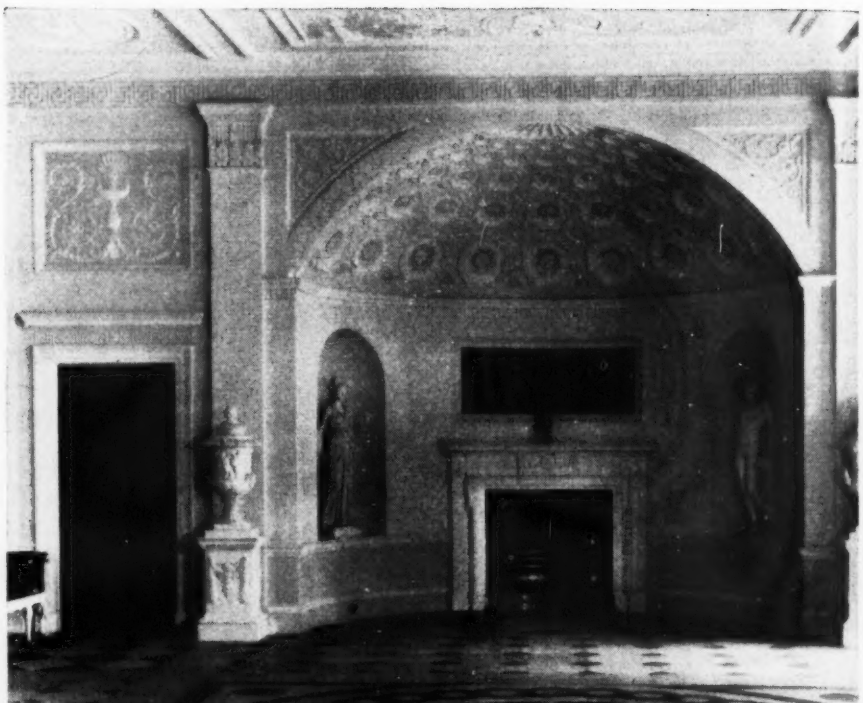

Entrance hall of Osterley Park, once the home of the 9th Earl of Derby. Osterley Park was remodelled by Robert Adam in 1762.

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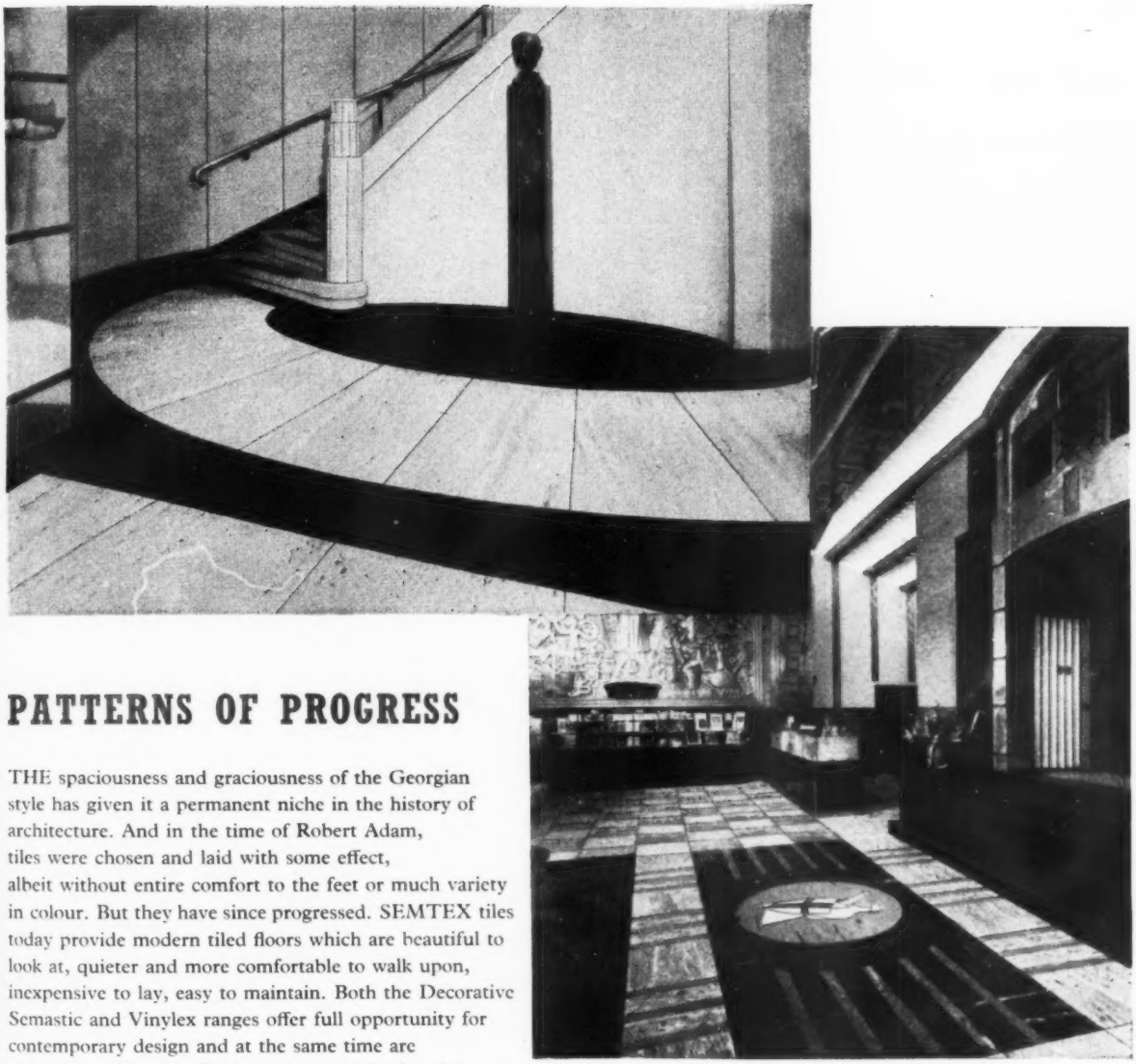

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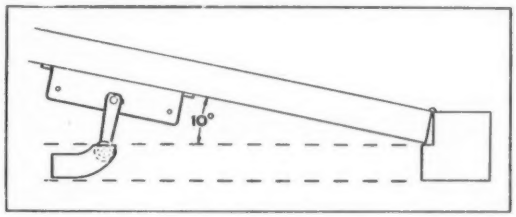

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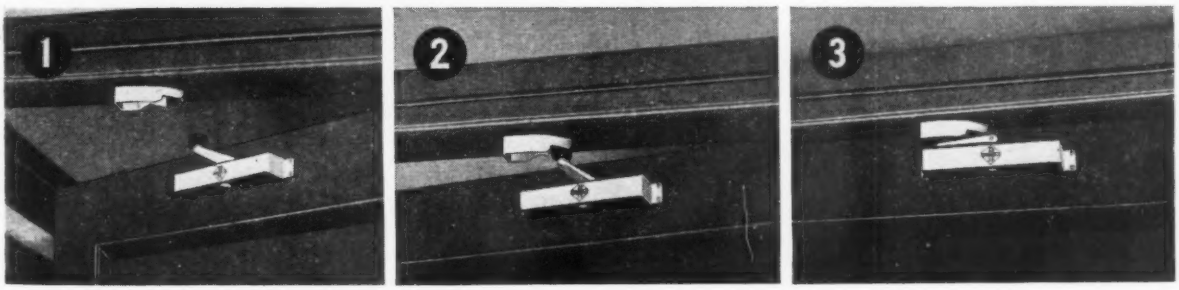

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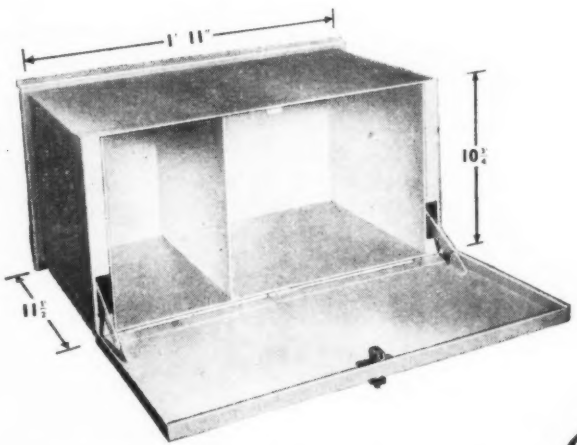
The Delivery Hatch is designed to be built into an external wall readily accessible to tradesmen. Fitted with two separate compartments, its locking mechanism is such that once either compartment has been closed from the outside after loading with goods, it can only be opened from inside the house. Pilfering, therefore, is an impossibility.

When the housewife has removed the goods, her action of raising the drop-down flap re-sets the simple locking mechanism and makes the two empty compartments available for the next tradesman's visit.

To ensure lifetime service, the Beacon Delivery Hatch is made of Zinc-coated steel, which is then stove enamelled, both internally and externally, in an attractive cream finish. Being made of metal, it is insect and odour-proof.



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

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'No Fines' houses at Half Hyde, Shephall Neighbourhood. Contractors: George Wimpey & Co., Ltd.; Photograph by kind permission of the Stevenage Development Corporation.

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6'6" x 2'3" 6'6" x 1'6"
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301 houses at Half Hyde, constructed on the 'new-traditional' 'No Fines' method, are equipped with DURADOR.

DURADOR are also being fitted in the new dwellings at Long Meadow N.E. and Broom Barns.

DURADOR is the flush door with the exclusive 'Placarol' core and balanced West African plywood facings. It is generally accepted as the outstanding flush door at its price in quality and dependability. The 'Placarol' core, consisting of hundreds of wood spirals bonded in immovable unity with the plywood facings, is the most successful advance of its kind in flush door manufacture.

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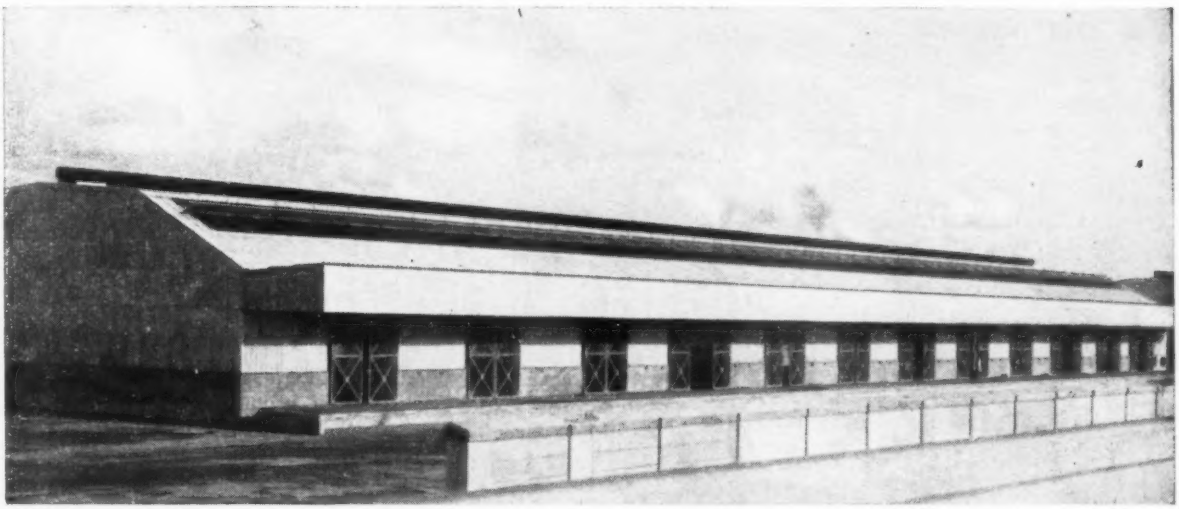

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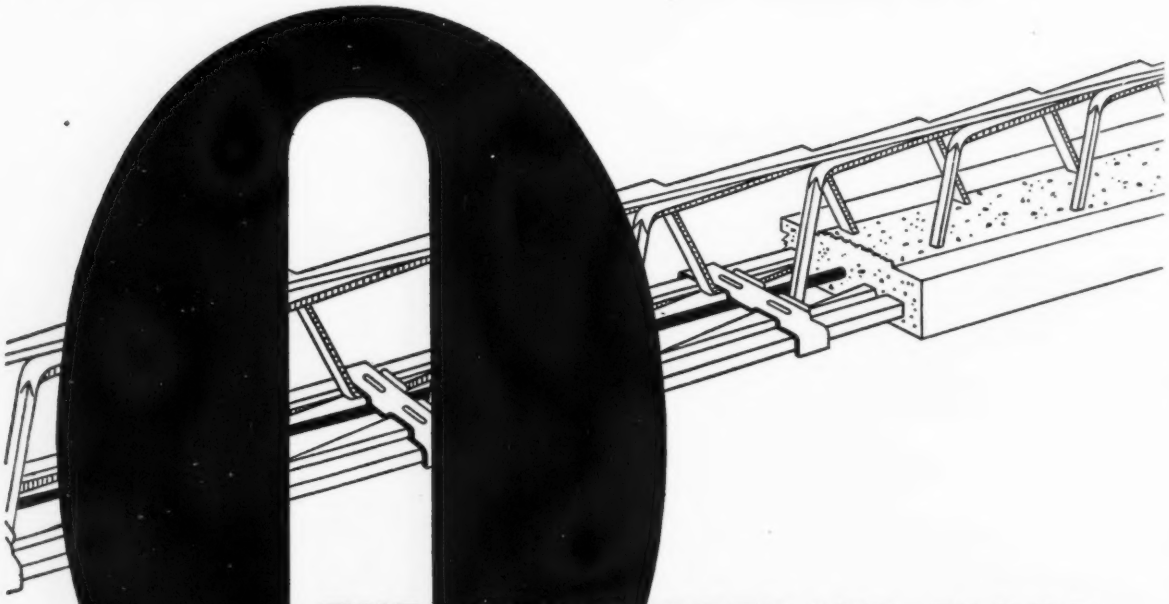

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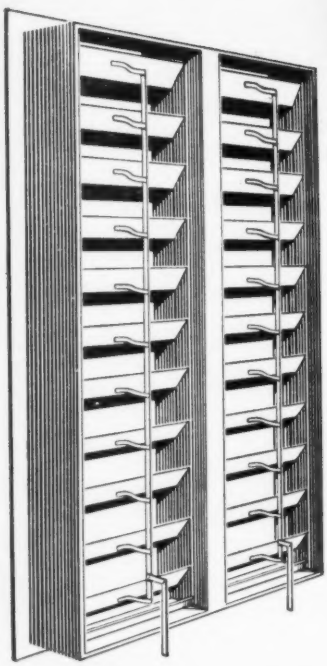

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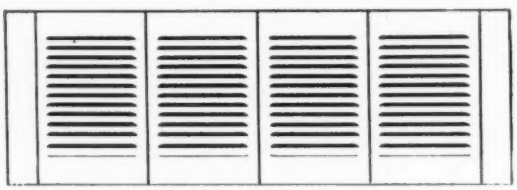
(Right) Type LH 'Maxaire' Multi-louvred Panel with ½" flange.



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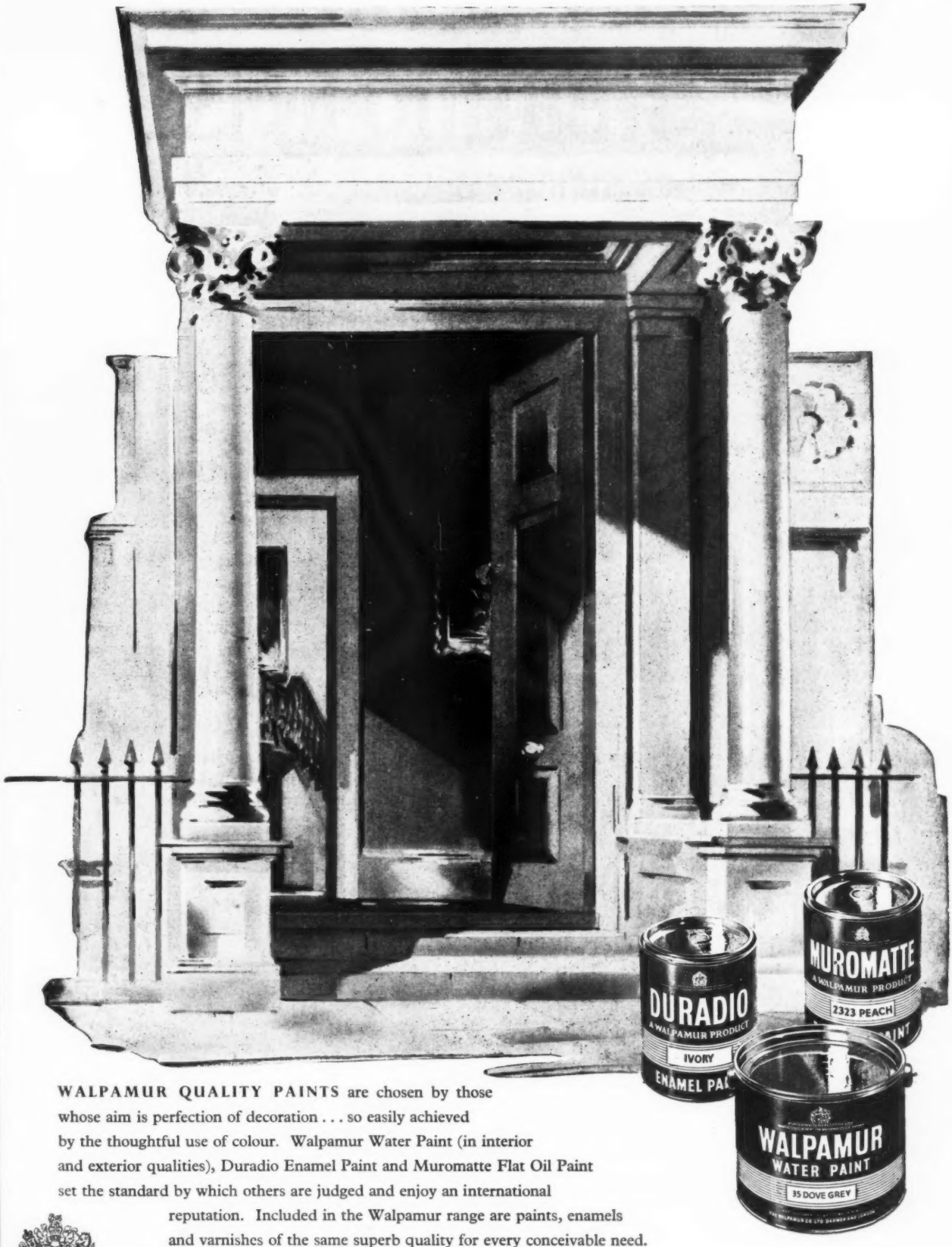

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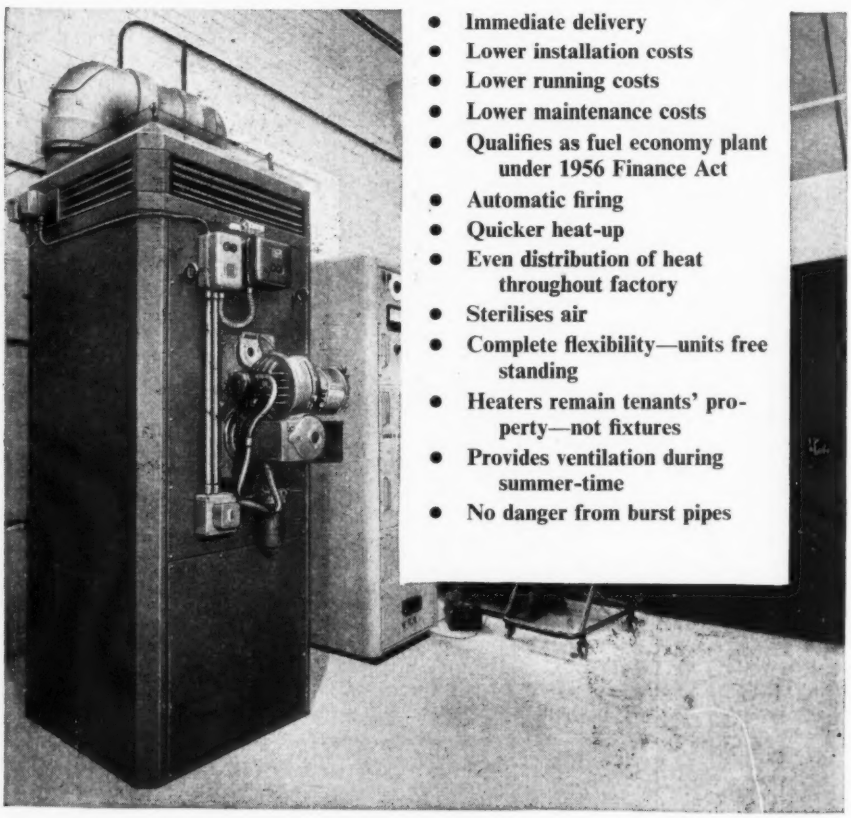

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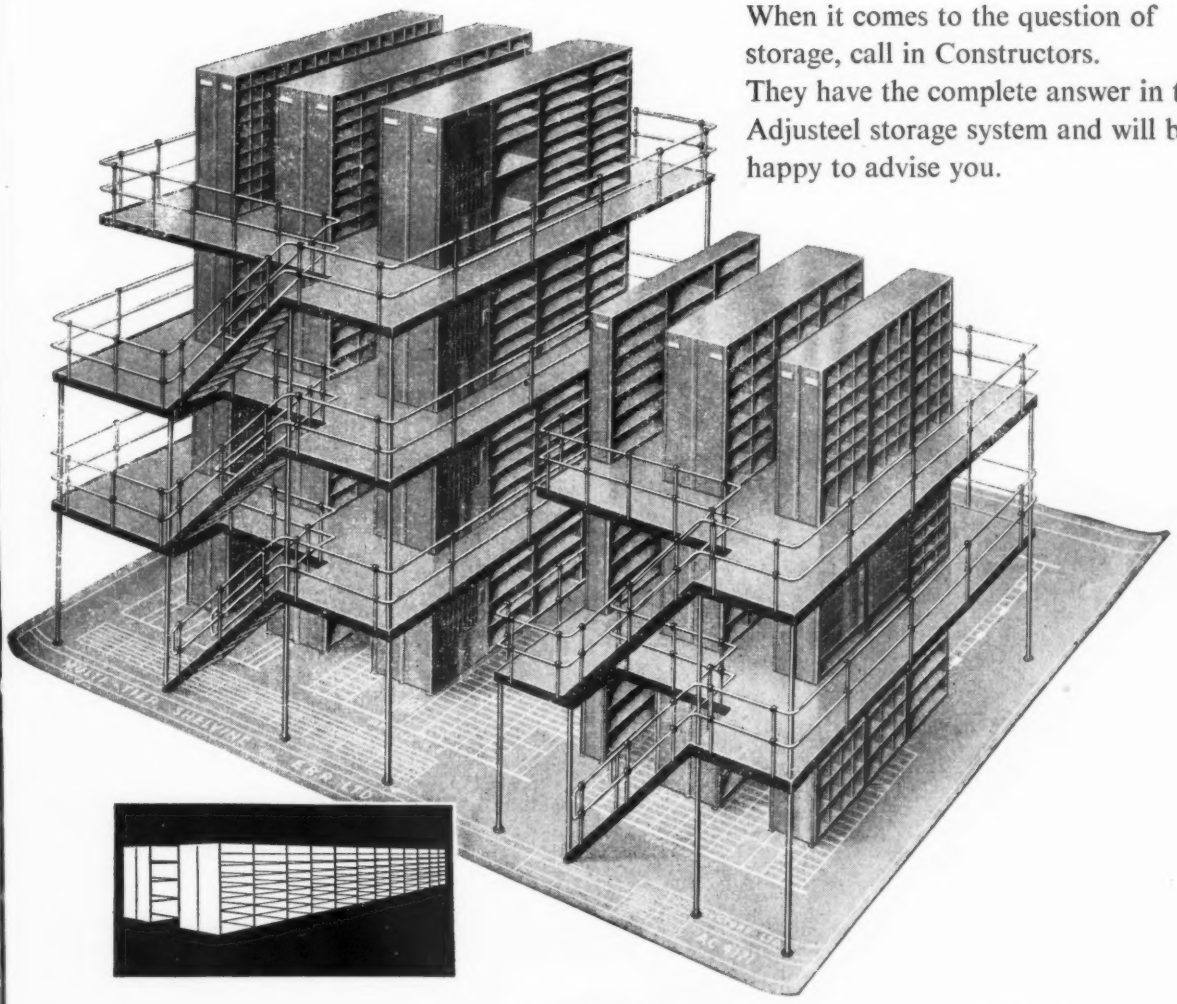

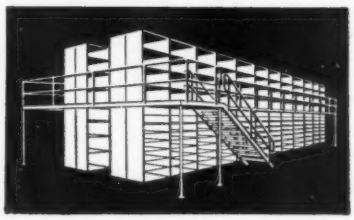

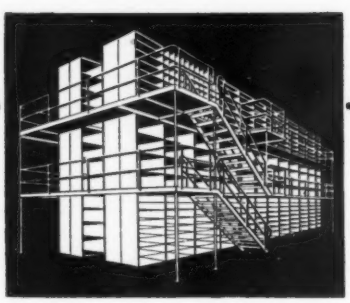

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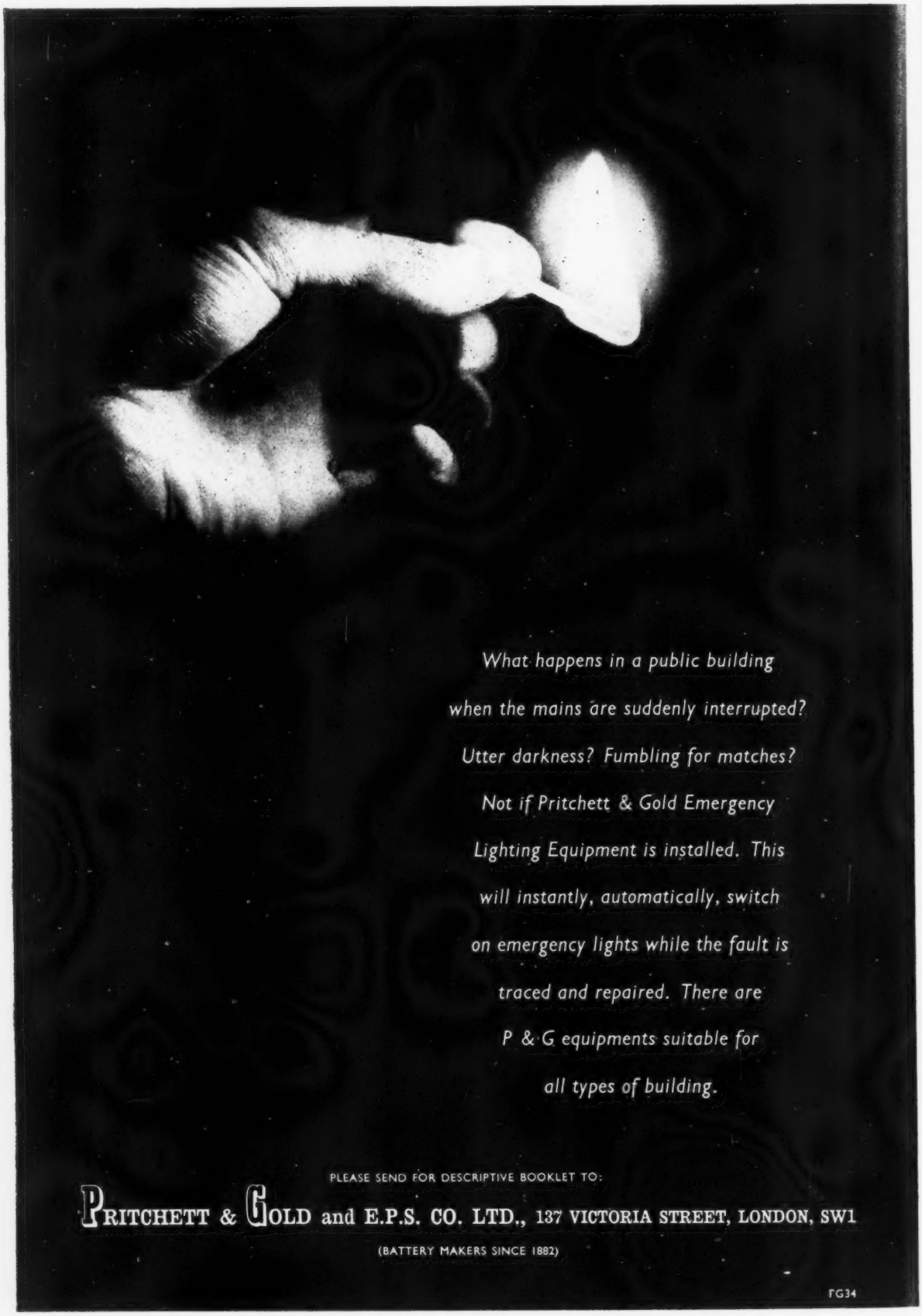
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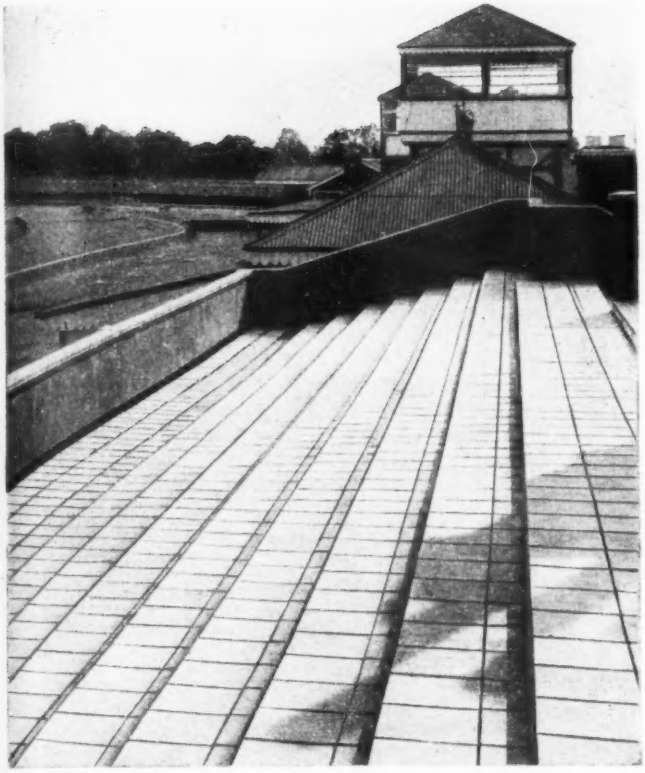

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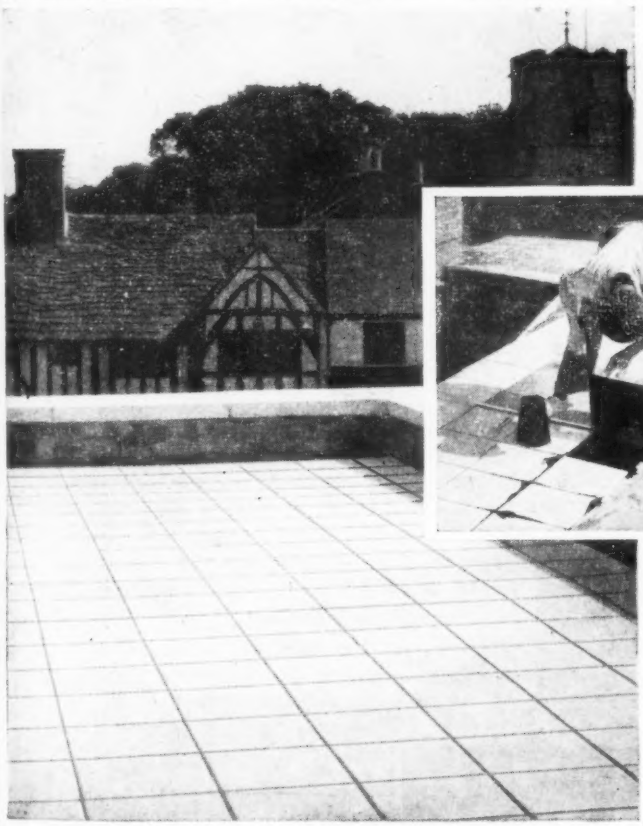
Below: THE GEORGE HOTEL, CRAWLEY, SUSSEX.
Architect: J. Hopwood, A.R.I.B.A.



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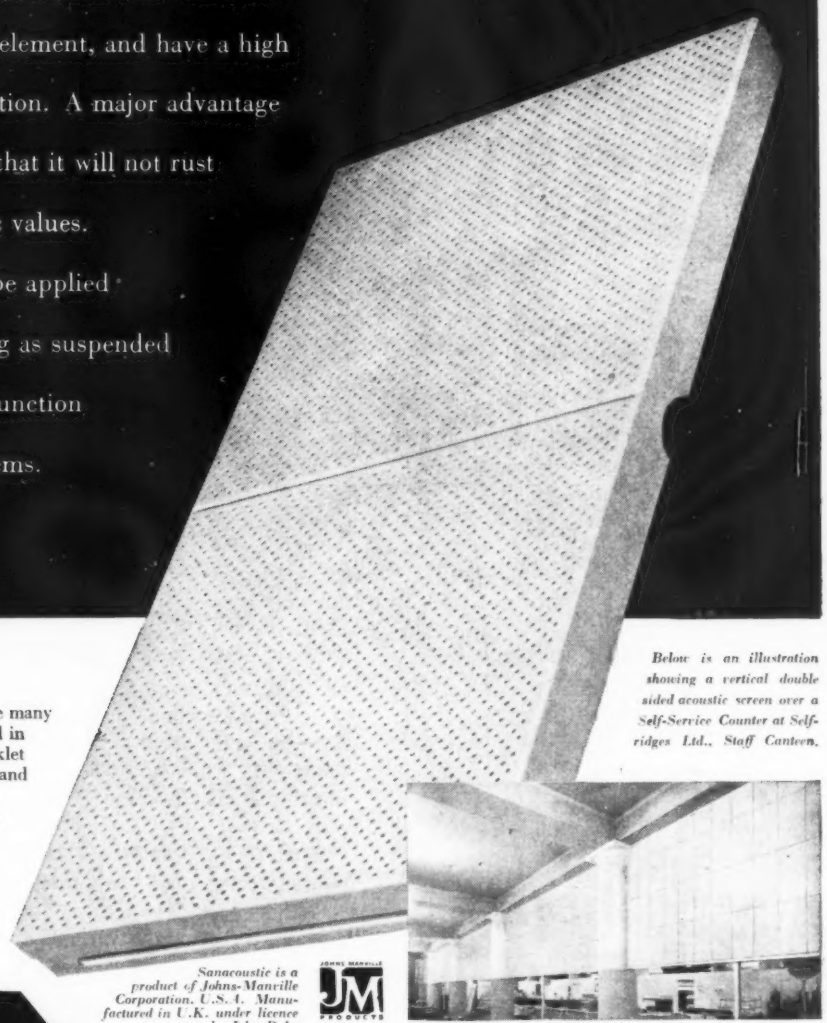

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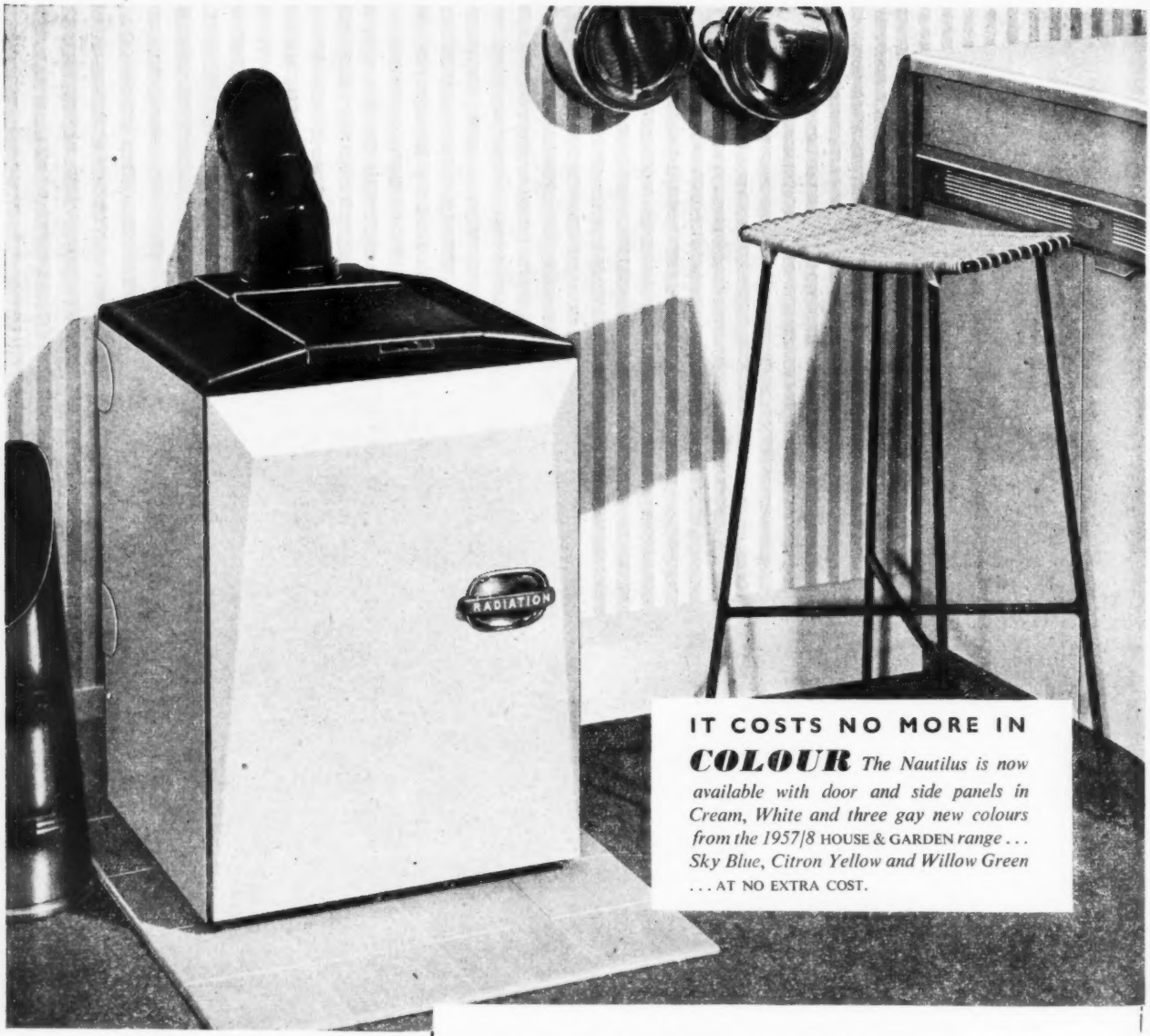

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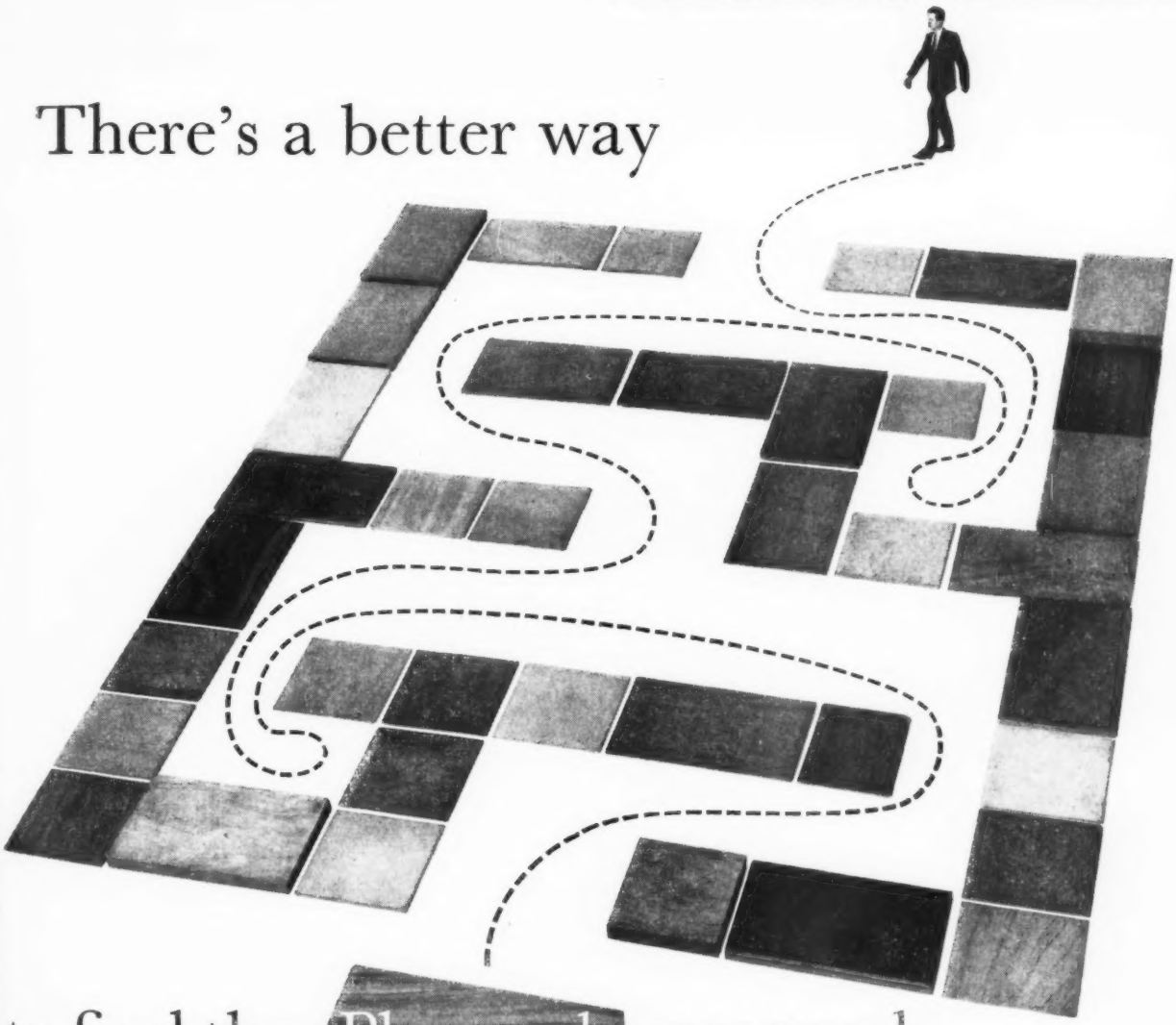

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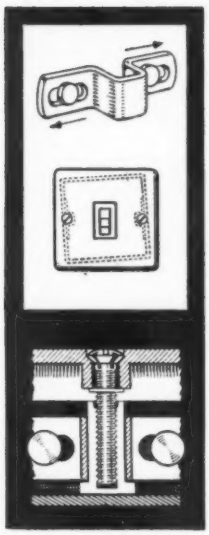

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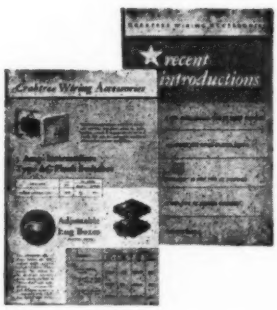

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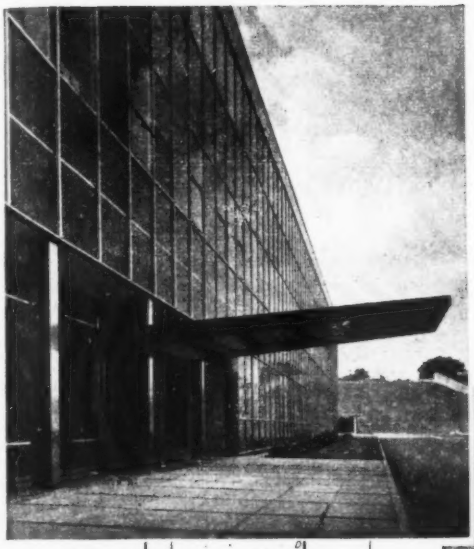

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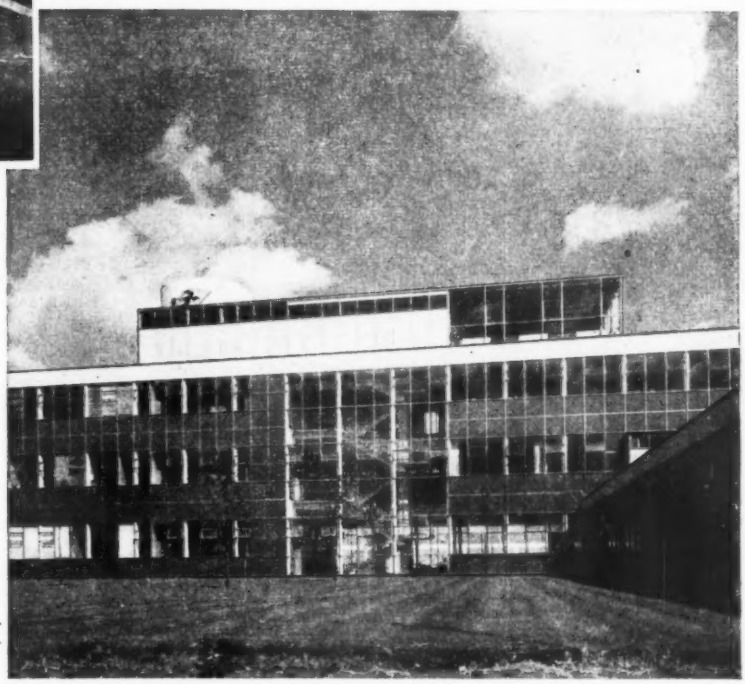

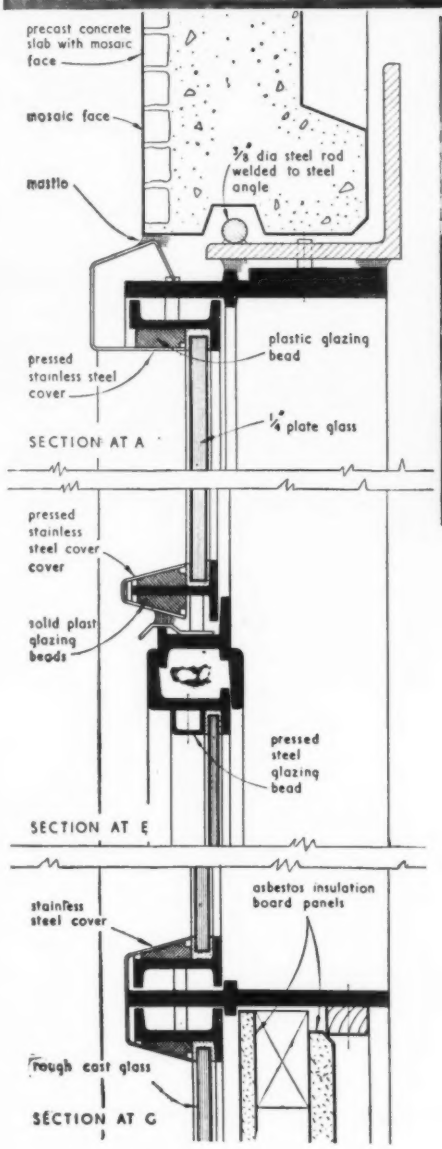

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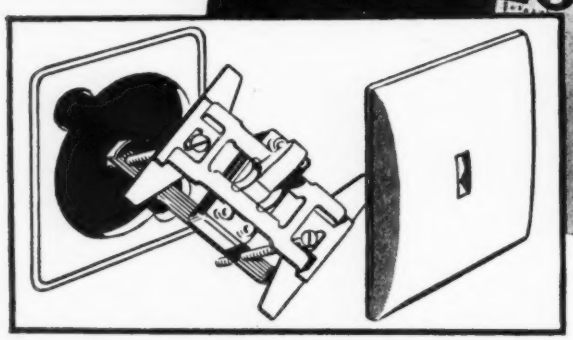

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Design: The Architects Dept., Boots Pure Drug Co. Ltd. Chief Architect, C. St. C. Oakes, F.R.I.B.A.

Contractors: Spooners (Hull) Ltd.

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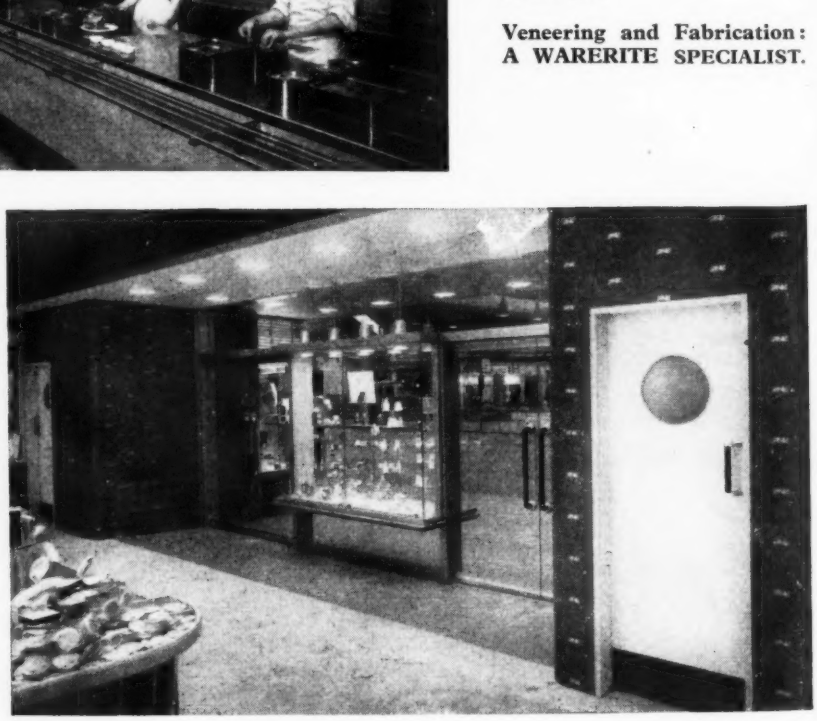

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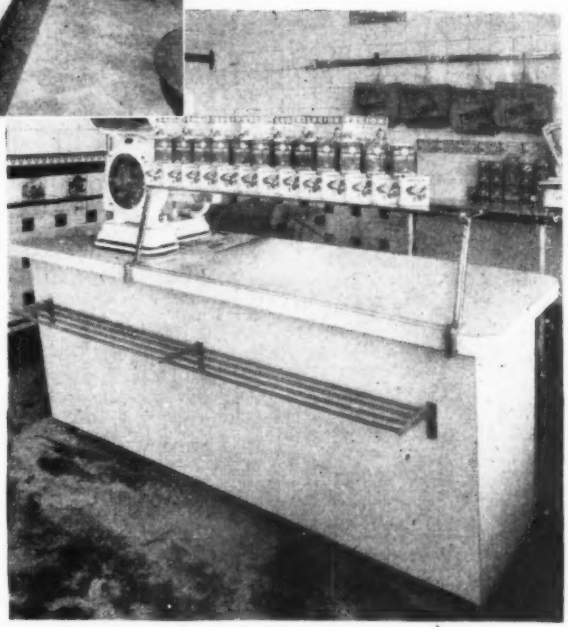

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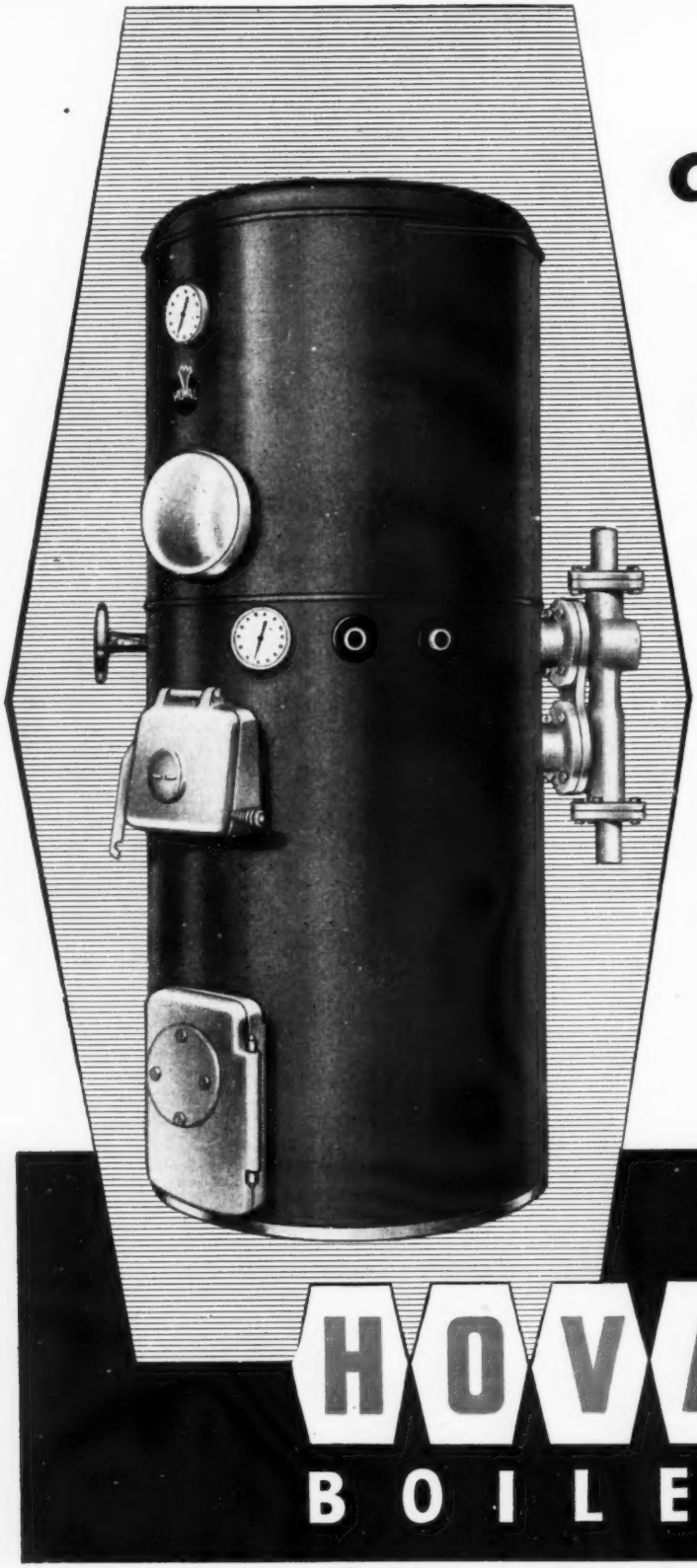

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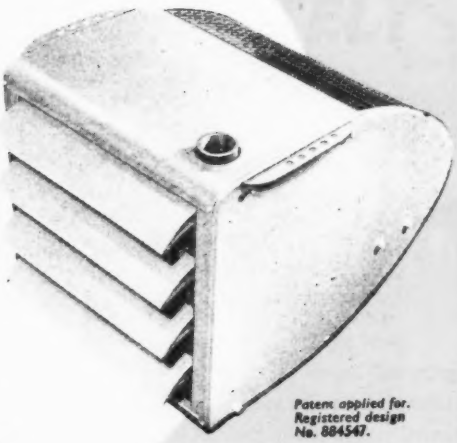

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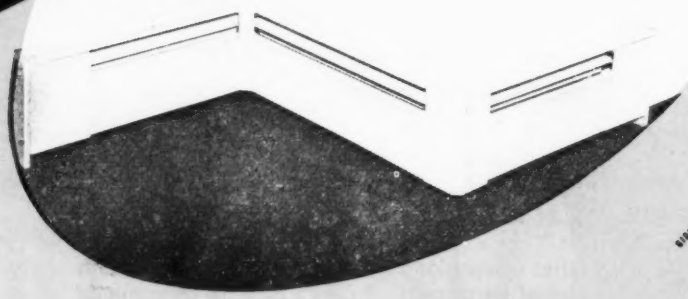

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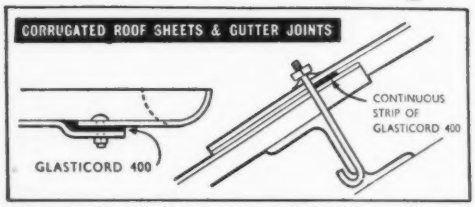
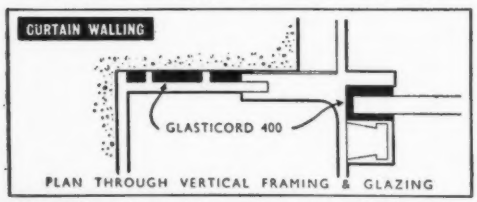
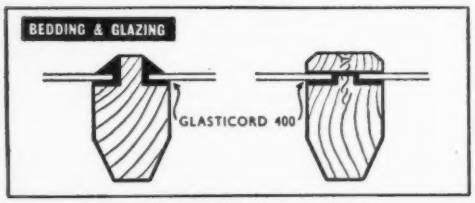
the latest development in Extruded Tape Sealers from U.S.A.



For sealing between laps of corrugated sheets and gutter joints



For sealing of joints and contact surfaces on curtain walling



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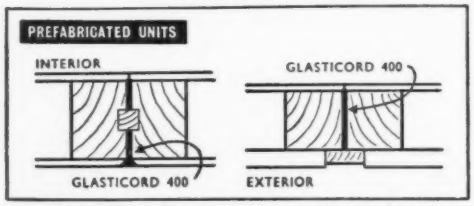

And for sealing between joints in prefabricated units

Glasticord Extruded Tape Sealers are made under exclusive British licence from the Presstite-Keystone Engineering Products Company of St. Louis — the largest manufacturer of joint sealers in the world.

Glasticord Strip has outstanding adhesion and will form a seal in any joint — against metal, wood, glass, masonry, rubber or plastic. It remains permanently plastic and can be used between materials subject to expansion, contraction, vibration or any other form of movement.

Glasticord Extruded Tape Sealers are made in a wide range of section sizes, both circular and strip, designed to fill every building requirement.

GLASTICORD '400' has greater adhesion than any other tape sealer available today, for the purposes illustrated. Supplied in stone grey colour only.

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Write for technical data and price lists. Samples of all Kelseal Products available on request.

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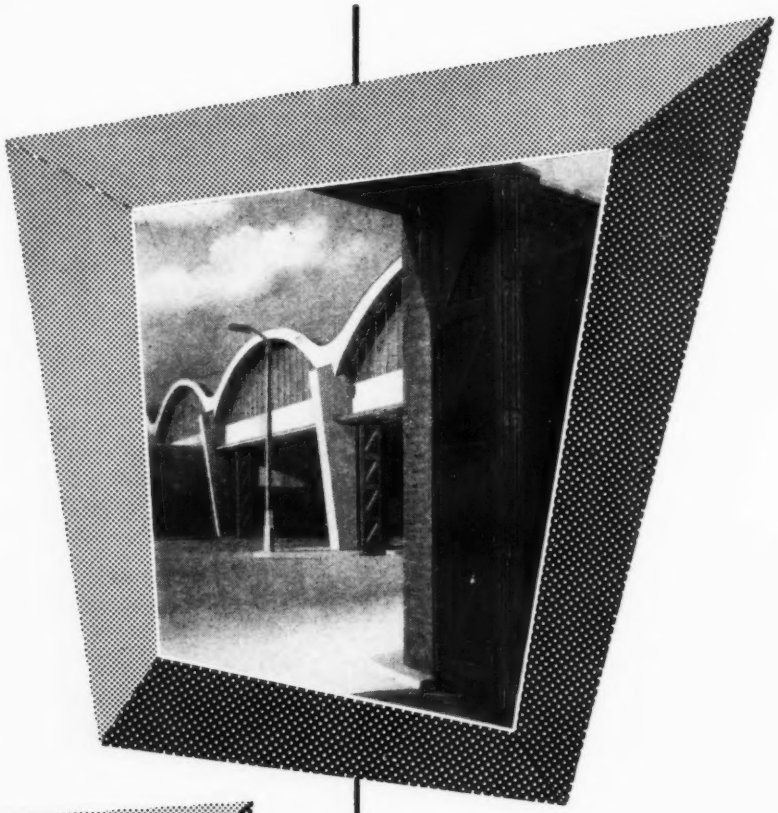
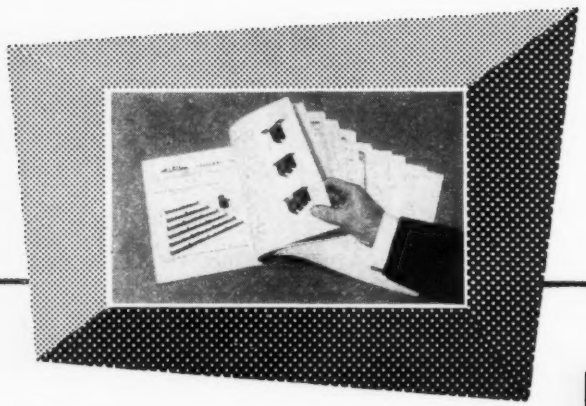
Who's behind the Sliding Door in today's Modern Buildings?





Doors should be a help, not a hindrance. They should provide easy access from one place to another, not flap about in everyone's way, taking up precious space.

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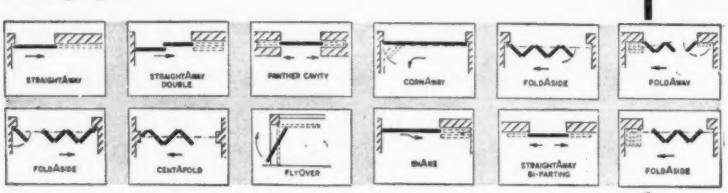

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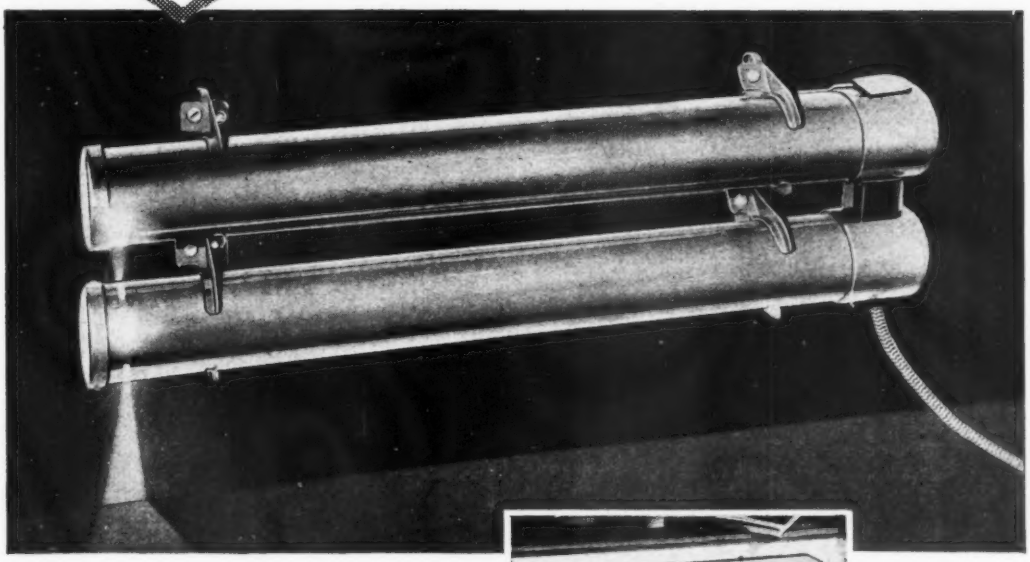

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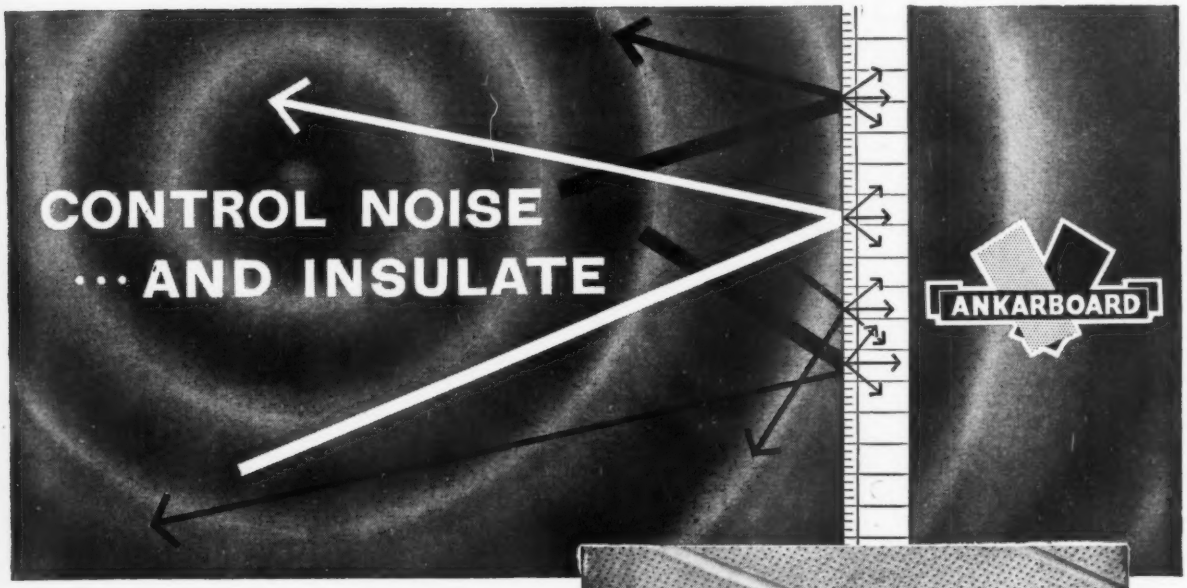

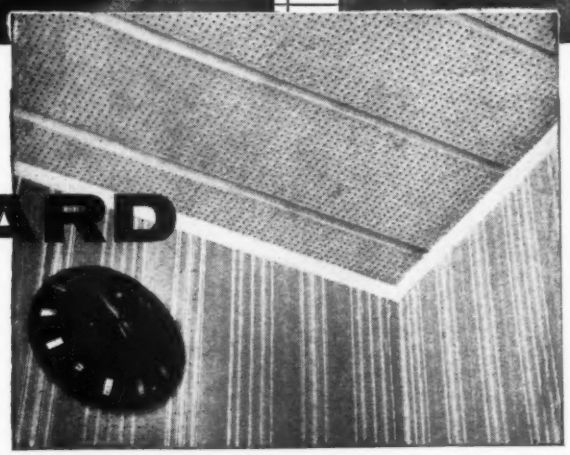

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In the factory, the office or the home, ANKARBOARD baffles noise, improves acoustics—and enhances appearances. The perforated boards are specially prepared with grooved and ship-lapped joints for easy fixing. Can be supplied with a coating of fire retardant Albi-R. for *extra* safety.

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HIGH FIRE RESISTANCE is another principal feature of Insulating Plasterboard. The core of all plasterboard is gypsum, and gypsum contains about 20% combined water—an inherent protection in the event of fire. Plasterboard conforms, on both faces, to B.S.476, Class I, *without requiring any additional treatment.*

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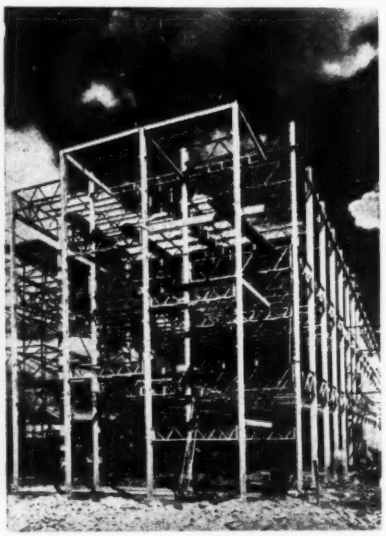
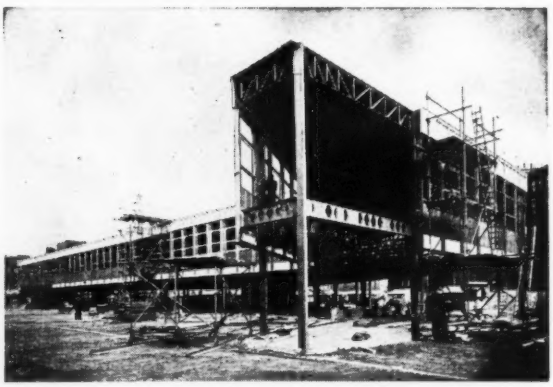
structural steelwork

THE BOWATER PAPER CORPORATION LIMITED. The Architects for the new Office Blocks at both Mersey and Northfleet designed for Lattice Steelwork on a modular grid which allowed service lines to be run between floor and ceiling and gave complete flexibility for internal arrangements.

Architects: Messrs. Farmer & Dark.



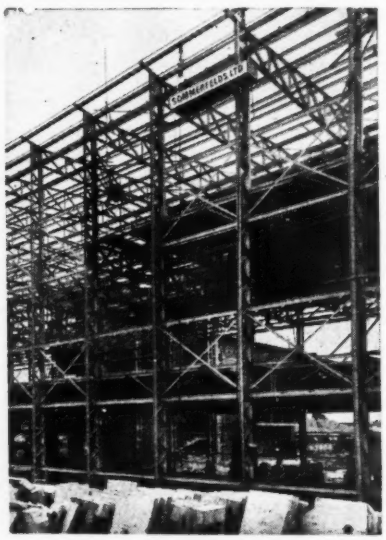


B.E.A. For this B.E.A. Building, speed was the essence of the Contract. Sommerfelds designed the Steelwork and from unloading the first lorry on site to the completion of a 250 ton steelwork erection took three weeks.

General Contractors: Messrs. Richard Costain Limited.

YORK. For the City of York a Grammar School. Sommerfelds designed the Steelwork on a 3ft. 4in. modular grid allowing complete freedom for the Architect to use curtain walling and internal arrangements.

Architect: E. Firth, F.R.I.B.A., A.M.T.P.I., City Architect.



I.C.I. For I.C.I. a Laboratory Block. A multi-storey building with a height to eaves of 44ft. and uninterrupted spans of 50ft. on each floor. Deep Lattice Beams and light stanchions were used with considerable saving in steel requirements.

Architects: Messrs. J. Douglass Matthews & Partners.

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SOLVES MANY PROBLEMS

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SPRAYED 'LIMPET' (Regd.) ASBESTOS was created to provide a form of thermal and sound insulation with many desirable features in one single operation. The process itself consists of the application, by means of a spray gun, of specially prepared forms of asbestos fibre which are discharged from the main nozzle of the spray gun simultaneously with a spray of water. These thoroughly intermix on leaving the spray gun and firmly adhere to the surface being treated. Irrespective of the shape of the surface, Sprayed 'Limpet' Asbestos completely covers all joints, rivets, or protrusions in one continuous jointless coating, thus eliminating all air spaces with their accompanying disadvantages.

The nature of Sprayed 'Limpet' Asbestos coatings varies with the job in hand, but in all cases it is rot and vermin proof, will not be affected by vibration and for most applications is extremely light in weight. This is the ideal method of combining thermal insulation with sound absorption and admirably suits the needs of various types of auditoria, as well as for the reduction of noise levels in factories, offices and workshops. Full details are contained in our catalogue "Sprayed 'Limpet' Asbestos Insulation", sent on request.

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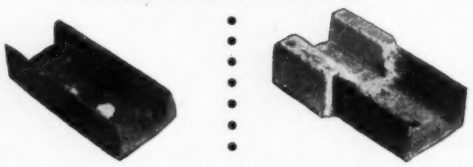

The photograph on the right shows the complete protection offered by Sprayed 'Limpet' Asbestos against corrosion. Both channels were subjected to the same conditions, the test being carried out in a dyeworks.

BIG NOISE REDUCTION

Sprayed 'Limpet' Asbestos has been used in this modern cotton weaving shed to reduce noise and for anti-condensation purposes. Photograph by courtesy of Richard Haworth & Co. Ltd., Hindley Green.

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"Doesn't look safe to me," he said when he saw the plans. "All that glass and stuff. Old Jeremiah wouldn't have liked it."

But he shook off these ancestral forebodings to add, "Better let the Chubb chap have a look. Don't want security trouble."

The Chubb master-key system installed by Jeremiah still worked unobtrusively and efficiently. The Man from Chubb explained how neat modern locks for the new building could be incorporated into the system.

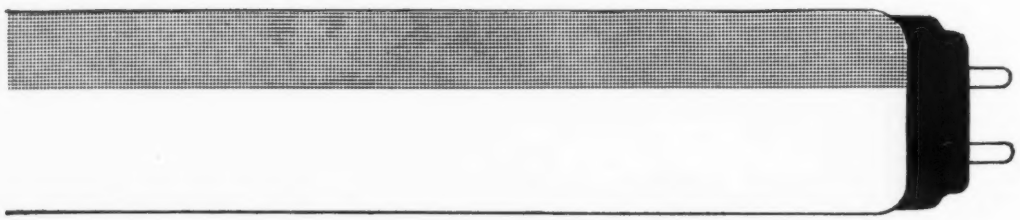
"Deuced clever," said Sir Ignatius, "Old Jeremiah would've liked that."

So, if Fornaby's Limited appears architecturally a little discordant, the security system at least is—literally—all in one key.

If you haven't got a Chubb catalogue (or can't find it), why not ask for the latest one? It makes an excellent door stop or paperweight, and you never know when you'll have a client who wants the best security there is. Write or telephone Chubb & Son's Lock and Safe Co. Ltd., 175-176 Tottenham Court Road, London, W.1 (MUSeum 5822).

DON'T LEAVE IT TO CHANCE—LEAVE IT TO CHUBB

Philips 'Reflectalite' gives you more light



where it matters

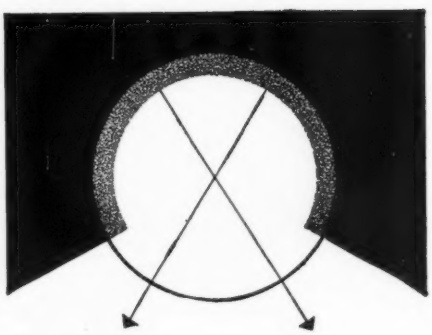
'Reflectalite' fluorescent tubes feature a special built-in reflector. Two-thirds of the tube are coated internally so that it reflects most of the light output *downwards* — through the 120° window — *where it does most good.*

LIGHT LOST THROUGH DUST

Dust and dirt, settling on the top and sides of an ordinary fluorescent tube, absorb a lot of the light output. By reflecting much of this light downwards, where dust does less to reduce efficiency, 'Reflectalite' tubes increase light output and are easier and cheaper to maintain.

REFLECTALITE 4' 40 w. and 5' 80 w. tubes are available for use on switch-start or instant-start apparatus in Warm White, Cool White and Cool White de Luxe colours.

LIST PRICES: Switch Start 13/9+P.T. (40 w.)
14/9+P.T. (80 w.)
Instant Start Lamps 1/- extra



This cross-section of a "Reflectalite" tube shows the diffusing, reflecting layer of powder inside the glass, which covers approximately 240° of the circumference.

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FLUORESCENT REFLECTOR TUBE

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Heat and sound insulation for: ROOFS FLOORS WALLS

'Rocksil' fibres are produced at high temperature from Dolomite rock and fire clay. 'Rocksil' synthetic inorganic fibres are strong and resilient and form a range of versatile end products that are characterised by their resistance to compression and shake-down. The most advanced technical and architectural requirements of thermal and acoustic insulation can be met by the 'Rocksil' range of products.

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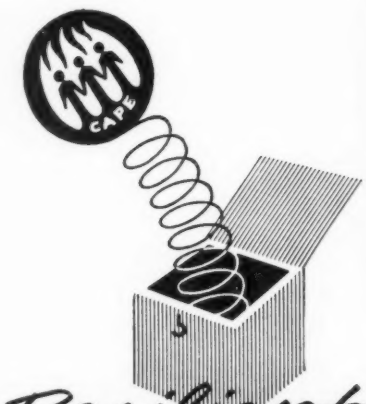

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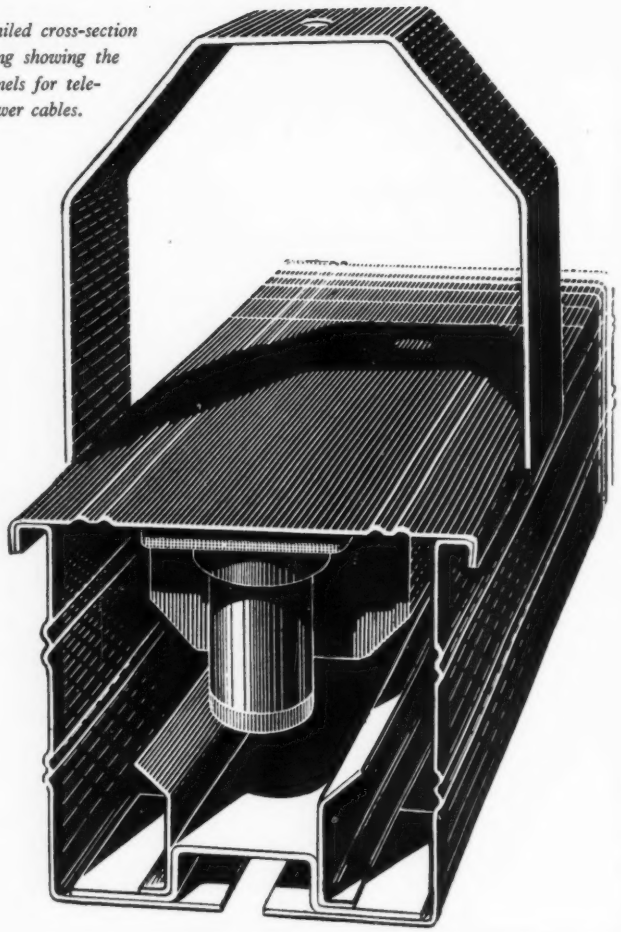
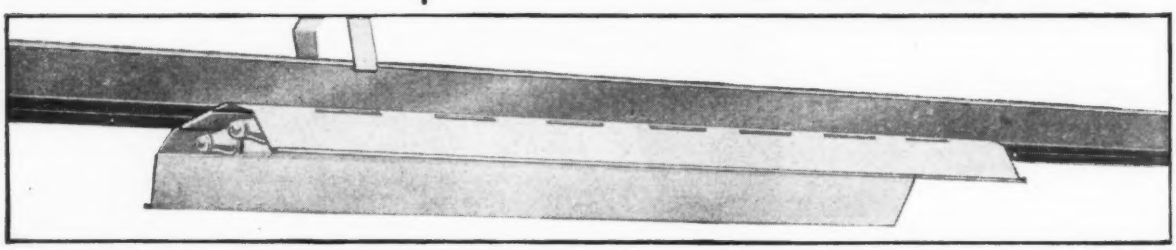
with EKCO trunking

EKCO's Universal Industrial Lighting Trunking gives the neatest approach to problems encountered in planning lighting in extensive factory spaces. Designed to provide high illumination levels over large areas, its compact form and easy assembly cuts installation costs. A variety of reflectors can be incorporated and provision is made for housing power cables and telephone lines. The system makes provision for the use of various types of Lampholders.

This is a detailed cross-section of the trunking showing the separate channels for telephone and power cables.





Have you a lighting problem?

Then the EKCO Lighting Advisory Service is available to help you. There is an office in your vicinity. So ask us to send a qualified lighting engineer to discuss your problem with you. There is no obligation and the service is entirely free.

EKCO Trunking System

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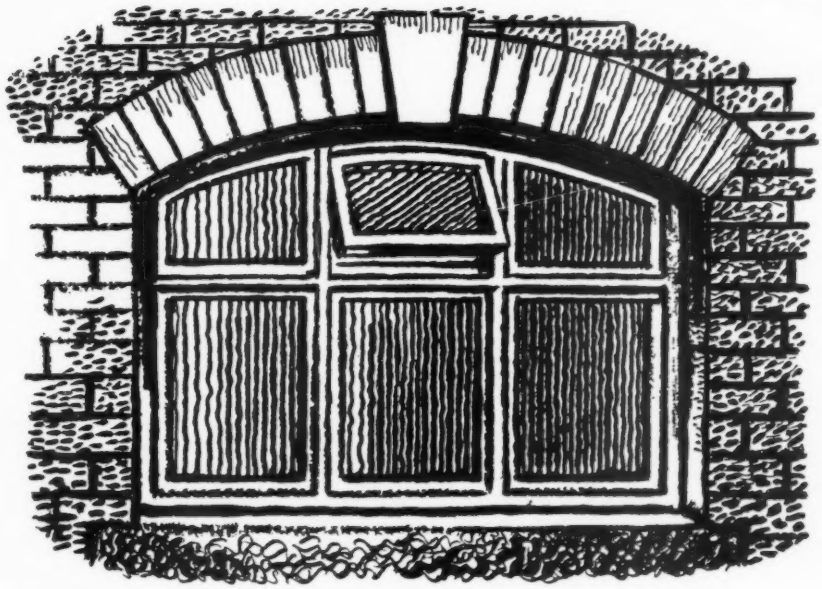
EL52



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There's not an architect in the country who would specify this window for a new school. Yet equipment just as outdated *is* being installed in schools. Old type heating plant for instance . . .

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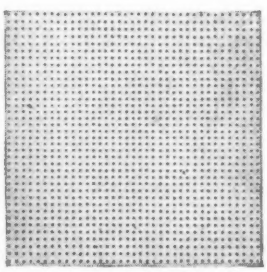
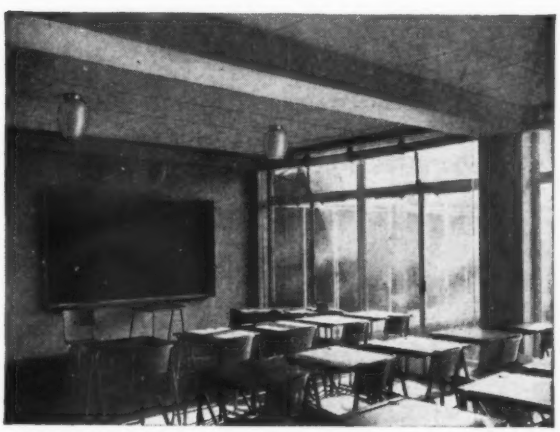


heated and acoustic FRENGER Ceilings

See the Frenger Ceiling display at the Building Centre



The following universities, colleges and schools are among those equipped with Frenger:—
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THRYBERG SECONDARY MODERN SCHOOL, Yorks.
SCHOOL OF ENGINEERING, Bristol University, Bristol.
ST. THOMAS'S BOYS' SCHOOL, Belfast, N. Ireland.
BRETTON HALL TRAINING COLLEGE, Yorks.
UNIVERSITY COLLEGE OF SWANSEA, Swansea.
ST. BEES SCHOOL, Whitehaven, Cumberland (*illustrated right*).
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RUFFS FARM, Secondary Modern School, Hucknall, Notts.
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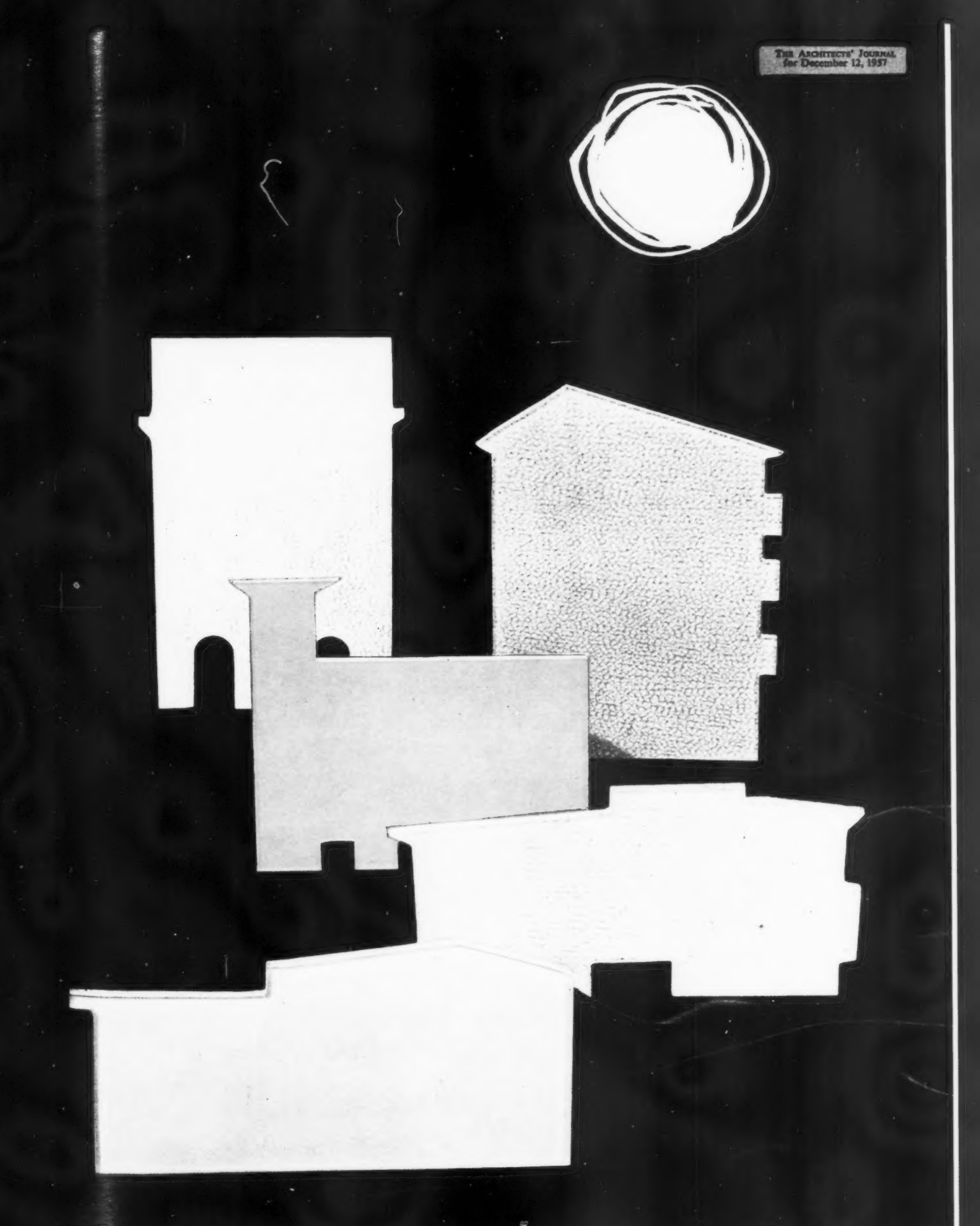

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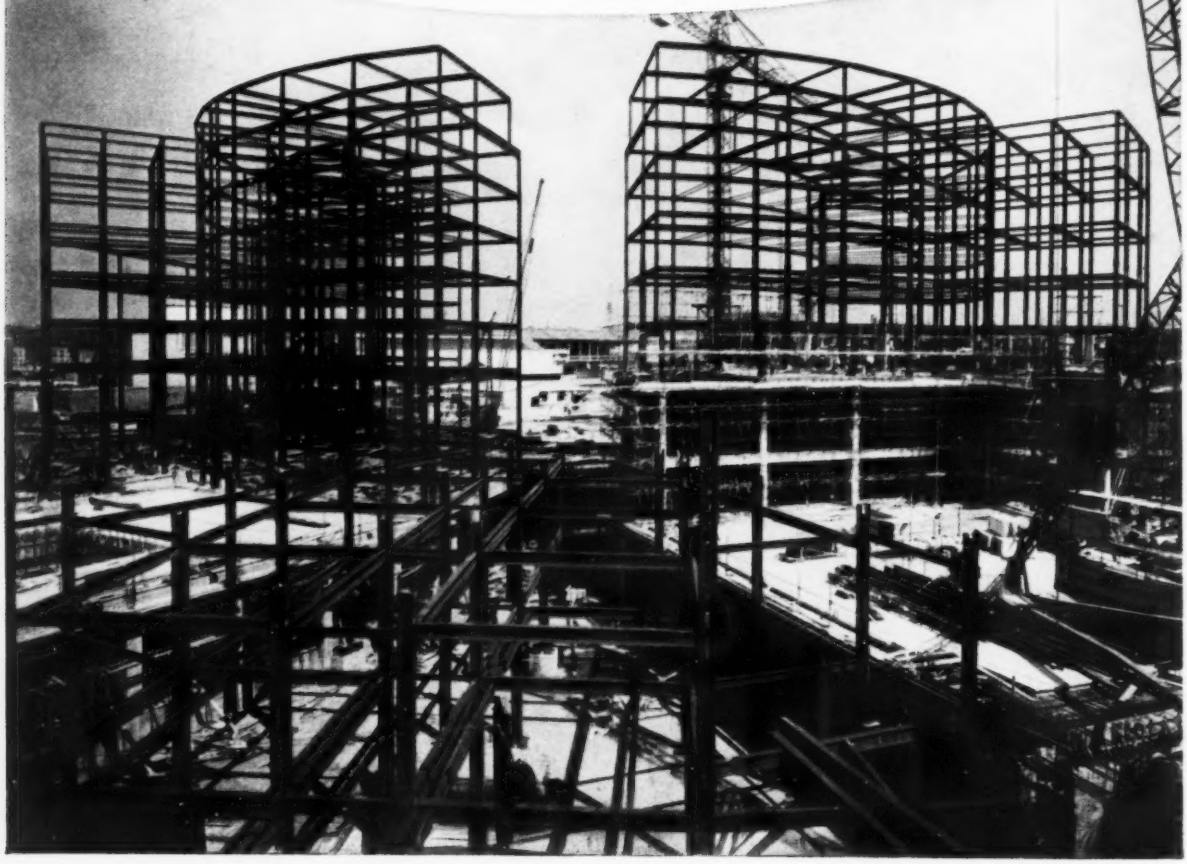

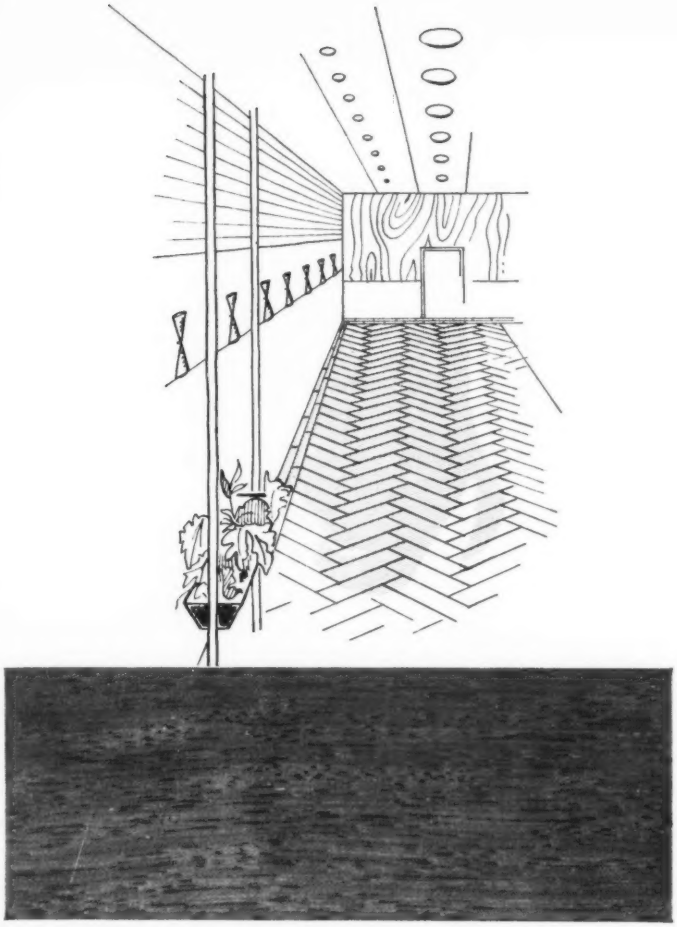

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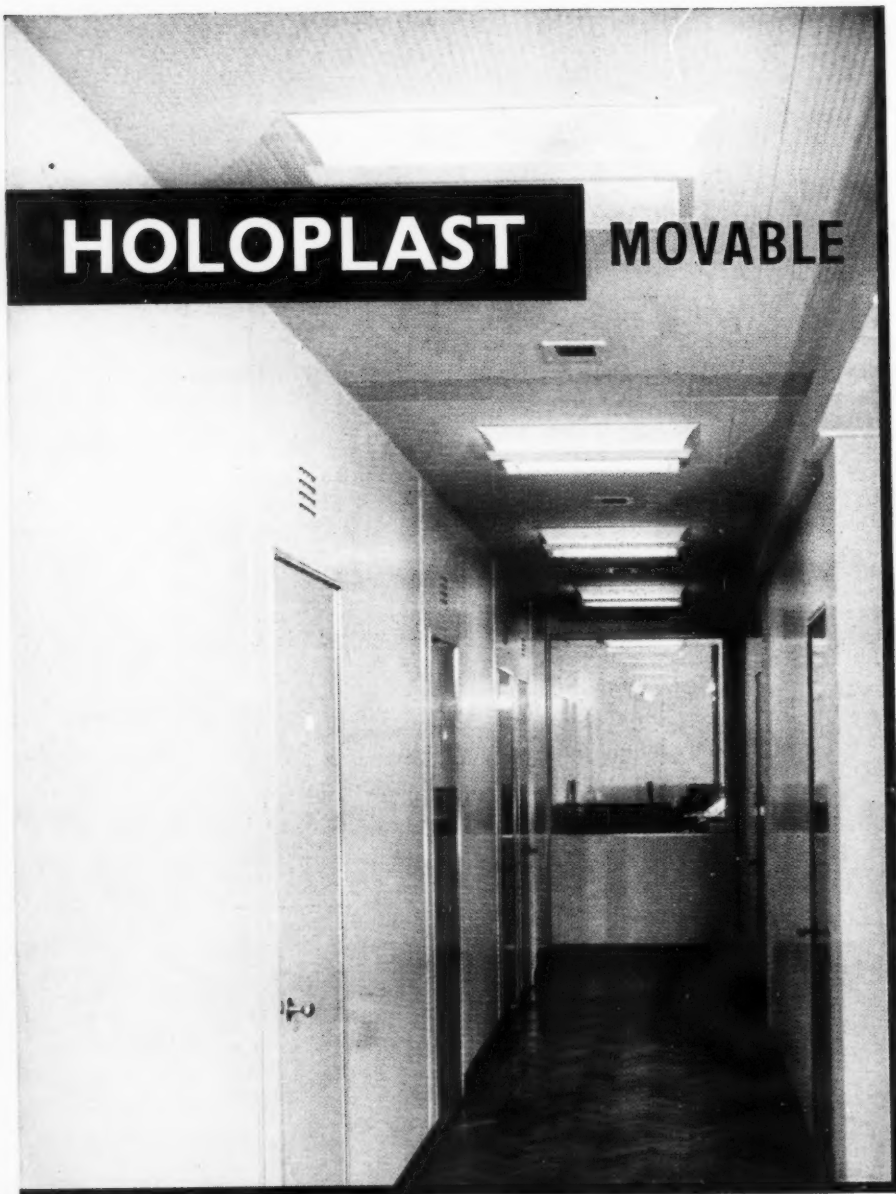

A corridor in Monsanto House, Victoria Street, London

HOLOPLAST MOVABLE WALLS NOW COST LESS

By streamlining production and simplifying design the well-known and established Holoplast Movable Wall System has been reduced in price without any sacrifice of quality or finish.

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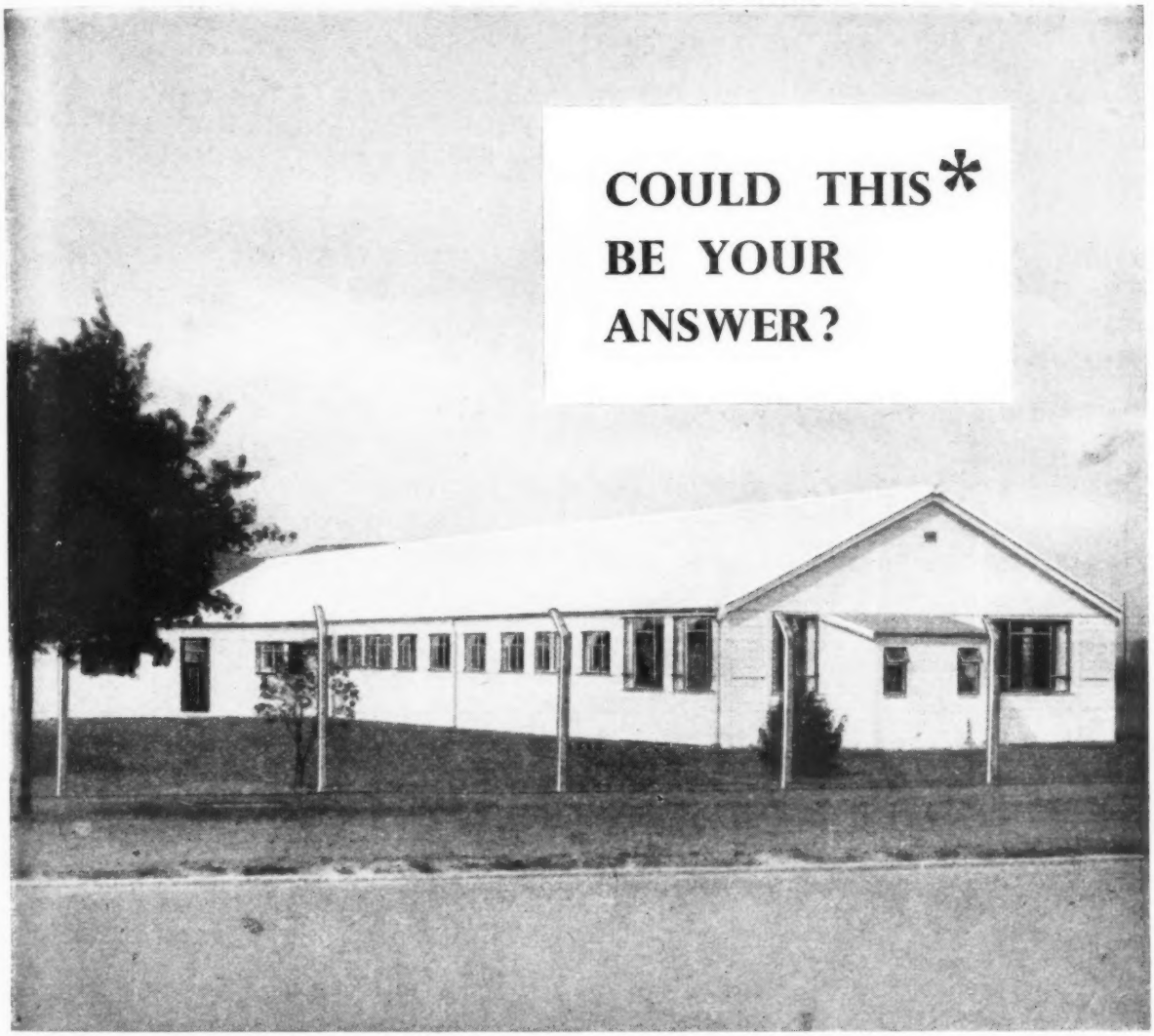
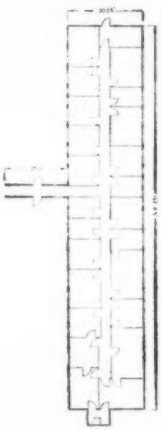


Photograph by courtesy of Hunting-Clan Air Transport Ltd., London Airport.



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Basic widths available—12ft., 15ft., 18ft., 20ft., 24ft., 25ft., 30ft.

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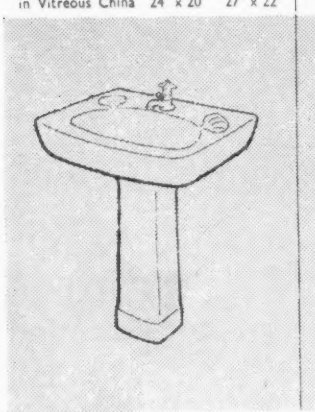
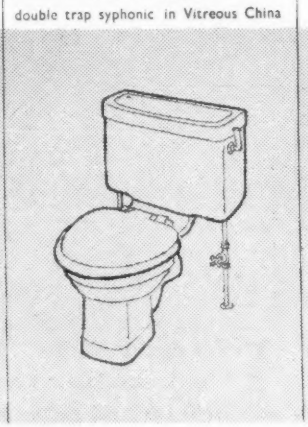
4144NP M/VC "Nuadale" in Vitreous China 24" x 20" 27" x 22"

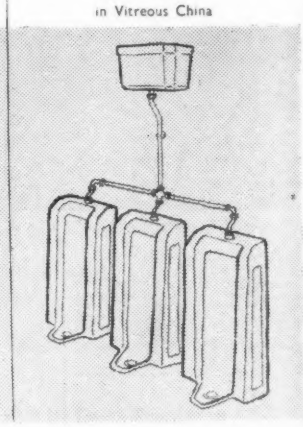


1047 M/VC "Orlux" in Vitreous China

116/VC "Unisyla" double trap syphonic in Vitreous China



3009/VC "Sanvit" in Vitreous China



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Armitage Genuine Vitreous China is a superior product fired at a very high temperature to render the body almost molten producing a non-absorbent material which cannot allow penetration of harmful bacteria. Resistant to thermal shock or change of temperature and because of its toughness *Armitage Genuine Vitreous China* will meet the most exacting tests—moreover it is non-crazing.

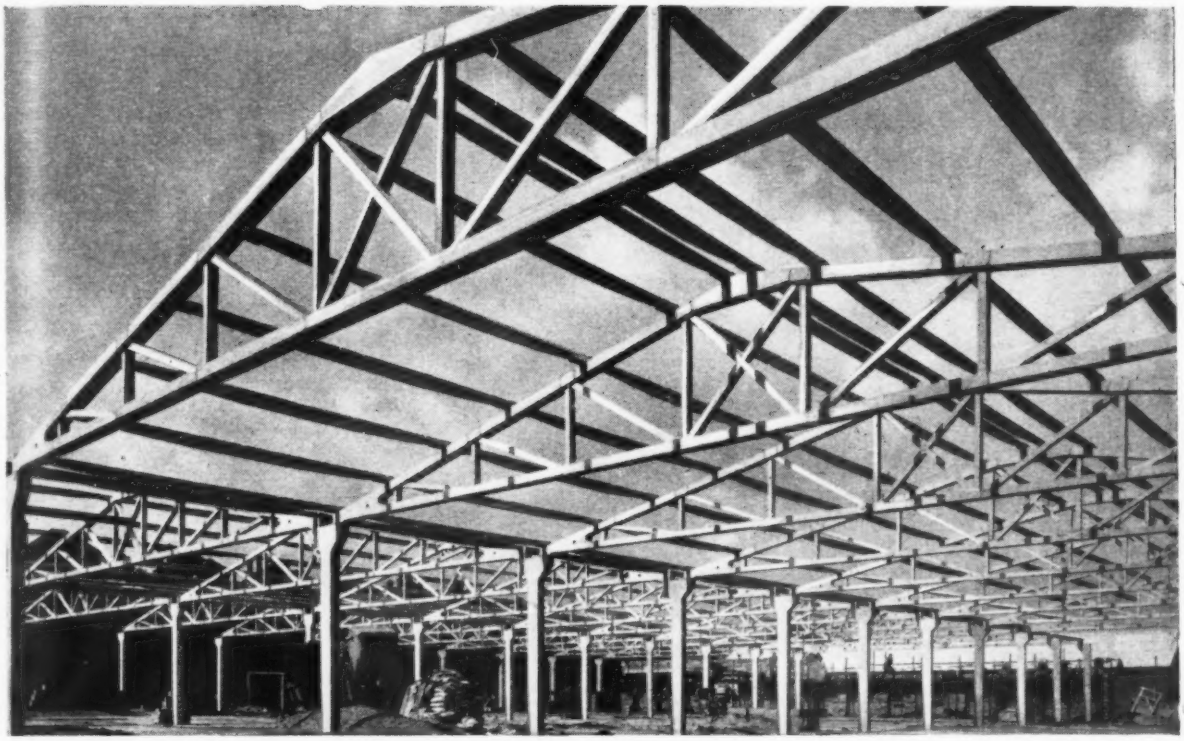
Specify *Armitage Genuine Vitreous China* for complete satisfaction.

The Armitage Range contains fixtures for all purposes including domestic, public, industrial and hospital installations and is available in white or eight attractive Armitage colours (colour card on request).

For further information ask for Catalogue 'A' showing bathrooms in colour and Leaflet 1516 "Nuastyle" Range of contemporary designs.

EDWARD JOHNS & COMPANY LIMITED · Armitage · Staffordshire

Tel: Armitage 253 (5 lines). London Office & Showrooms: 333/337 Grand Buildings, Trafalgar Square, W.C.2. Tel: Whitehall 8063 & 2488



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The illustration above shows the use of 50 ft. GKP prestressed concrete trusses which may span from 21 ft. to 55 ft. 6 ins. The lower illustration shows one of our specially designed frames of 76 ft. span and 18 ft. 6 ins. to eaves with a North Light Extension.

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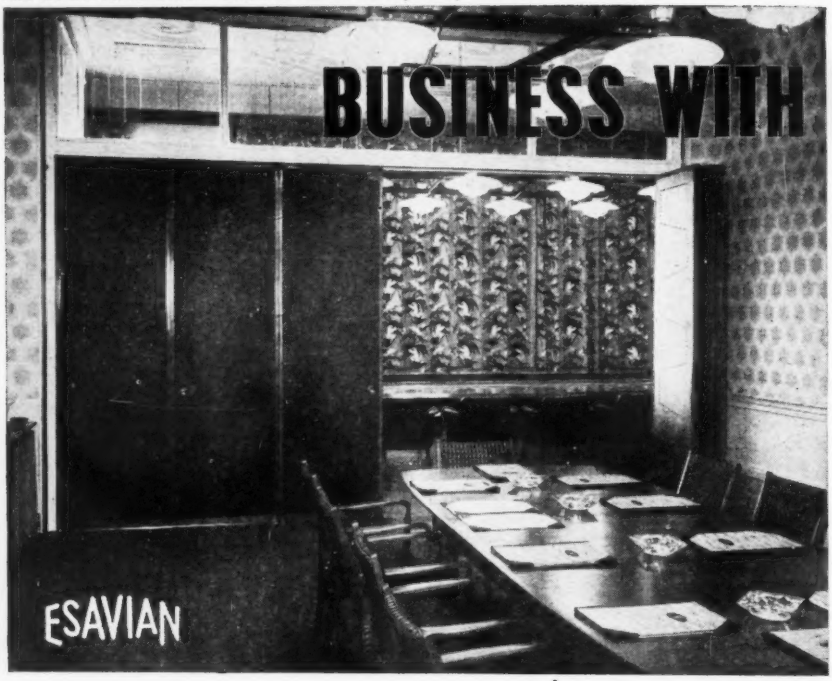

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will solve your problem.

A new departure from traditional Decorative Enamel both in performance and use.

Provides an extremely resistant hard finish, specially developed for the protection of metals and concrete, under severely corrosive conditions.

Resists acids, alkalis, mineral and vegetable oils, including cutting oils, petrol and sea water.

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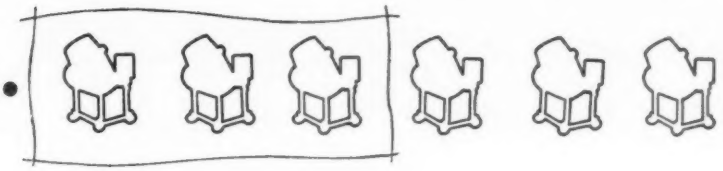
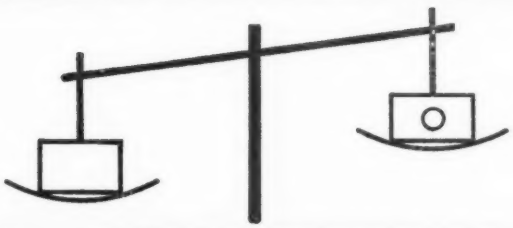
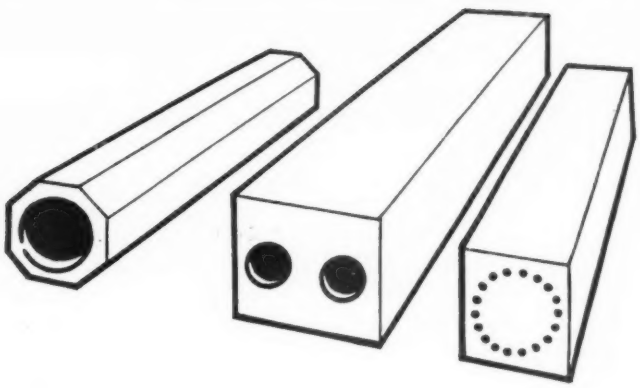


Save weight...



Use *Sonovoid* in piles, slabs and beams



Sonovoid is fibre tubing which is used to create voids in concrete piles, slabs and beams.
It saves weight, concrete and reinforcing steel.
It can be used for pre-cast or cast-in-situ jobs whether unstressed, pre-stressed or post-stressed.
Sonovoid tubes can even be curved. Write for full details of price and delivery.

Sonovoid

for creating voids

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ROMILEY, CHESHIRE, ENGLAND. *Telephone :* WOOdley 2271/2/3/4. *Telegrams :* SONOTUBE, ROMILEY.

GYPROC overcame

the problem of noise in this

Staff Canteen with . . .

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Architect: E. V. Collins, A.R.I.B.A., Chief Staff Architect.

These 2 ft. square, attractive bevel-edged tiles are high quality precision products. The slots which are the distinctive feature of the tile have been designed to provide optimum sound absorption when used with a suitable porous backing. As the tiles are manufactured from ½" thick gypsum plasterboard there is a high measure of fire protection. The tiles themselves present pleasant decorative elements. The slots and the 45° bevels on all face edges supplement a decorative scheme. All facts on sound absorption co-efficients, fire resisting characteristics, and methods of fixing, will be sent on request. Write for leaflet AP361

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Prestressed

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Depth	TYPICAL CROSS SECTIONS	Self Wt. per sq.ft.	Type	Superimp'd load lb./ft.²	30 lb.	40 lb.	60 lb	80 lb	100 lb.	150 lb	200 lb.	336 lb.
7"	2' 0"	35 lbs.	X7	Case 1	20'-10"	19'-3"	17'-5"	15'-11"	14'-6"	12'-7"	11'-3"	9'-1"
7"	1' 6"	36 lbs.	do	Case 2	24'-0"	22'-5"	20'-2"	18'-7"	16'-9"	14'-7"	13'-0"	10'-5"
7"	2' 6"	40 lbs.	do.	Case 3	26'-0"	24'-2"	21'-9"	20'-2"	18'-9"	16'-0"	14'-4"	11'-6"
7"	2' 0"	42 lbs.	do	Case 4	27'-6"	25'-0"	24'-5"	22'-8"	20'-6"	17'-10"	16'-0"	12'-11"
7"	6" 6" 6"	60 lbs.	do.	Case 5	—	—	—	—	—	24'-1"	22'-10"	17'-10"
9"	1' 8" 8½"	47 lbs.	H9	Case 1	31'-3"	29'-2"	26'-6"	24'-7"	22'-5"	19'-8"	17'-7"	14'-3"
9"	2' 4" 8½"	53 lbs.	do.	Case 2	36'-6"	34'-0"	31'-2"	28'-10"	26'-4"	23'-2"	20'-6"	17'-0"
10"	10" 12" 12" 12"	55 lbs	I10	Case 1	38'-8"	36'-3"	33'-4"	31'-1"	28'-3"	24'-9"	22'-4"	17'-11"
10"	10" 12" 12" 12" 12" 12"	64 lbs.	do.	Case 2	44'-1"	41'-2"	38'-0"	35'-6"	32'-3"	28'-7"	25'-10"	20'-3"

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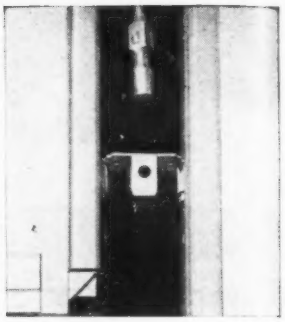
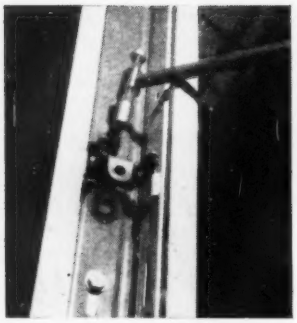
1 Two steel sole plates for each unit of partitioning are screwed to the floor with wood screws.

2 The 40" wide, modular units are bolted to the sole plates. All units are interchangeable.

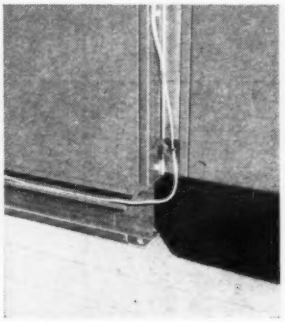


3 Five link plates, at 15" centres, drop into ready pressed out pockets and fix each unit to the next.

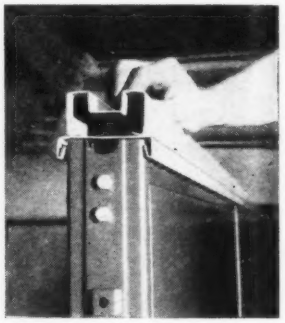


4 Link plates are also used for 3-way fixing — but in this case they are finally bolted in for extra strength.

5 The 40" wide modular door frame, linked in with the rest of the system, is firmly anchored at the foot by a cleat.



6 Electric wiring runs down between partitioning units and along specially provided channels at the bottom.



7 A head channel, cold rolled like all Roften Modular Partitioning sections, finishes off the top of the free-standing screening.

8 Pilasters are clipped on to the notches of the link plates to finish off the joins between units.

9 Skirting is clipped on to the bottom of each unit. Plinths cover the joins in between.

10 Four rubber-buffered glazing beads clip in. Special beads are available for double glazing.

11 Any type of 32 oz. glass slips into the opening, followed by the second set of four glazing beads.

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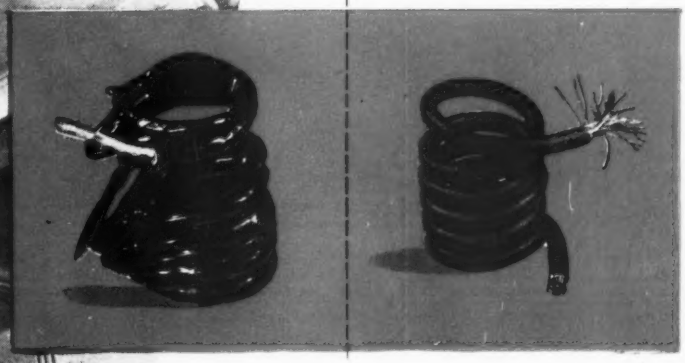

Specimens of polythene cable after heating at 200 C. Left: Normal sample. Right: Irradiated sample.

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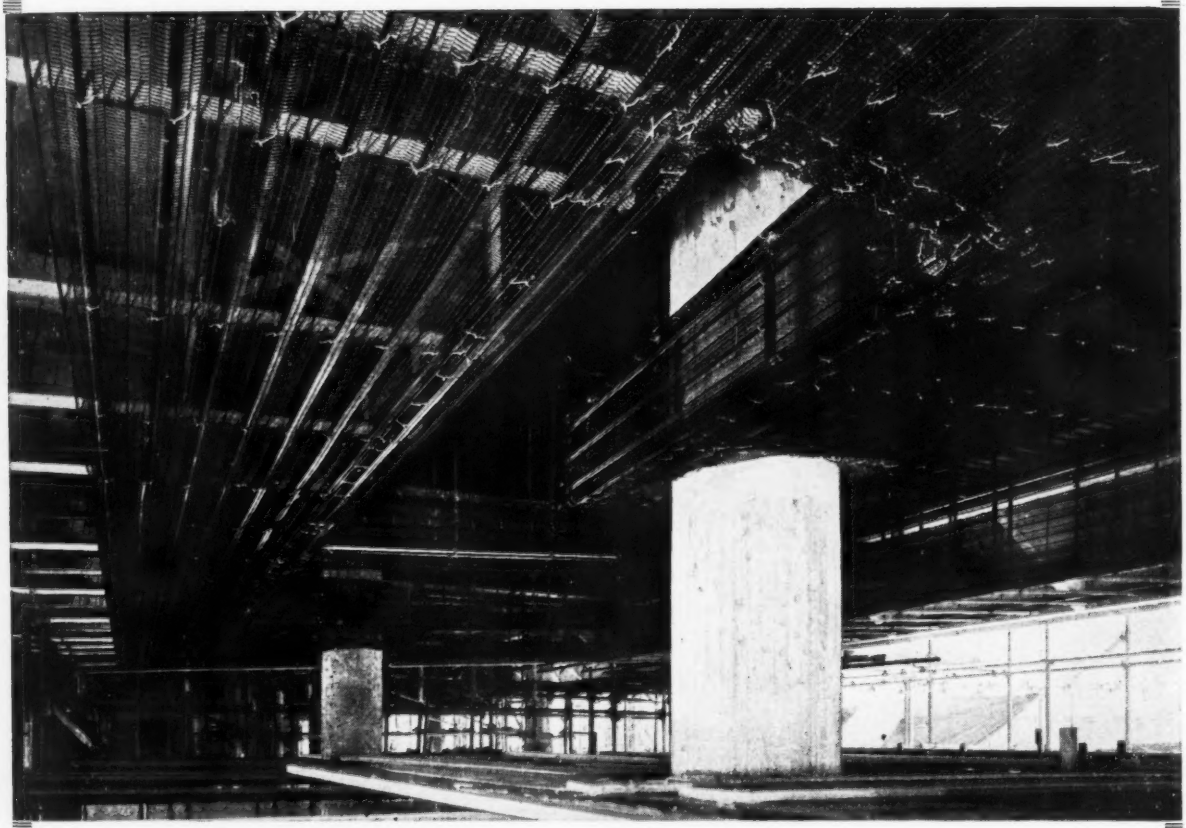

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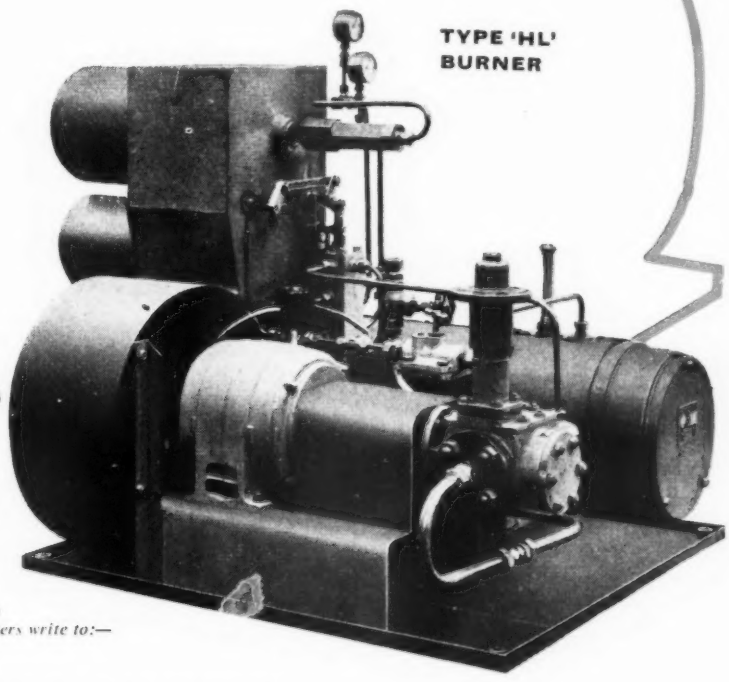

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THE ARCHITECTS' JOURNAL

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NOT QUITE ARCHITECTURE

WATCH THIS SPACE

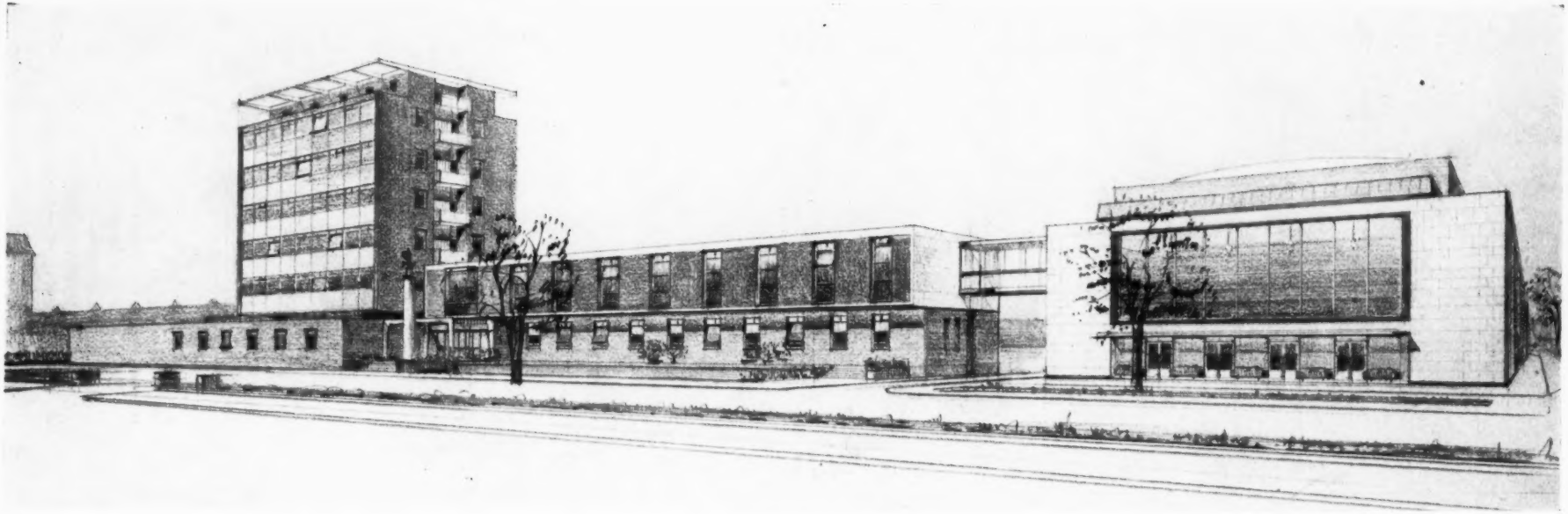
Can space be harnessed to Man's needs? That is what the Sputnik-conscious citizen is asking today. It is a fair question. And only a week ago it would have been difficult to give a helpful answer. But I am now able to reveal the encouraging results of 25 years of American research on "space environment." Details of these results have just reached me from California, where Ernest J. Kump has completed his deductions. They are published in a book which describes Mr. Kump as a public benefactor, and says that his discoveries about space will "open the way to raising the standard of living of all people in society." If anyone is sceptical, let me say right away that Ernest J. Kump not only published the book in which this statement is made; he also wrote the statement himself. Indeed, he wrote the whole book—apart from an introduction which asserts, with over-cautious overstatement, that it "perhaps contains the key to the ultimate harmony we all seek."

*

This introduction, written by an admirer of Mr. Kump, who also happens to be his public relations officer, is not to be skipped. Its opening paragraph shows very clearly the problem that is dealt with in the book. "Ever-active Man," it says, "spends his life on earth moving stuff from here to there, combining this with that and piling it up in different forms to suit different purposes. Much of the resulting construction seems to be aimless when regarded as a whole."

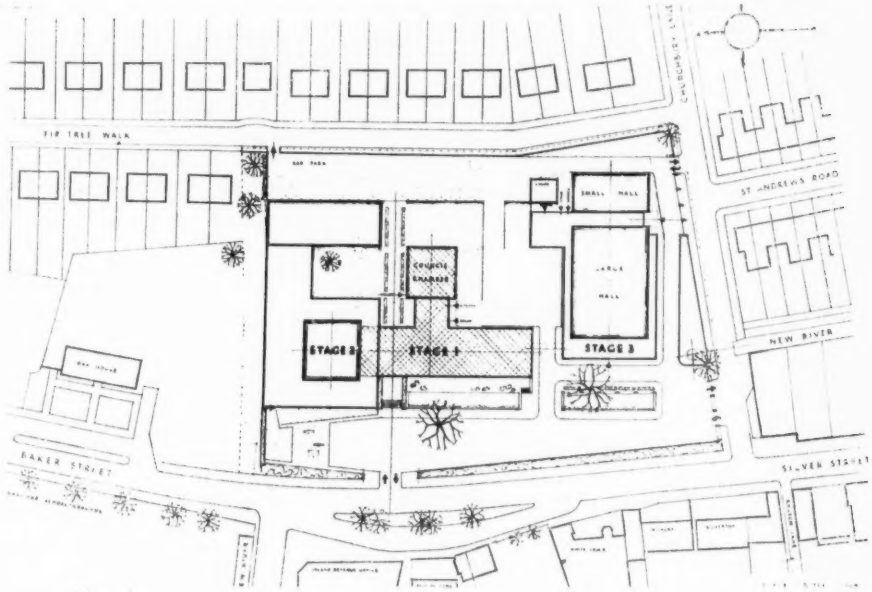
*

That, you will agree, is a pretty good definition of Life Today, and you may wonder why the writer is not in business as an Angry Young Man. If you read on, however, you will find that his association with Mr. Kump has given him a more starry-eyed view of the world. As he recalls his Master's adventures in space, he admits—with slightly reluctant optimism—that "there is now hope for the day after tomorrow." Ernest J. Kump, as you must surely know, is an architect, and his 25-year quest began with the object of discovering the "true nature"



Ahead In A Number of Matters

This is the winning design, by Eric G. Broughton, in Enfield Borough Council's competition for a Civic Centre. Mr. Broughton. who won £1,000, has placed a two storey block containing the mayor's parlour, the council chamber and the town clerk's office in the centre. On one side is a tower block of offices and on the other side is a building containing two public assembly halls. It is the Council's intention to put up this group of buildings in three stages, starting with the council chamber, etc., and ending with the assembly halls. The assessor was S. Rowland Pierce. His report on the three winners (chosen from 108 entries submitted) is published in full on page 876—all six sentences of it! Is it really fair to any of the competitors in a competition that such a superficial report should be made? Cannot the RIBA persuade assessors to prepare reasoned analyses? The designers placed second and third in this particular competition might like to know more about the way their designs "fall behind that placed first in a number of matters." And they might also like to know exactly *how* the winning design "is well related to . . . the central area of Enfield," which is just about the least flattering thing anyone could hope to say about a building. More details are given on page 876.



Site plan

of his subject. It was only by chance that he found himself exploring space and devising a way of using it in everyday life. It seems that his first lucky break came when he realized that "Man is by nature endowed with the powers to Feel, Think, and Act." You might suppose that after a discovery like that a man would be content to sit back and relax. But for Mr. Kump this was merely the beginning. As the years passed "a second realization" came to his mind. "Man," he observed, "cannot escape from the space in which he finds himself—not even for so much as a fleeting instant. It is in space," says Mr. Kump, with a pretty turn of phrase, "that Man lives, moves and has his being." Now this, of course, was a tremendous moment in the life of Ernest J., and he records it vividly by using a metaphor which will be understood only by those who know something of the more obscure ball games of the canyon country. "This," he writes, "was the first plateau in my attempt to attain my ultimate goal."

*

There then followed a number of years in which Mr. Kump made little progress. But one day something rather wonderful happened. At the end of chapter 3 he tells of a process of reasoning which must have seemed, at the time, like a blinding revelation. "The major question remained as to the true nature of a Vocabulary for Architecture. From my experience I was satisfied that it was not physical or structural parts. *It must be something else.*"

*

Anyone who has done research work will know that once you get over a hurdle of that kind, the rest is easy. Within a page or so, Mr. Kump was able to write, "I then naturally deduced that, if Architecture concerns itself with the spaces of Man, the natural unit or cell of Architecture is a unit of space." So much for mere theorizing. Mr. Kump is also a practical man. He realized that in order to make proper use of space, he must have more than one space unit to work on. In his own carefully-chosen words, he must have "at least several." And in the last and most revealing pages of his book he explains that these units of space must vary in size, colour, texture, pattern and so on. Finally, with that care for detail which is only to be expected from someone who is rounding off a life's work, Mr. Kump makes what is, perhaps, the most important point of all. "Each space must be related structurally to all other space units."

*

The significance of all this must not be allowed to escape use. While the Russians are messing about, trying to get information about space, the Americans have given us a way of using it for the good of society. Are we going to miss this opportunity? If we do, we are doomed to a lifetime of moving stuff aimlessly from here to there and combining this carelessly with that—not to mention piling it all up in a meaningless sort of way. And that, as the man said before he went to Siberia, should not happen to a dog.

KENNETH J. ROBINSON.

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

The Editors

STOP, STOP, STOP!

FROM every quarter, but one, voices are being raised to draw attention to the malaise from which post-war town and country planning is suffering, to underline the inadequacies of the present planning legislation and machinery, and to urge bold new measures equal to the gravity of the situation. L. W. Lane, the senior planning officer of the LCC, has given the most serious warning that unless the planning of Central London is tackled comprehensively the West End may soon become like the City, a vast accumulation of offices abandoned by the residents. J. P. Macey, the Birmingham Housing Officer, has shown how the slum clearance campaign, which is supposed to be the major effort of the government in this field, is being hampered by the archaic procedure for acquisition which entails a fantastic administrative waste and inordinate delays. At the TCPA conference on postwar planning there seemed to be overwhelming support from local authority representatives for the views put forward by Peter Self, who considered that if nothing further was done to enable the authorities to tackle the problems of overspill and central area redevelopment a real disaster, such as the engulfing of the green belts, could not be excluded. Arthur Ling made a convincing case for a new Town and Country Planning Act. The only discordant notes are being struck in Whitehall. Henry Brooke conceived that the major problem on which he should address the TCPA conference was the danger of planning authorities being ultra-perfectionist or attempting the impossible. In fact, for a variety of reasons, the post-war impetus has spent itself. Uncontrolled forces, such as speculative house-building and the construction of offices on an immense scale, have been let loose; planning authorities, hampered by government restrictions, inadequate machinery and lack of finance, have been attempting far too little. While the conference was emphasizing the need for more new towns, the government was announcing its intention to build no more, thus virtually abdicating from its responsibility for a national solution of the overspill problem. Its financial policy will still further restrict initiative. The time has come for the government to review the machinery set up in 1947, to remedy the shortcomings revealed by experience and to take the lead in a bold attack on problems that we shall neglect at our peril. The councillor at the TCPA conference who

Site plan

of Enfield," which is just about the least flattering thing anyone could hope to say about a building. More details are given on page 876.

complained that the government did nothing but say "stop, stop, stop," may have been guilty of a pardonable exaggeration. But those concerned for planning Britain well are looking to Westminster for leadership, not for sermons on the dangers of perfectionism.

MILFORD HAVEN

A particularly vivid illustration of the economic waste resulting from lack of national planning and neglect of the road system is to be found in *The Times Review of Industry*. It points out that the roads connecting the Midlands to Milford Haven are inadequate to take more than the present limited traffic; this, in turn, may prevent exporters and importers from using the new docks which the Milford Dock Company is proposing to build there. *The Times* expresses the hope that the road authorities are considering all the implications of the new developments in West Wales: it is a fair bet, however, that consideration is unlikely to be backed up by money and action.

*

The Milford Haven developments bid fair to fulfil the most gloomy prophecies made by this JOURNAL in its review of Milford Haven in September. The *Manchester Guardian* and Peter Self have both made the same proposal as we did, that a body on the lines of a New Town Development Corporation should be set up for Milford Haven. But the Government's decision to build no more new towns, and the approval of the Esso refinery project by the MOHLG without any parallel action on the planning front, both suggest that piecemeal and largely unplanned developments are to be allowed to take their course, inevitably with wasteful and disastrous results.

CAMBRIDGE WASHES WHITER

The Senate House at Cambridge, fresh from a homely clean with soap, water, beeswax and turpentine now looks by day almost exactly as in the Ackermann print of 1815. The plasterwork was then buff, possibly from candle smoke. Now the shells and scrolls on the walls have the added elegance of white on grey. As in the print, no lighting fittings are visible. Fluorescent tubes are cunningly concealed behind hinged panels in the sloping window sills. The indirect lighting, using the whole plaster surface as reflector, is a grand architectural conception, but it takes the building unawares. Instead of the gleam of polished oak and chequered marble that has been the evening aspect of the Senate House for two and a quarter centuries, it is now the ceiling that claims attention. In the gentle light of the past it did very well; the full glare of the fluorescent reveals it as being of painstaking mediocrity, unequal to the felicitous detailing below.

*

Indirect lighting always seems dim by comparison with the brilliance of the reflecting surface. This fault is usually corrected nowadays by the provision of accents of direct light. It is ironical that Sir Albert Richardson has allowed the potentialities of modern lighting to outweigh his love of period detailing. For what this building surely needs is chandeliers.

PEVSNER PELICAN

Professor Pevsner's irreplaceable *Outline of European Architecture* has now achieved its fifth Pelican edition, revised, enlarged and more fact-packed than ever,* a little harder to read *in toto*, as a consequence, but still containing those excellent assessments of Mannerist and Baroque buildings, in particular, that have done so much to open English eyes that were closed by Ruskinian and Geoffrey-Scottish prejudice. It still remains, in any case, quite the best pocket history of practically anything that has ever been published in English—and is now to be published also in German and Spanish, one hears—and the bibliography would be an education in itself, if only one could get at all the books that are mentioned in it.

*

There is, however, one oddity about the present edition that is bound to strike any attentive reader, particularly if he knows his Roman monuments at first hand: Plate 1b, captioned "Basilica of Maxentius," and the supplementary plate 7a, a Piranesi engraving captioned "Ruins of the Golden House of Nero," appears to be the same building, in spite of the difference in name. One presumes the mistake is Piranesi's—in which case a *sic* or some quotation marks would have helped—and not the Professor's, but it would be interesting to hear his comments on the subject.

FROM WARSAW'S POLY.

Professor J. Hryniewiecki, who has been in this country with the Polish Parliamentary Delegation, has some interesting things to say about the changes taking place in architecture in his country. He is editor of a new architectural journal, *Project*, and professor of architecture at Warsaw Polytechnic as well as being an "independent" M.P. During the pre-Gomulka years he was specializing in industrial architecture, the only branch of the profession, he said, that "saved its face" during the domination of Stalinist wedding-cake architectural conceptions.

*

It is, of course, early to look for a dramatic change in Polish architecture as a result of the political changes of last year, but the professor has no doubt they are coming—although, he adds wrily, "we are still busy finishing the buildings we dislike." Now Polish architects are looking to the Soviet Union only for ideas on building construction: æsthetically their eyes are turned to Western Europe, a term that includes Finland, the country whose architecture has the greatest appeal for Professor Hryniewiecki. Prefabrication

* Also more expensive, 6s.

is being rapidly developed, although with much lighter units than in the Soviet Union, and in education the trend is towards educating the architect to be an engineer as well. From what he said there seems to be grounds for hoping that in two or three years there may be some really interesting work to be seen.

PICASSO HE SAY . . .

A smart business-man—an English one, at that—has recently had the brainwave of using Picasso as a copy-writer for his advertising—or rather, has been handing out a statement by Picasso, *Art Means Business*, instead of the usual advertising circulars. Some of this statement appeared in an advertisement in that paper that Top People read, so you saw it, of course, but in case you were feeling a bit below summit that morning, here are a few selected Picassisms that you may like to throw at your local authority the next time it refuses to sanction the art works you have carefully designed into a new school or abattoir: — The only difference between the machine of tomorrow and the academic painter of today is that today's robot is made of flesh and blood. Or is he?—Why this passion for beauty? Is life beautiful? Reader, are you beautiful? . . . Can you look me in the eye and say that there are no vitamins in refuse—If you want a picture of yourself as " God made you " get Him to paint it, not Picasso—Abstract art is for the birds. Abstract art is phoney—When an artist is modest it is because he has plenty to be modest about—Those who say " Why do hard-headed people buy art? " should ask themselves " Why do I ask this question? Is it because I am soft-headed? "

*

Thought you would like that last one —though you might find it more effective if you attributed it to Bernard Shaw, or the Duke of Wellington, or Spike Milligan.

ROUND THE HOUSES

Next time your local parent-teacher association is looking for something extra-curricular to organize, get it to lay on a tour of the ten best modern houses in the district. Yes, alas, how right you are!—it does indeed depend on what you mean by *modern*, even more than it depends on what you mean by *best*. But suppose you lived in New Canaan, Connecticut. . . .

To raise funds for a new nursery school there, local ladies laid on a tour of modern houses in the parish, and you can see from the pictures on this page what modern means in New Canaan. At least four of these houses —the Breuer and the three by Johnson —are of international repute, and two are nearly so—the Johansen and the Noyes. One wonders if there can be any other area of comparable size (about five square miles) that contains so much that is so good, and one begins to see that New Canaan deserves the occasional epithet of *The Vicenza of the New World*.

ANGRY OLD MAN

If you were a wealthy lawyer would you buy a dilapidated cathedral for the pleasure of being able to restore it according to your fancy, and conduct a campaign of vilification against anyone who disapproved of your activities? Probably not; nor would most of us. But that needn't prevent us from appreciating what a wonderful opportunity this would offer for the exercise of the sense of power.

*

And that is always an enjoyable thing; anyway Lord Grimthorpe, of whom a fascinating biography* has just appeared, enjoyed it immensely. The accounts of the manœuvres by means of which he acquired control of St. Albans, of his running battle with the SPAP, of his life-long persecution of G. E. Street, all depict him as a vigorous, if not at all likeable, character; also as one of the most quarrelsome men imaginable. And he had the even more maddening quality of always being right.

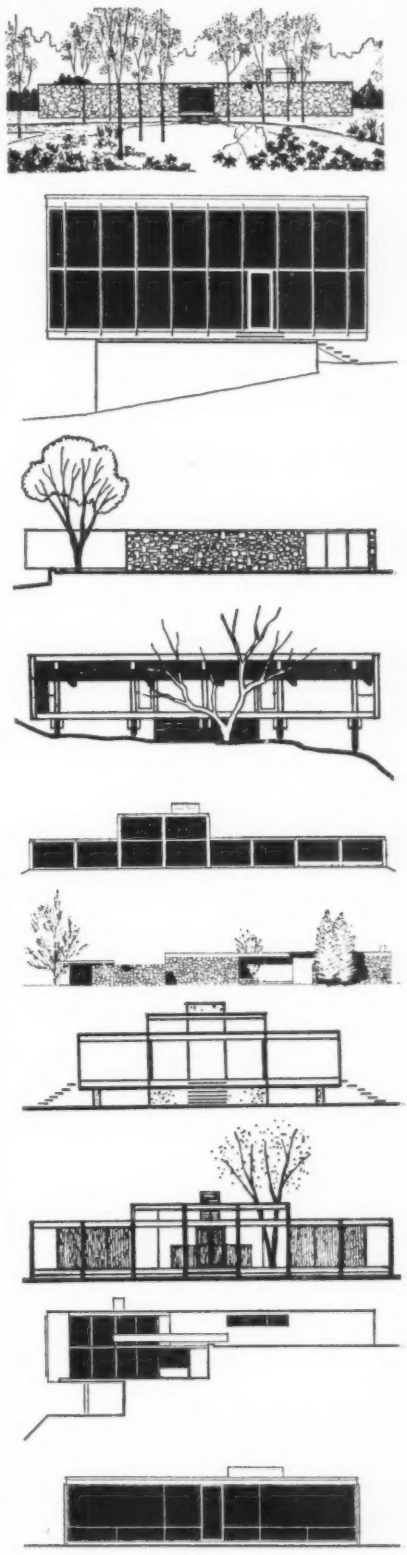
*

Except in what he did to St. Albans, which I don't think any change of fashion is likely to bring back into favour. But in his other and less well-known battles over Big Ben (which he designed) and the clock that goes with it (which he designed, too) he came out right on top—even if Big Ben did crack at the most awkward possible moment —and showed his opponents no mercy.

*

He also despised architects, so I recommend Mr. Ferriday's book as salutary week-end reading.

ASTRAGAL



The designers of these houses (top to bottom) are: Eliot Noyes, Philip Johnson, Roy Binkley, John Black Lee, Philip Johnson, Marcel Breuer, John MacL. Johansen, John Black Lee, Willis N. Mills and Philip Johnson. See " Round the Houses ".

LETTERS

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David H. A. Nall
H. H. Ballin, Director and Technical Sales Manager, Atlas Lighting Ltd.
B. A. Gilonis, A.R.I.B.A.
Stefan Buzas, A.R.I.B.A.
E. W. Wignall
Morton Wright, A.R.I.B.A.

Touché: Or Is It?

SIR,—My attention has been drawn to your frontispiece in the JOURNAL for November 21. I am pleased to be able to inform you that *Architecture d' Aujourd'hui* has had a correspondent in this country for 23 years* (with a short interruption due to unforeseen circumstances, between 1940 and 1945, when the paper did not appear). During this period, architectural happenings in this country were fairly reported and, in fact, a special number on architecture in Great Britain, was published in February, 1952.

With regard to the special number on young architects throughout the world, it was not necessary to report specially on young British architects as *Architecture d'Aujourd'hui* has repeatedly published the work of young architects when and if they have produced anything worth showing, while in other countries, where the *Architecture d'Aujourd'hui* did not have correspondents, a special effort was made to bring matters up to date.

May I take this opportunity to draw your attention to the fact that it is astounding that a paper of your standing should report so rarely and sketchily on French architecture. No place at all is given to the latest and most interesting buildings erected in France by old and young architects, but no doubt you will come round to report on these, as you have done in the past, when they have become classics.

May I further put your mind at ease by saying that *Architecture d'Aujourd'hui* is ignorant of any quarrel which the young English architects may have had with the Groupe Espace, but if this were so, it would, of course, not have any effect on the publication of buildings by such persons, as many buildings are published in *Architecture d'Aujourd'hui* which have no connection with the doctrines of the Groupe Espace.

ERNO GOLDFINGER.

London.

*Mr. Goldfinger

A Pique At Modern Architecture

SIR,—This is directed to the writer of the piece "Blinkers in the Rue Bartholdi" appearing in the JOURNAL of November 21.

Surely the high standard of the JOURNAL is not maintained by such criticism of a renowned and most stimulating magazine of the standard of "Architecture d'Aujourd'hui." This is a journal of distinction and discrimination, and if no sample of work from Great Britain was shown, we may assume that there was good reason for such omission.

May we take this as a challenge? Let us see fully illustrated, a series of comparable examples of British work of equal standard of theme illustrated on the page referred to. The author has suggested that British architectural students are capable of similar work. Fine—let us see their examples! Let us see a conception like that of the Frenchman, Alain Bourbonnais.

One would be most unhappy to hear the word "Pique" whispered in the foyer at Queen Anne's Gate!

DAVID H. A. NALL.

London.

The Lumen Predicament

SIR,—I have noted with interest the JOURNAL'S Library of Information Sheets 644, 34.B3, "Artificial Lighting Calculations: The Lumen Method: 3" in your issue of October 31, 1957, but would point out that the information given regarding the efficiency of fluorescent lamps is incorrect, as the values are very much below those of present-day tubes.

H. H. BALLIN.

London.

The Specialist Editor (15) on Lighting, writes:

There are problems in giving nominal lumen outputs of fluorescent lamps which are suitable for the calculation of lighting installations. None is given in the relevant Standard, B.S. 1853:1956. At the same time there is variation from manufacturer to manufacturer in the claims made for their products, based on a continual process of technical improvement. The figures actually given in the table of the information sheet are the minimum stipulated by B.S. 1853 at 2,000 hours, individual lamps being required to give not less than 93 per cent of these lumen outputs. They are perhaps on the conservative side, but doubtless Mr. Ballin has noticed that a note was given with the table, indicating that whilst they were suitable for preliminary calculations, manufacturers should be consulted if precise data are required.

Technical improvements in fluorescent lamps made by such firms as Mr. Ballin's are, of course, to be welcomed, and indeed in recent years lumen output per watt has become a highly competitive issue. I would like to take this chance to make two points to Mr. Ballin relevant to this matter. Firstly, it would be helpful if manufacturers would publish, together with the lamp data, a description of how the tests on which they are based have been carried out, by whom, how these figures may be expected to relate to any actual installation, and what guarantees are offered if lamps fail to comply with the data. At the same time I think that most architects are as much, if not more, concerned with fluorescent lamps to see improvements in colour rendering and colour appearance, as to see more efficient lamps appear on the market, these factors seeming sometimes to take rather a back seat in the race for more lumens. I hope, however, that Mr. Ballin will not misconstrue my remarks by thinking that I am attempting to single out his firm for criticism; on the contrary, I would say that it is outstanding in its response to architectural requirements.

Education For Builders

SIR,—I was pleased to see Mr. Clark's letter clarifying the difference between Higher National Diploma and Higher National Certificate. (AJ November 21.)

As one who completed (with a certain amount of difficulty) the full time HND course and subsequently took RIBA finals, externally, I would say that the comparable papers of HND final examination were of a higher standard than those of RIBA finals Part II.

Despite this, HND alone is given little recognition by employers in the building industry and allied professions, and the holder cannot expect to be given a position of responsibility with adequate recommendation until he has gained additional qualifications from bodies such as the IOB, RICS, RIBA, Inst.Struct.E., etc.

This is not an unfounded statement. I have noted with some interest, the careers of my fellow HND students, who are now, almost without exception members of one of the above institutes. It is interesting to note that although HND is sponsored by the RIBA, RICS, Institute of Civil Engineers, and Institute of Structural Engineers, only the last named gives exemption from any part of its examinations to holders of the HND.

B. A. GILONIS.

London.

A Distorted View

SIR.—Not wishing to enter the particular argument regarding the good or bad aspects of "curtain walling" and stone facing—an argument completely missing the point that truthful, strong architecture does not begin or end here—I should like to take up one point in Sir Howard Robertson's letter to you on November 14.

In point (8) Sir Howard mentions No. 450 Park Avenue, New York. If I am not mistaken, I have amongst my slides a photograph of the very building which I remember taking with special delight, as I was not only interested in the distorted reflections, as a curious optical play, but found that—perhaps unintentionally—the vitreous skin of this otherwise not too distinguished design, with its reflections and distortions, does create a new and important point of considerable value in the street architecture of a town like Manhattan. I can see nothing "wrong" with distortion and any effect that enriches is one that the designer should not only recognize but exploit. How lucky we are to have such a material as glass and let us use it, by and with all means, where it creates rich effects.

STEFAN BUZAS.

London.

Hot Water

SIR,—The gas water heating supplement to your issue of September 26 raises once again the question of the standard of domestic hot water supply. It quotes the Egerton Report as recommending that for small houses of two adults and two children provision should be made for *a maximum of* 250 gallons of hot water a week; the words in italics do not appear in the Egerton Report.

The supplement later says that "the experience of the gas and electricity authorities now indicates that 150 gallons per week at 140° F. is a realistic average when the flexibility of gas and electrical water heating appliances is possible." As I suggested in my letter in your issue of April 18, 1957, surely the only reason why much more hot water is used by those who heat it by solid fuel than those who use gas or electricity is that solid fuel provides a plentiful supply much more cheaply. I cannot understand how flexibility of supply can reduce domestic hot water needs, though I can easily see that less hot water will be used if it is less plentifully available. In fact the supplement really gives this away when it says in a later paragraph that "when you know that there is more hot water waiting in the storage cylinder you will tend to use it."

The supplement rightly suggests that allowance should be made for possible expansion of hot water consumption above 350 gallons a week, but at this level solid fuel is much more than "slightly cheaper" than gas. To provide 350 gallons from an open-type boiler using coke at 10s. a cwt. would cost about 8s., as compared with a cost of about 12s. 10d. when using gas at, say, 1s. 10d. per therm or about 13s. 5d. when using electricity at 1·25d. per unit. A closed-type boiler using coke at 10s. could provide 450 gallons for about 7s. 3d.

If the householder wants only a limited amount of hot water, or if low running cost is not an important consideration, there is no reason why gas (or electric) water heating, with its undoubted convenience, should not be specified. If, however, an ample and inexpensive supply of hot water is wanted,

provision for this should be made from the start. Comparisons of relative running costs based on the 150 gallons a week standard of the gas and electricity authorities cannot be applied when 250, 350, or more, gallons a week are required. Although costs on gas and electricity rise in direct proportion to the hot water consumed, solid fuel can supply increased amounts of hot water with relatively little additional fuel consumption and cost.

E. W. WIGNALL.

London.

No Advertising

SIR,—The question raised by Alan Daventry (November 28) of good design at a reasonable price, has occupied a position in the forefront of many architects' minds.

As one of those who has, "done something about it," and produced a design which I consider would solve not only the economic, but the aesthetic problems involved, may I remind Mr. Daventry that the solution is in the hands not only of the architect but also of the manufacturers concerned. If they were as willing, as Mr. Daventry seems to be, to accept new design concepts and to give them the publicity necessary to reach the, "fortunate Jameses," then perhaps we would see a new era in the, "Boom in Boxes."

I would also like to make it quite clear that architects are forbidden to indulge in the subtle art of advertising.

E. MORTON WRIGHT.

Kent.

CRITICISM: Last week we published A. G. Sheppard Fidler's reply to a criticism of his design for a teachers' training college at Birmingham, which J. M. Richards wrote in the JOURNAL for November 21: Here is a comment by C. G. Stillman, F.R.I.B.A. County Architect Middlesex.

SIR,—I have enjoyed reading J. M. Richards' criticism of the college and I have found it refreshingly interesting and informative.

Not having seen the site I cannot comment upon the suitability of quadrangular planning in this case.

I think Mr. Fidler can be congratulated on receiving so favourable a report especially as we are told there were a number of changes in the staff concerned with the development of the scheme, and this alone can be a serious handicap.

Clearly it is the hostel block which claims Mr. Richards' principal attention and here he is, I think, rightly concerned with the question of the size of study bedrooms. We should welcome his observations since the Ministry of Education seem to have very undecided views on this subject.

I should like to quote the case of the Maria Grey Training College in Middlesex where the Ministry particularly ask for study bedrooms of 160 sq. ft. The total schedule of accommodation for 96 students worked out at 290 sq. ft. per student giving 130 sq. ft. per student for other purposes, corridors, staircases, Common room, lavatories, etc.

More recently the Ministry's schedule for a similar hostel for 88 students allows a total of only 200 sq. ft. per student and study bedrooms of 120 sq. ft. The remaining space for all ancillary accommodation is at the rate of 80 sq. ft. The estimated saving on the difference between 120 sq. ft. and quoted minimum of 140 sq. ft. is approximately £5,500 or 10 per cent.

TPI

London's Planning Problems

A Correspondent writes:

The urgent need for a truly comprehensive development in central London was the theme of a speech on "The Planning Problems of Central London" by L. W. Lane, the LCC's chief planning officer, at the TPI last week. He gave the most serious warning that what had already happened to the City was already happening to the West End, which in its turn would become one dreary sea of office blocks if the process continued. The population of the central area had declined from 425,000 in 1911 to 213,000 in 1956. The rate of decline was twice that of the rest of the county, it was sharp and alarming. Central London was well on the way to being a commuters' hell by day and a ghost city by night. "On present trends," said Mr. Lane, "there is a real possibility of the whole complicated process grinding to a standstill, followed by a seed-pod explosion which would deposit central area uses indiscriminately all over the region. The two most urgent problems are those of increasing employment in offices, and ways and means of solving traffic congestion.

"The proportion of persons employed in London is twice that of the national average. 70 per cent. of the total office workers in the County are concentrated in Central London. The offices must go somewhere, but there is surely no need for them all to be piled up within 8 square miles. The other functions essential to the Metropolis need a degree of protection against this all-consuming flood. The conception of floor space index relates the bulk of building to total employment and ushers in a new building form for offices and similar building, but it does not cope with the qualitative aspect of planning.

"We need to go further and think of emphasizing the dominant character and function of the different parts of the area and of variety of use to give liveliness and gaiety to our city buildings.

"Variety and liveliness can be achieved in many ways. It is astonishing how little many of our City buildings are used considering the intense pressure on the available space. So many uses could be dovetailed together, the more profitable subsidizing the less remunerative. Car parks by themselves may be uneconomic but could be combined with other uses. A hotel could be put over a departmental store. A students' hostel could be used for tourists out of term time. Modern techniques of construction and the new building forms which are emerging open up exciting possibilities of enriching city life both visually and functionally."

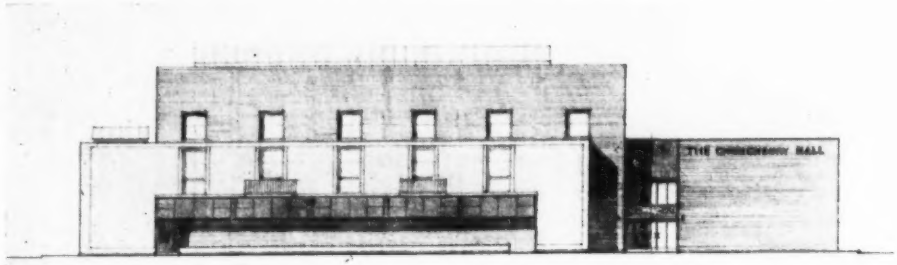
To solve the traffic problem Mr. Lane rejected either the banning of cars from the central area or ruthlessly replanning it for the motor vehicle by laying down a system of urban highways. The remedy lay rather in stepping up and co-ordinating the effort of a number of agencies in their attacks on the problem. We should curb the growth of the commuting army, exploit the staggering of working hours, and invest in tube railways, which might not be a paying proposition but would be worth while as a contribution to the total picture. The provision of multi-storey car parks was falling between the stools of public and private enterprise: the state should prime the pump, and for a comparatively small expenditure would release road space equal to many Kingsways. The key to pedestrian movement was the principle of segregation, either by the creation of a traffic-free precinct, or, at places like Piccadilly Circus and Charing Cross, by separating wheeled and pedestrian traffic on different levels. But Central London, unlike the East End, was not a major field of activity for local authority development, and to assemble all the interests in a single block on to one ownership for redevelopment was a task to be measured in years. Despite the difficulties, the redevelopment of city blocks as a whole was becoming the order of the day, for the financial rewards were glittering. The kernel of the problem was the fusing of the dynamic powers of redevelopment with a heritage of unique beauty, whilst giving free play to 20th century ideas and reaching 20th century solutions.

"It brings up the whole question of the planner and architect relationship and it seems to me that they have different but complementary rôles," said Mr. Lane. The planner is related to the whole entity. His thought is compound, ranging through the kind of complexities which I have tried to outline in this paper—international, national, regional and local environmental considerations which he brings to bear upon the particular. His contribution to any particular site is, therefore, conceived creatively in terms of character, use, planning standards, all expressed in design terms. The architect is appointed by his client developer for the particular project. His primary object is to fulfil his client's purpose. His starting point is a schedule of accommodation, for which he has to find expression on a given site. His preoccupations are to weld these requirements into coherent design. Today more than ever the greatest volume of his knowledge must be devoted to modern techniques, materials, costs and contracts. It is successful collaboration from these two approaches which can produce the finest result.

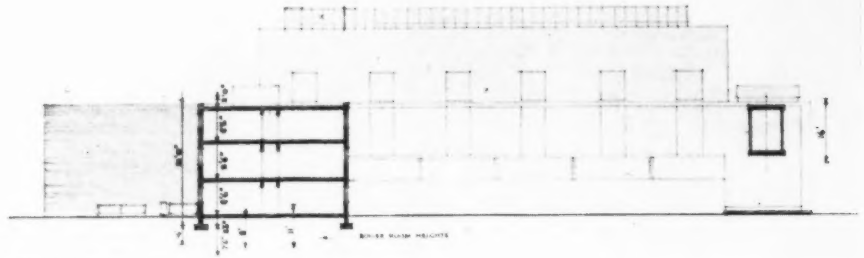
"Looking at Central London it seems to me that in terms of design there are three main considerations. There is the method of comprehensive development of islands throughout the area such as the precincts of St. Paul's. There is infilling rebuilding where the pattern of building round about is sufficiently set and solid to preclude thought of immediate widespread redevelopment for many years to come. And lastly there are buildings and districts to be preserved. The comprehensive technique is, broadly speaking, a post-war innovation and so far it has arisen mainly as a consequence of war damage. It is now arising from two other causes. Firstly, the necessity for carrying out complex schemes of urban traffic improvements, which to be truly successful necessitate the redevelopment of their immediate surroundings. Secondly, the tendency towards the larger unit of development of the city block. We have yet to see the complete and successful fruition of a truly comprehensive development in Central London. And yet it is along this path that the greatest contribution to the city centre can be made in the second half of the 20th century."

WINNING DESIGN IN THE ENFIELD CIVIC CENTRE COMPETITION

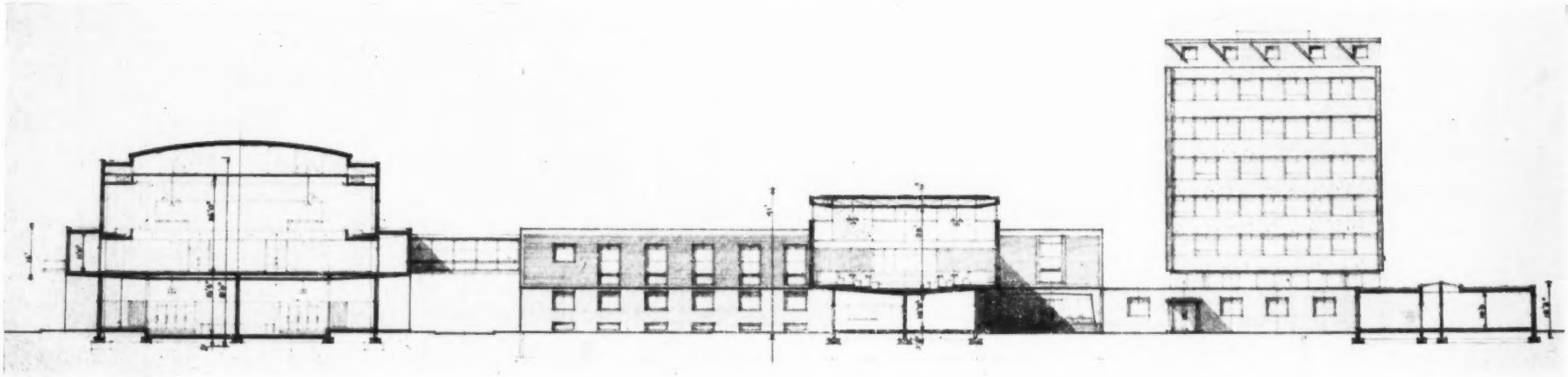
Eric Broughton, A.R.I.B.A., of Ealing, won the first prize of £1,000 in Enfield Borough Council's competition for a civic centre. A sketch of the main elevation is reproduced on page 870 (together with comments on the report of the assessor, S. Rowland Pierce), and other details are shown in the following pages. We also show briefly, on pages 879 and 880, the second and third prizewinning designs by Clifford Culpin, F.R.I.B.A., and Associates (£750) and A. R. Osborne, A.R.I.B.A., (£500). The following is the assessor's report of the winning entries in full: " Mr. Broughton's entry is an imaginative and good answer to the problems set; the general architectural finish and massing are suitable, not only to the site but are well related to the existing town plan and the skyline of the central area of Enfield, to which the tower block will make an interesting and suitable contribution. The detail planning is sound, though some adjustments to the accommodation in the Tower Block may require second thoughts. Apart from certain minor criticisms of detail, the Town Hall Block is ingeniously planned and the interior arrangements have much imaginative dignity. There are minor errors in the cubing and estimate of cost, which do not, however, affect the totals materially (i.e., a plus of slightly over 1 per cent.). I am of the opinion that this design, with reasonable care, could be carried out for a sum within 10 per cent. of the estimated cost. The other two premiated designs, while of considerable interest and quality, fall behind that placed first in a number of matters." The assessor also wished " to place on record the good but varying merits of a number of other designs " and commended the following entries: (1) Eric Hardy, A.R.I.B.A., and Anthea Hardy, A.R.I.B.A., of High Wycombe; (2) Grenfell Baines & Hargreaves, A./A.R.I.B.A., of Preston; (3) F. Hamer Crossley, F.R.I.B.A., in collaboration with H. H. Powell, F.R.I.B.A., of Derby; (4) The Architectural Group (K. S. Mobsby, A.R.I.B.A., G. M. Jennings, A.R.I.B.A., and Associates), of London; (5) J. B. F. Cowper, F.R.I.B.A., K. M. Poole, A.R.I.B.A., of London; (6) E. G. Dodds, A.R.I.B.A., and J. P. Lomax, A.R.I.B.A., of London; (7) Donald R. Stewart, A.R.I.B.A., of London; (8) Shingler and Risdon (Alec Shingler, F.R.I.C.S., Frank Risdon, F.R.I.B.A., William Wakeling, A.R.I.B.A., of London; (9) Clifford Strange, L.R.I.B.A., of London.



South elevation

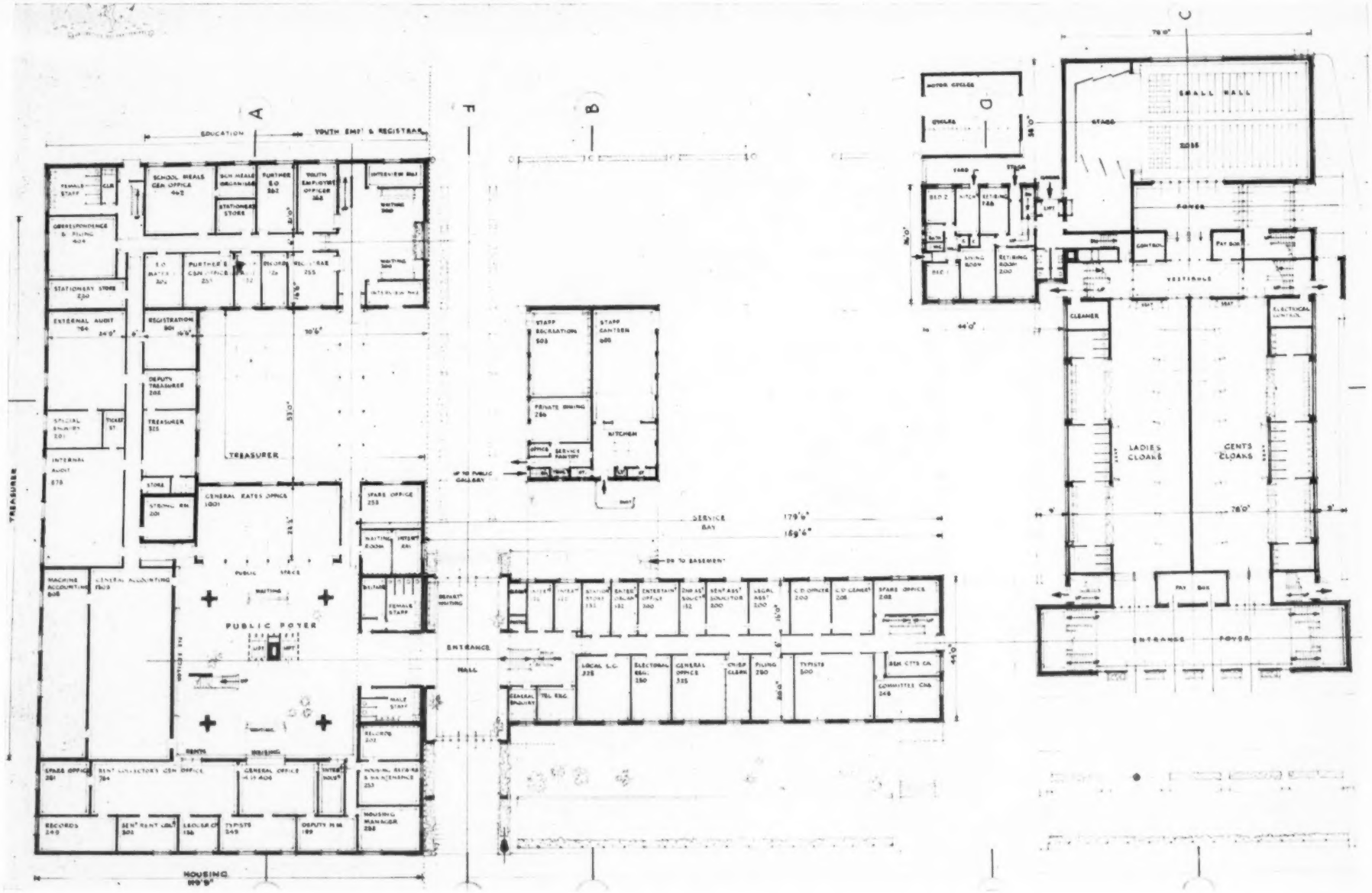


Section D-D



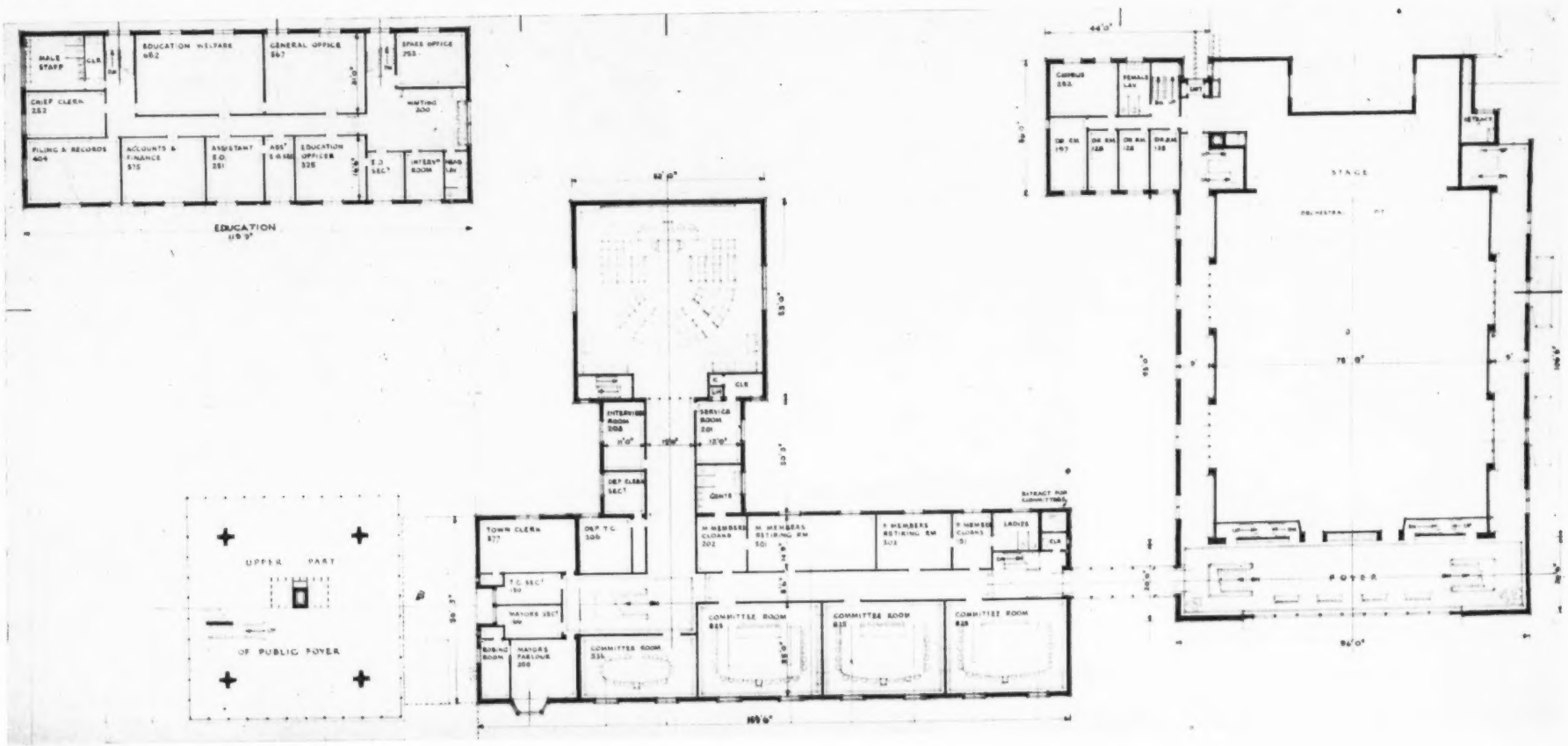
Longitudinal Section

Longitudinal Section

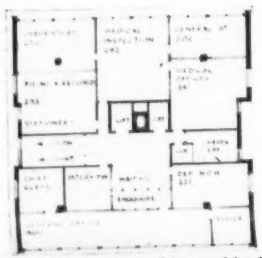


Ground floor plan

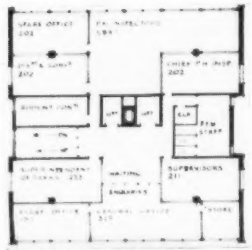
WINNING DESIGN IN THE ENFIELD CIVIC CENTRE COMPETITION: continued



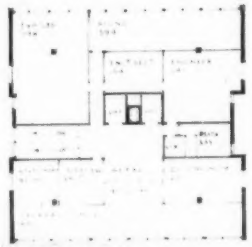
First floor plan



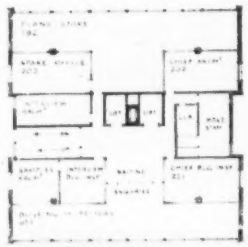
First floor plan of tower block



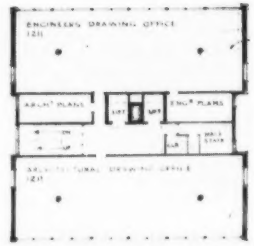
Second floor plan



Third floor plan



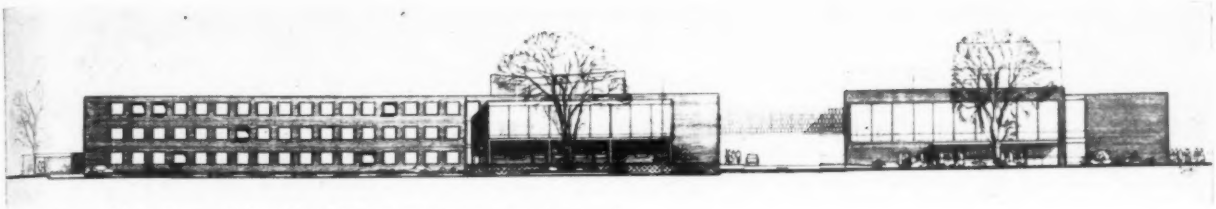
Fourth floor plan



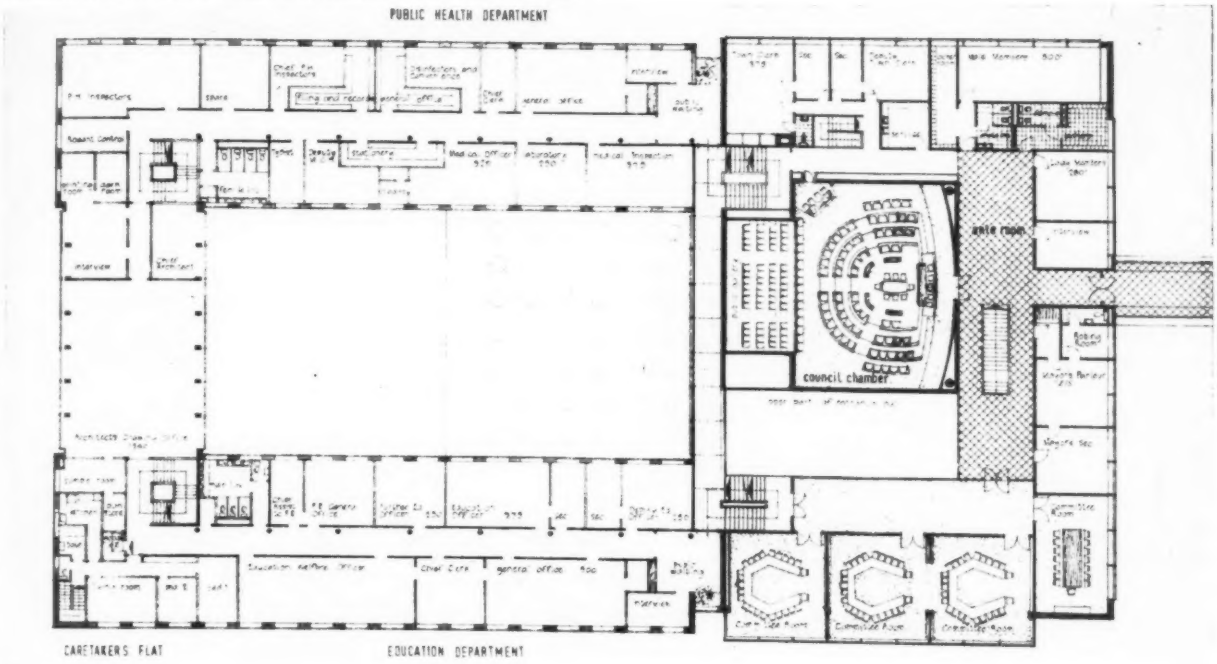
Fifth floor plan

Sixth floor plan

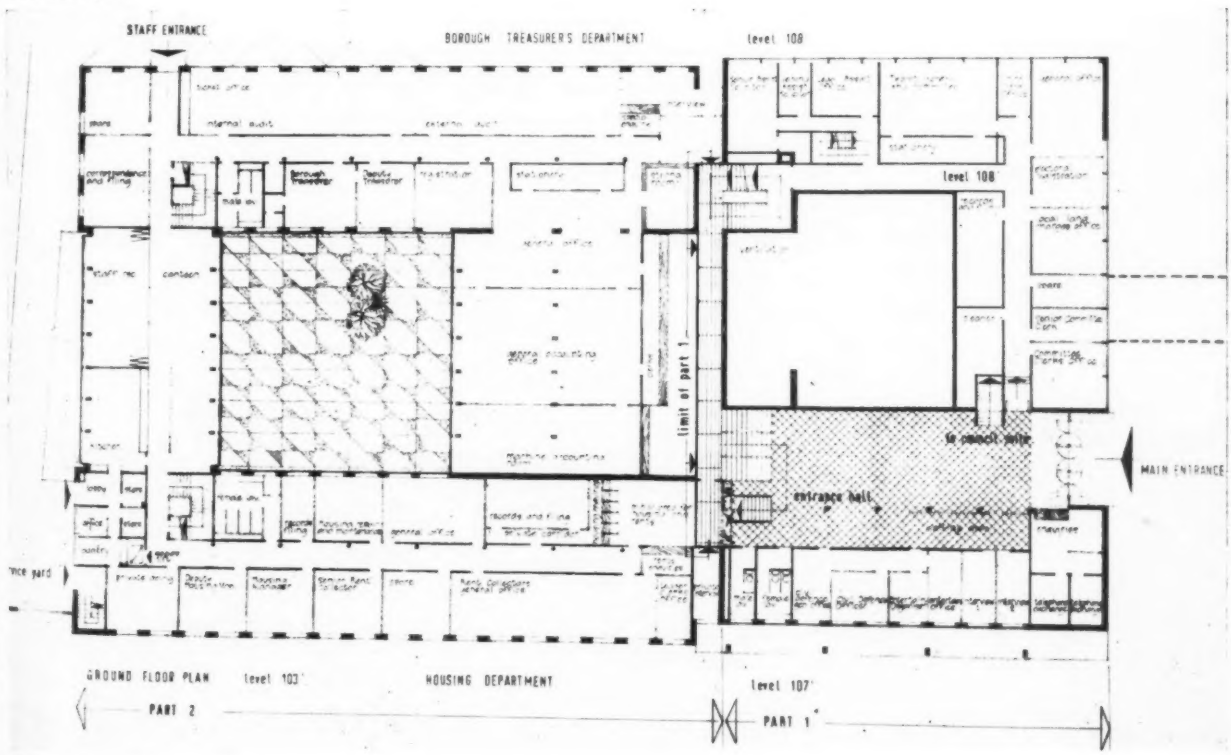
SECOND PRIZE-WINNING DESIGN FOR ENFIELD CIVIC CENTRE



Elevation to Silver Street, designed by Clifford Culpin and Associates



First floor plan



Ground floor plan

Sixth floor plan

Fifth floor plan

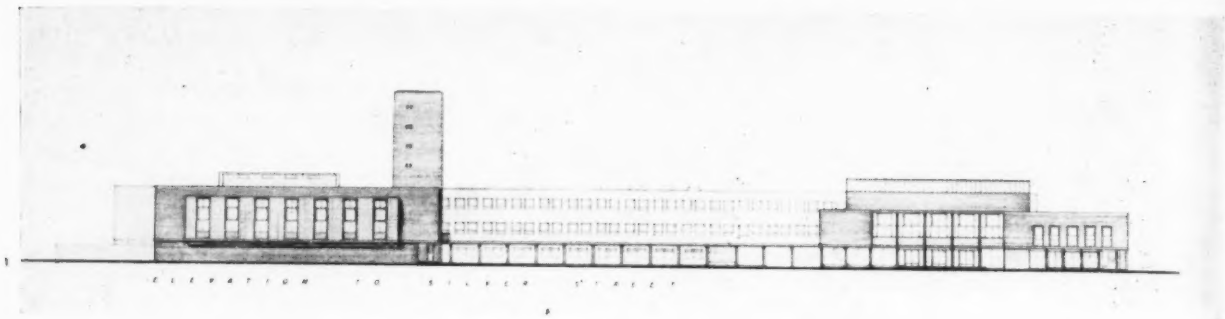
Fourth floor plan

Third floor plan

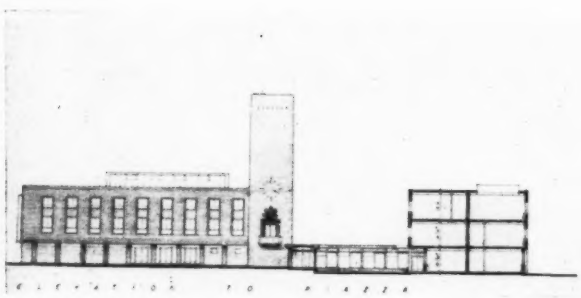
Second floor plan

First floor plan of tower block

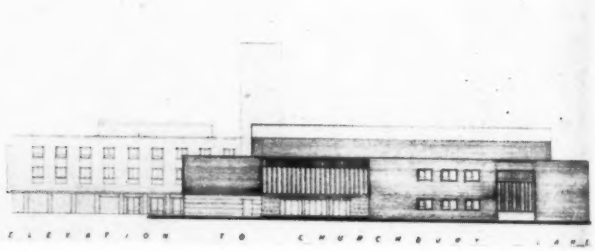
THIRD PRIZE-WINNING DESIGN FOR ENFIELD CIVIC CENTRE



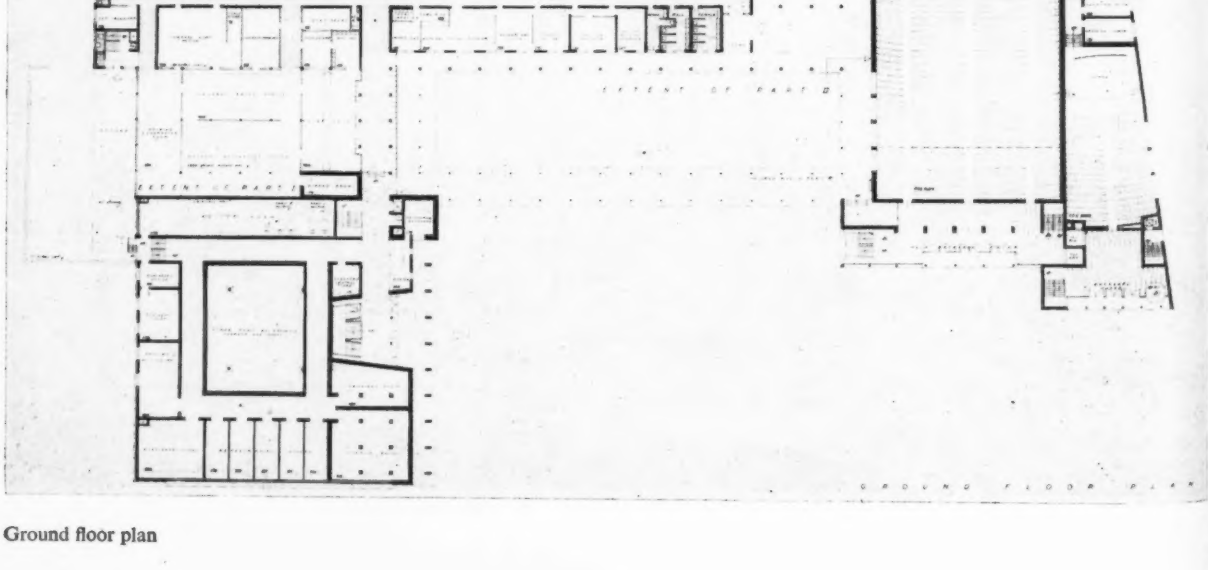
Elevation to Silver Street, designed by A. R. Osborne



Elevation to Piazza



Elevation to Churchbury Lane



Ground floor plan

TCPA

National Conference

Our Specialist Editor, Planning, contributes this report on the TCPA conference on Post-war Planning.

A correspondence writes:
The declared objective of the Town and Country Planning Association's National Conference this year was "to discuss the aims and achievements of post-war planning and try to point out the ways ahead"; a review of this kind is badly needed—many planners consider it to be long overdue.

The papers and the discussions however did no more than touch the fringe of the subject; a two-day conference could not be expected to get very far in such a complex and controversial field, but it did provide a very clear demonstration of some of the difficulties and limitations now imposed on planning and, on occasion, a hint of what might be done to overcome them.

In his opening address the Minister of Housing and Local Government emphasized one of the most serious of these difficulties—the outlook of the man in the street who knows very little about planning and understands almost nothing of its objectives. Mr. Brooke's approach to this problem was, to say the least, very cautious. He appeared to think that while it was possible to persuade the public to accept some rules of planning as a good thing, they would never agree to the forms of control demanded by "ultra-perfectionists". The price, in terms of money and restrictions on freedom of choice, was too high. Planners, he thought, must accept these limitations, develop a balanced judgment and use the planning machinery wisely, if the ordinary man is to be persuaded that the system is worth keeping in anything like its present form.

Peter Self, in his paper "Record and Prospect," adopted a much firmer line. He considered that while the positive achievements of planning over the past ten years may be no more than modest compared with our early expectations and the extensive powers available, they could too easily be underestimated. We had built some new towns and established green belts round major urban centres. New industries had been introduced into the development areas. We had made a start on decentralization and city redevelopment. In planned control of land use we had made a "modest beginning."

The worst effects of city sprawl and ribbon development had been avoided. But it must be recognized that all these efforts were no more than a start. A great deal more needed to be done before the British planning experiment can be counted a success. There were three main fields in which he suggested future action should be taken, in the conurbations themselves, in the central areas of our great cities and in the rural countryside. In each case the approach must be positive and constructive, not negative and restrictive. Our aim should be to decentralize the conurbations by setting up a series of new communities as counter-attractions to draw away industries, businesses, offices and so population from the pull of the big cities. This could only be done effectively on a regional basis, and some new agency acting on a regional scale was needed to co-ordinate and supplement the work of the local planning authorities. The experienced staff from the New Town Development Corporations could, he suggested, be used for this purpose.

In the cities themselves Mr. Self thought we needed to redevelop on a bold and comprehensive scale and try to include a mixture both of uses and densities of residential development in the redeveloped areas. In our approach to rural planning problems we could rely entirely on purely restrictive controls to regulate development, important as such controls undoubtedly were. Much more needed to be done by way of providing sufficient sites suitable for development. Here Mr. Self thought that public authorities could perform a useful function by acting as ground landlords, acquiring the freeholds and letting out plots in the countryside on long lease to private developers. So far as the existing planning machinery was concerned he thought it was most important that we should concentrate on the administration of a few key controls—of which the location of industry was the most essential—and avoid getting bogged down in a pettifogging series of highly localized controls. In this way overall control could be achieved with a minimum of public irritation and fuss.

Arthur Ling, who opened the discussion on this paper, compared our situation before the war to a car travelling very fast out of control; now the brakes were on, but we were still travelling in the wrong direction, and had to turn the car round and make it go in the right direction. We would not be going in the right direction in Mr. Ling's view until employment capacity in London and the big cities was going down. He favoured the planned location of industry, a ban on further office building in the big cities, and the siting of new towns farther away from the conurbations. He made a strong case for higher densities, not extravagantly high, but compact development. He blamed the building societies for the semi-detached approach, and denied that higher densities implied "continental" living: people were prepared to sacrifice a certain amount of space in order to enjoy the advantages of central living. He blamed the government for releasing the boom in spec.-built housing without first working out ways by which proper planning and design standards could be achieved, and he hoped that the 7 per cent. Bank Rate would give a breathing space in which this could be done. He concluded with a plea for a new Town and Country Planning Act to solve the problem of compensation and betterment: local authorities, not being allowed to buy land in advance of requirements, were having to buy back the increased values created by their own developments.

The second session was devoted to a highly controversial question—the delegation of planning powers to county districts and non-county boroughs. At the present time most county councils operate some kind of delegation system (a number of these were described during the discussion), but much wider planning powers are now being sought by second-tier authorities. This proposal was stoutly opposed by Sir Sydney Littlewood, a solicitor with wide experience of planning and local planning authorities of all kinds. His indictment was that the smaller authorities lacked the necessary experience, tended to show personal bias in their decisions, went in fear of their electors, and could not attract the qualified staff required. This attack provoked a sharp response from the members and clerks of the smaller authorities, but they were unable to dislodge Sir Sydney from his position.

The remaining sessions were devoted to a more detailed examination of two major factors in planning: dispersal of industry, and policy with regard to agricultural land. A. G. B. Owen, a leading industrialist and chairman of Staffordshire CC, showed himself to be a strong supporter of planned dispersal of industry from the conurbations. Here, he argued, was a field in which planners and industrialists could co-operate to their mutual advantage and described the progress that had been made in the West Midlands through the operation of an "industrial bureau," whose specific function was to assist the process of dispersal by finding sites suitable for industrial use within the framework of an overall plan.

Dr. Wibberley's paper was an admirable example of lucid thinking and scientific analysis applied in a field where objectivity is not always the rule. He was at pains to point out the absurd inadequacy of our basic information on land use changes in rural areas. This lack of factual information had produced a great deal of muddled thinking on the actual amount of land that had passed from rural to urban use. "Recorded" agricultural land had declined from 84 per cent. to 81 per cent. of the total area during the past 50 years, but his own investigations suggested that the actual loss of farmland had been almost twice as great. He maintained that we still had no coherent land-use policy for the areas likely to be affected by urbanization in future, nor did we apply any reliable tests to measure the real value of lands affected in this way or the consequences which might result from proposed changes of use. With some 30,000 acres of agricultural land being converted to urban uses each year, it was essential to think out a policy which would enable this loss to be made good in an economic way. Turning to the rural areas themselves, Dr. Wibberley felt that here again a positive planning policy was needed and pressed for more co-operation between county agricultural and planning committees.

To the professional planner, the outcome of the conference was rather disappointing. The Minister's comments seemed to hold out little prospect of firmer policies in the future and gave little encouragement to local planning authorities to think and act positively on the scale required. Mr. Self's account of record and prospect showed quite clearly that unless this is done we will have come no nearer to the solution of major planning problems in this country at the end of the next 10 years. This would be a serious blow to planning and the final outcome might be the writing off of the British experiment as a failure. There is no reason to suppose that the ordinary man would not support a more comprehensive and more positive approach if only he were told more about this side of the picture and less about niggling controls. Public Relations should be a vital part of planning—as it is in the USA. Here, it is almost non-existent. In this context the proposal to change the delegation system is most relevant. It is significant that during the discussions no-one put the point of view of the planning technicians. This was a great pity, for there is no doubt that they would have come out wholeheartedly in support of Sir Sydney's indictment. Delegation is responsible for more delays, frustration, absurdities and general irritation than any other single thing in the machinery of planning.

There were many lessons to be learned from Dr. Wibberley's paper. The ignorance and lack of basic information that he referred to in relation to agricultural land applies in many other key fields in planning. Little is being done to fill in these gaps by scientific research. Until this is done planners will have no basis on which they can rely for the development of techniques or the determination of policy.

During the past 10 years we have achieved a modest success in finding out what some of the real problems in planning are and how they could be tackled. It would be a disaster if the outcome of 10 years of experience were to be ignored, or thrown away. Planning has a real opportunity to catch the public imagination once again by the breadth of its outlook and the value—in hard cash—that can result from planned development and redevelopment. If it can do this, public support will be assured; if it fails, little that is worth while will be done. This is not "perfectionism" but plain commonsense.

DIARY

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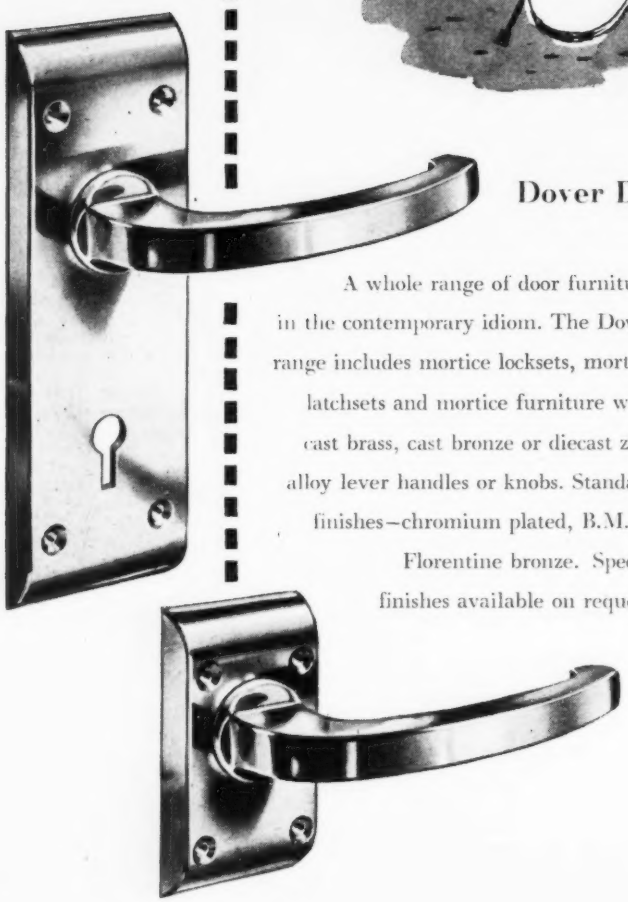

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E. M. Galloway and Partners designed these premises for a firm of opticians in Southampton, on a site next door to Yorke, Rosenberg and Mardall's store for Tyrrell and Green. The clients only required a narrow frontage for street display, provided there was a generous floor space inside. The first floor was set at a level which, with a minimum of excavation, enabled two floors to be accommodated in an apparent single-storey height. A difference in pavement heights between front and back was also put to advantage in staggering two floors approximately a third of the way back. There are therefore four floor levels—main entrance at street level, upper ground floor, upper basement and lower basement—linked by the main staircase with short flights of steps. There is natural light and ventilation. The shop front is completely filled with plate glass in silver bronze framing with one display window and a side showcase running back through the shopfront. The flank walls of the shopfront are lined with light Swedish-green marble, and the ceiling is formed as a louvred canopy projecting into the shop and concealing the main lighting of the entrance. The colours in the marble are echoed in a wall-paper running the full height and depth of the shop on one flank wall. The opposite wall is in a natural linen weave paper. The furniture, apart from the chairs and three standard "room-dividers," was made to the architects' design in sapele with Bombay-rosewood veneering. The pictures show, above, the shopfront; extreme left, a general view showing how three levels are visible from the entrance, and left, the lower ground floor. The stairwell is enclosed with silver bronze balustrading.

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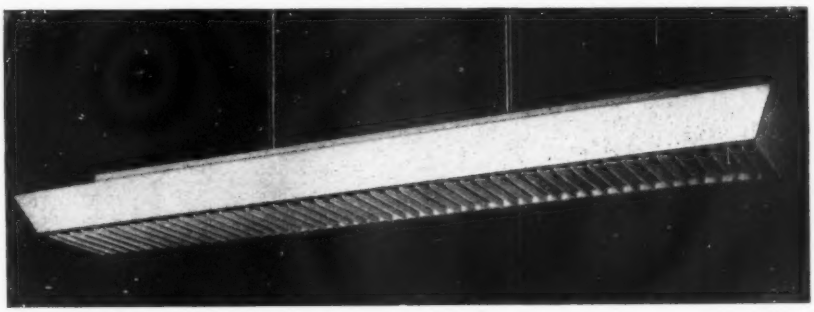
THE INDUSTRY

Brian Grant reviews a new range of light fittings, a coupling for single stack plumbing and a range of wall-mounted gas heaters.



The "Roding" fluorescent fitting, from the new Falk's Thames range.

Lighting fittings

The photograph on the right shows one of Falk's new Thames range of fluorescent fittings which has been designed to provide a range of 30 different types using a small number of basic parts. There are five separate designs of body pressing, three in stove-enamelled sheet steel and two in Perspex, and each one can accommodate six lamp arrangements of two, three or four lamps in 5 ft. 80 watt or 4 ft. 40 watt sizes. The fittings are designed so that the body, complete with louvres or diffusing panel, can be easily detached to give access to the lamp, and the quick-start control gear is also easily accessible. Fittings can be fixed direct to the ceiling or suspended by a pair of 3 ft. ½-in. diameter steel tubes at 2 ft. centres. Prices (not including purchase tax) vary from £19 16s. 4d. to £37 7s. 4d. (*Falk, Stadelmann & Co. Ltd.*, 91, *Farringdon Road, London, E.C.*1.)

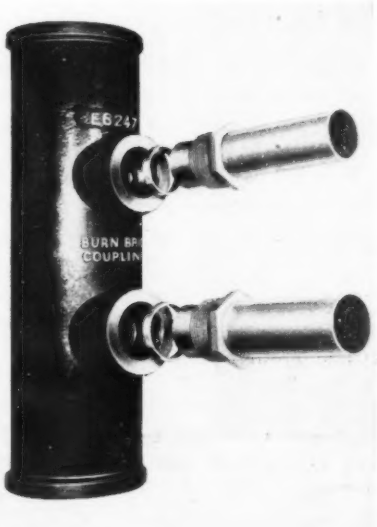
Simplified plumbing

For use with single stack plumbing systems, Burn Bros., have now produced a compression coupling for joining all forms of waste pipe to the main stack without any additional fitting. The coupling is at present made for 1¼ and 1½ in. bosses, and can be supplied on bosses cast in any of the positions specified in the British Ironfounders' Association list. The boss is machined to take a soft brass ring and a compression nut. When the end of a copper pipe is inserted in the coupling and the compression nut is tightened, the brass ring is compressed against a sloping shoulder inside the boss and closed in to grip the wall of the tube. No caulking compounds are required, and as there are no perishable washers there should be no loss of soundness in the joint. For lead and iron pipe normal practice can be followed, as the boss is drilled and tapped to the standard BSP thread. Cost, in addition to the list price for bosses, is an extra 3s. 6d. and 4s. 9d. for the two sizes. (*Burn Bros. (London) Ltd.*, 6, *Stamford Street, London, S.E.*1.)

Wall-mounted heaters

For some considerable time Bratt Colbran have been producing a range of luminous gas heaters. They have just introduced a wall-mounted model with a rated heat input of 17,500 B.t.u. per hour, to supplement the existing suspended types which radiate downwards, or for use independently in workshops, canteens or small halls. The angle at which the heater may be set is adjustable between a minimum of 20 degrees and a maximum of 45 degrees to the vertical, so that when there is an adequate mounting height the heater may be tilted fully forward to give a high proportion of downward radiation. The heater has a one-piece refractory, so that it gives a uniform glow all over its surface, and the non-aerated burners are quite silent, an important point in churches or libraries. Finish is cream vitreous enamel with a black deflector at the top. This range of heaters is marketed under the name of Satellite, but it is perhaps only fair to add that the name was chosen long before recent events put the word in everybody's mouth. (*Bratt, Colbran Ltd.*, 10, *Mortimer Street, London, W.*1.)

The compression coupling by Burn Bros.



The "Satellite" wall-mounted heater.

This 'House of Tomorrow' was conceived by the Monsanto Chemical Company in co-operation with twelve building supply and home equipment companies. The gleaming white structure took three years to complete. The four curved wings are cantilevered from a central utility core. The entrance is near the core which contains the kitchen, bathroom, laundry and other working areas. In the four wings are grouped the living area, the dining area and the sleeping areas.

tomorrow?

Whether you admire it or not, you must admit that this American exercise in futurism offers food for thought. A plastic structure of this size was outside the realm of possibility until glass fibre reinforcement came into the picture. Now, it is coming into a lot of pictures, on both sides of the Atlantic—as architects appreciate that a new basic structural material is to hand: a material which suggests, permits, and even demands entirely new structures.

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19 CONSTRUCTION: DETAILS
the glass curtain wall 3, fire resistance and sound transmission

Continuing his review of the present state of our knowledge concerning glass curtain walls,* our author, Thomas A. Markus, turns to the problems of fire resistance and sound transmission. As the first of these affects the architect primarily through the application of Byelaws, he uses this section to summarize the requirements of the LCC, the new Model Byelaws, the Scottish Byelaws, and the MOE regulations for school building. Pointing out that all but the last of these were framed before the curtain wall was envisaged, he expresses the hope that experimental work now going on at the Fire Research Station will provide a basis for revision. He then outlines the requirements for sound reduction, warning architects to be on their guard against the BS Code of Practice on sound insulation (CP: Chapter III: 1948) which is now seriously out of date, and gives reasons why, in his view, the single minimum reduction range proposed in BRS Digest 98 is an unsatisfactory basis for design. Passing from theory to practice, he lays particular emphasis on the importance of good window design, pointing out in particular that a single glazed window with effective seals round the opening lights can be as efficient in sound reduction as an inadequately sealed double glazed window.

Fire Resistance

None of the Byelaws governing building in this country —the LCC, the Model or the Scottish Byelaws— envisaged curtain walling (as distinct from panels in a structural frame) when they were written. In many respects they need considerable pulling and stretching to make curtain walls permissible. This is specially true of those Byelaws directly concerned with fire or those derived from fire precautions, *e.g.* the regulations laying down the maximum areas of openings or the minimum height from head to sill.

The LCC Byelaws in particular have been influenced by fire precautions and, on paper, they therefore present more anomalies, ambiguities and contradictions to the curtain wall designer than the others. However, the experience and knowledge with which they are applied and the elastic manner in which individual schemes are considered and waivers granted, if necessary, has enabled bold experimental curtain wall techniques to be used. This is also true to a lesser extent of the provincial Local Authorities, but nevertheless it is unsatisfactory that advances in curtain walling should happen as the result of happy accidents or enlightened exemption from Byelaws. The varying interpretations of the LCC Byelaws given by the almost autonomous District Surveyors and of the Model Byelaws by different Local Authorities, has made things additionally difficult for both architectural practice and manufacturing development. Until some of the basic assumptions about the spread of fire in buildings, held since the Great Fire of London, are critically re-examined and more Byelaws are written in functional and performance terms, this position will remain. A four-storey " tower " has been built at the Fire Research Station in which the question of fire spread in multi-storey structures is to be fundamentally re-examined, and this will make such a re-examination practicable.

Although BRS Digest No. 98 mentions the three sets of Byelaws, the general rules given seem to have been drawn from the Model Byelaws only and made to appear to be valid for all three. For instance, the statement that in general non-domestic multi-storey buildings require a two-hour fire resistance for a curtain wall, or a one-hour resistance if it is a panel wall between structural frames, is not borne out by either the LCC or the Scottish Byelaws in that simple form. The following outline of relevant Byelaws is given not only as a guide, but also as a practical demonstration of the inherent ambiguities; some of these are, of course, inevitable and can be resolved in practice by the use of waivers or by skilled interpretation, but others could be removed by revised wording or basic form. In addition the regulations governing schools are also considered. Early consultation with the appropriate Authority is essential as the letter of the law will rarely be strictly applied to curtain walling or even be applicable.

In the Digest it is rightly pointed out that in many instances a fire resistant back-up wall supported from the structural floor is insisted upon, no matter how high the fire resistance of the cladding panel may be, because the normal metal curtain wall frame will fail in the early stages of a fire and has no recognized resistance. What is not made clear, however, is that provision of such a back-up wall largely cancels the supposed economic advantages of curtain walling, *i.e.* reduction of dead load, saving in floor space, dry construction and speed of erection. It would be more accurate to regard such a wall as a traditional frame-

*Previous articles in this series appeared on November 7 and 21, 1957.

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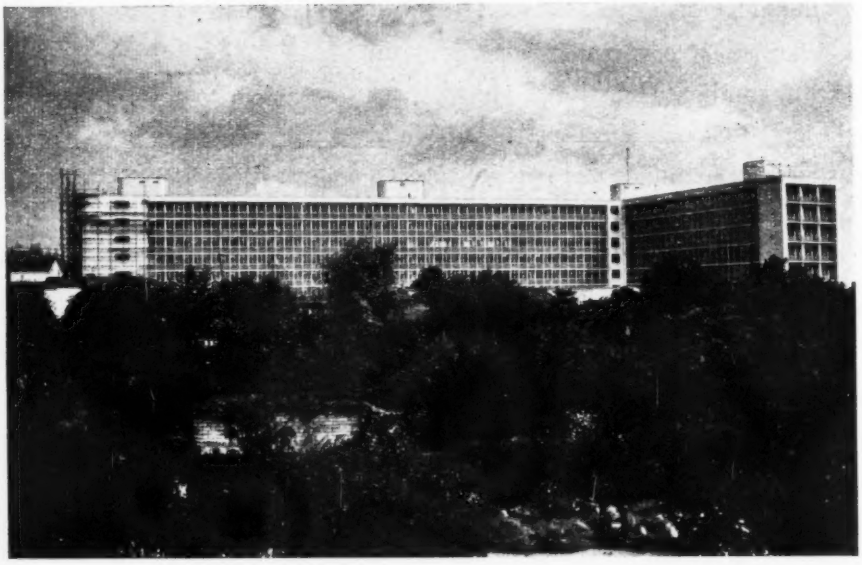

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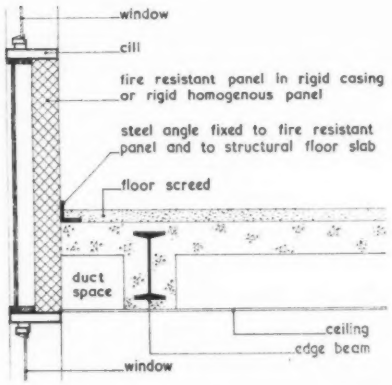


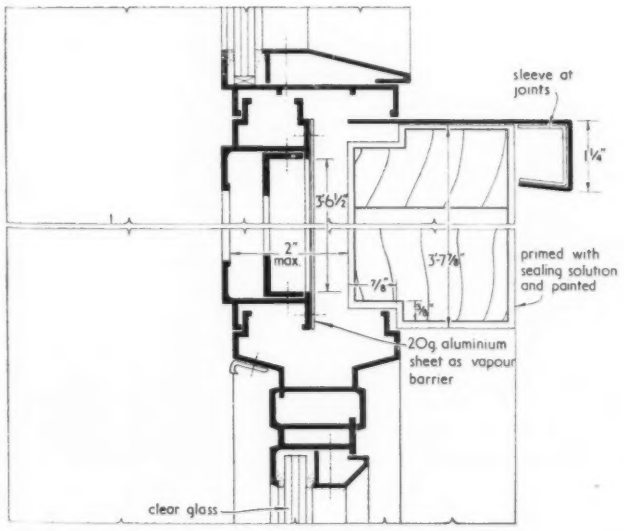
Fig. 1. Method of providing support for the cladding panel which is independent of the frame.

and-panel construction which has applied to it a decorative and weathering veneer. Nor does the Digest issue the very necessary warning to architects that, in view of this, expensive cladding panels for which fire-resistance is made a sales feature, may be useless.

One suggested method of overcoming this difficulty is to fix the fire resistant cladding panel by means of angles welded to it, to the structural floor (Fig. 1).

The "Muragard" curtain wall system recently developed by Messrs. Gardiner Sons & Co. Ltd., of Bristol, is the first complete "package" curtain wall which solves the fire resistance problem (up to two hours grading) without the necessity for a separate back-up wall. The mullions are of prestressed concrete and are tied back to the floor by structural fixings protected from fire. The fire resistant panel is a "Seco" panel and the front face, which can be glass or any other cladding material, is held in an independent metal frame (Fig. 2).

Fig. 2. Below, section through left, transome and right, mullion of the "Muragard" curtain wall.



(*a*) LCC BYELAWS: Under 9.03 if the external walls are regarded as separating the building "from an adjacent building" they are required to have a four-hour fire resistance. This may apply to party walls only or it may include free external walls as well. If the wall is regarded as an "element of construction" (although not so defined under 1.03 it seems to have been considered as such in some cases) the requirement is half, one or two hours according to size and type of building (9.02).

The above fire resistance is required of the solid portions of the wall. Under 5.26 the openings must be limited in such a way that the spread of fire between storeys or buildings is prevented and this can be achieved by:

(*a*) Limiting the total area of openings to 50 per cent. or less of the total wall area.

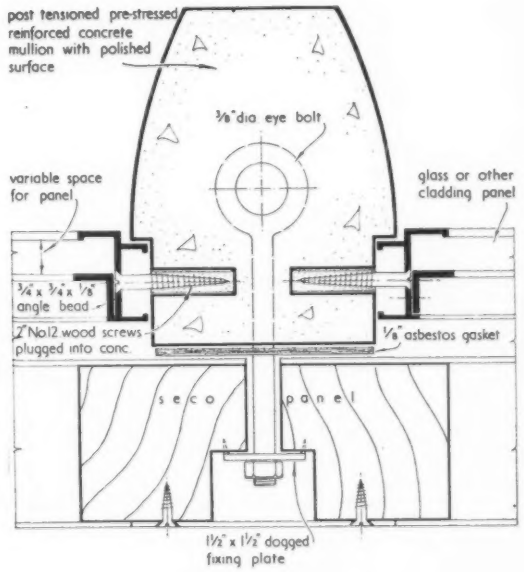
(*b*) Ensuring a minimum floor-to-sill height of 2 ft. 6 in.

(*c*) Ensuring a minimum distance of 3 ft. from windows to boundary or party walls.

Staircase windows with fire resisting glazing are exempted from (*b*); otherwise the use of glass "in the thickness of a wall" makes that part of the wall into an "opening." Strictly applied this would, of course, make it impossible to use any glass fronted cladding panels. Condition (*c*), frequently waived, in fact, is impossible to achieve with a genuine curtain wall—*i.e.* one that covers the entire width of a building.

There is no mention in the Byelaws of horizontal (balcony) projections. BRS Digest No. 98 ambiguously suggests that all Byelaws in general accept this system without a note to the effect that the LCC Byelaws do not formally recognize it, although it is frequently permitted by the application of waivers.

The fire resistance of elements of structure is defined in Schedule VI and, under Table F, wired glass for glazing in areas up to 4 sq. ft. is given a half-hour



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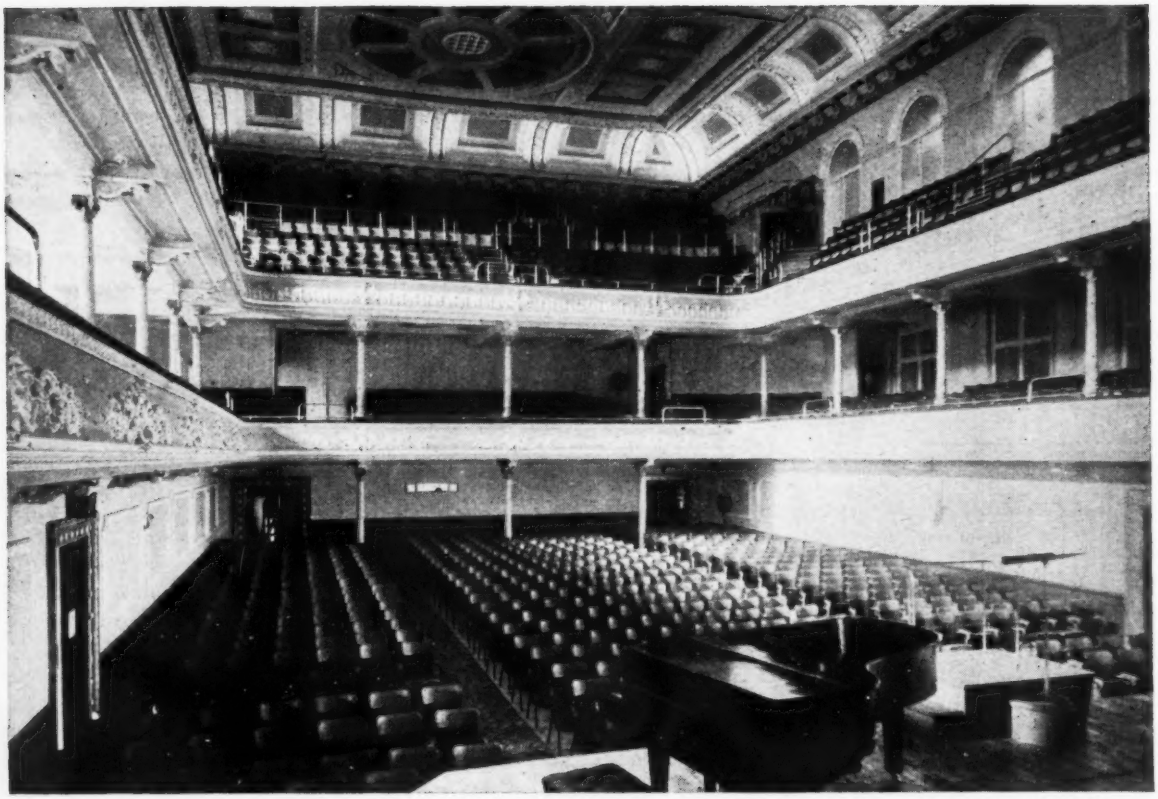

By courtesy of Bradford City Council *City Architect: W. C. Brown, Esq., F.R.I.B.A., A.M.T.P.I.* *Photo by Yorkshire Observer*

St. George's Hall, Bradford

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fire resistance. Since glass for glazing is exempted from the " insulation " condition of the BS 476 test, it could be argued that when used in an opaque panel the fire resistance should not be recognized. However, both this Table and Byelaw 5.26 seem to have been broadly interpreted and wired glass has been recognized as adding to the fire resistance of the opaque panel, even in areas larger than 4 sq. ft. perhaps in view of the manufacturers' claim, supported by DSIR tests, that it has a one-hour resistance. Resistance from either side is normally required.

Hollow glass blocks in panels up to 40 sq. ft., with adequate clearance round the top and sides, have a recognized one-hour resistance.

The normal metal curtain wall has no recognized fire resistance, no matter what the properties of the cladding panel may be, and in general the LCC view seems to have been that a fire resistant back-up wall is required. If the wall is regarded as an element of construction and has a required resistance of one hour or more, all the materials in it must be incombustible (9.02, (3)).

(*b*) MODEL BYELAWS: The required fire resistance for external walls is generally two hours (38) or one hour for panel walls supported in the structural frame (40). Certain single-storey buildings have reduced requirements (39) and certain warehouse buildings increased requirements (41).

The Model Byelaws are more specific about the frame which supports any part of the external wall; it must have the same fire resistance as that required of the entire wall (48) and this means that the normal metal curtain wall frame cannot be accepted as fire resistant. Openings are limited by either: (*a*) making the minimum dimension from head to sill 3 ft. and from floor to sill 2 ft.; or (*b*) the alternative system of horizontal projections at floor level of at least 2 ft. There is no definition of " opening."

The Fourth Schedule, which defines the fire resistance of elements of structure, does not mention wired glass. It has, however, been accepted by various Local Authorities as contributing to the fire resistance of cladding panels. Generally resistance from either side is required and walls must be incombustible throughout (38), although for certain buildings this only applies to the external face of the wall (39).

(*c*) SCOTTISH BYELAWS: The required fire resistance of external walls varies according to type and size of building and its distance from adjacent property, from " no requirement " to four hours. Residential, institutional and office buildings, adequately separated from adjacent property, having panels in a structural frame of at least one hour resistance require only one hour resistance. Generally resistance from either side is required and external wall facings have to be incombustible.

Openings are defined as windows, doors or other apertures or portions of wall with less than the required fire resistance. Their total area is limited to less than 50 per cent. of the total wall area. Where this is exceeded, or where the wall has a combustible external facing, that side of the building is deemed to have no external wall and must hence be separated from adjacent property by distance determined by use and size (30). There must be at least 3 ft. between heads and sills and 2 ft. from floor to sill; alternatively a 2 ft. projection at floor level can be used (31). Openings are required to be at least 18 in. minus half the thickness of the wall away from a separating wall—again strictly interpreted this Byelaw would prevent a curtain wall stretching fully from side to side of the building.

Wired glass is given the same fire resistance as in the LCC Byelaws, *i.e.* half an hour for areas up to 4 sq. ft. (Schedule C, Section 8). It is interesting to note that the Scottish Byelaws are the only ones which permit the all-glass curtain wall—50 per cent. window and 50 per cent. wired glass panels—as they stand, since under 29 (4) a wall with a half-hour fire resistance is recognized as such even if it does not satisfy the " insulation " requirement of the BS 476 fire test.

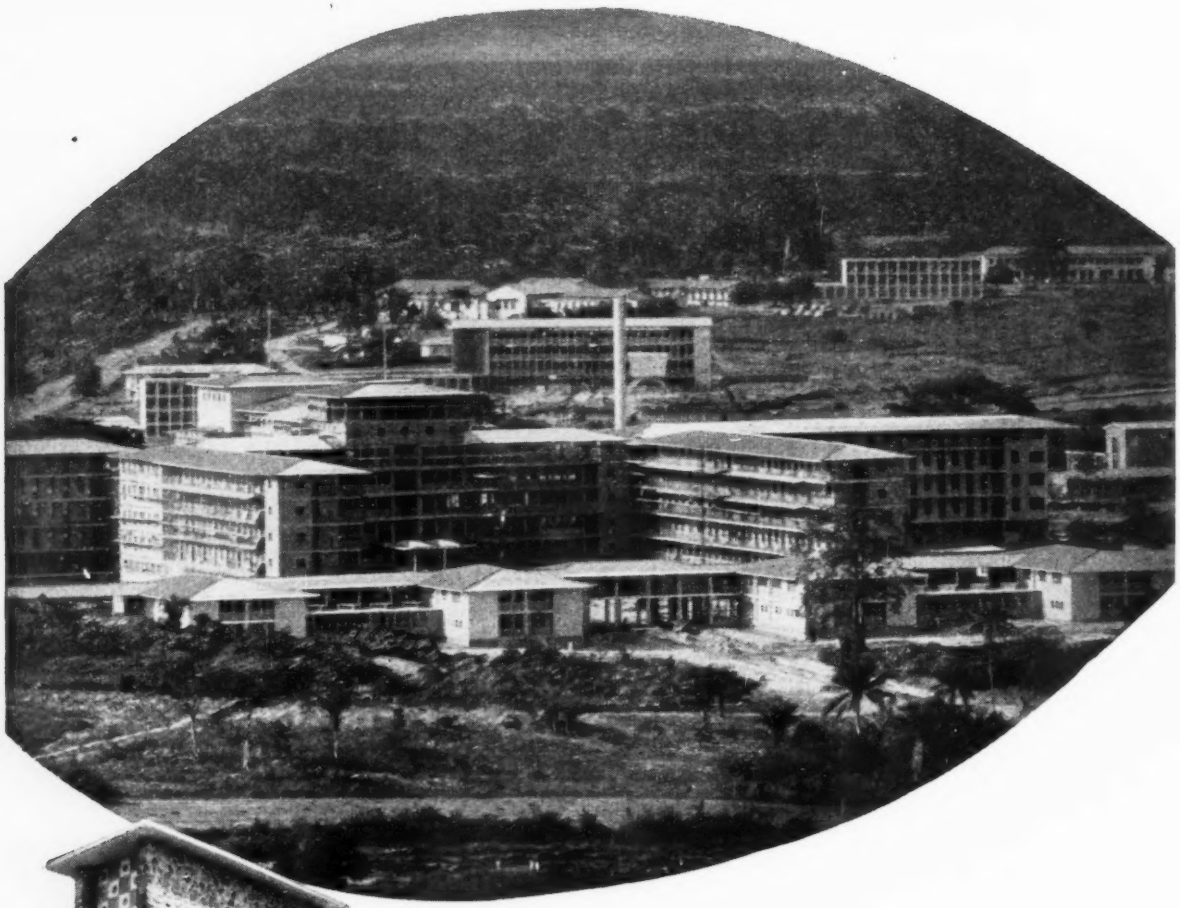
(*d*) SCHOOLS: The regulations are described in the Ministry of Education Building Bulletin 7 (1955). Surprisingly they are not described in the BRS Digest, although the majority of curtain wall experience in this country has been in schools. The regulations are less stringent than those of the Byelaws and this may be the reason why many architects, who have proved real economies by the use of curtain walling in schools, are disappointed with the high costs in other buildings where a solid back-up wall frequently has to be provided.

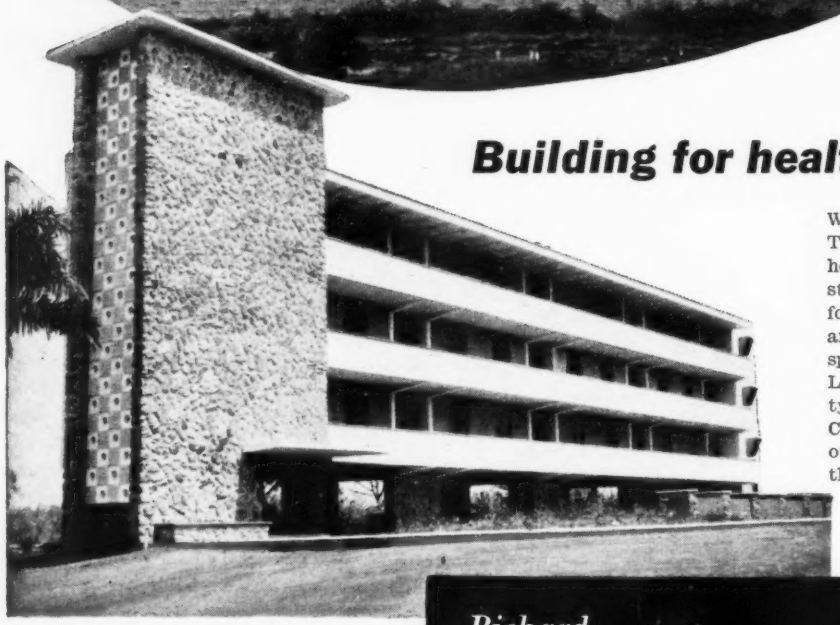
Generally external walls for buildings of two or more storeys have to be of non-combustible materials (89). Curtain walls, if not used to protect the structural frame, need no fire resistance requirements up to three storeys, and for four or more storeys a half-hour resistance is required (95).

The proportion of window in the wall is controlled by required minimum distances from site boundaries; the less the window area and the higher the fire resistance of the wall, the smaller the required distance (Table IX). It is also stated that where a floor has a one-hour fire resistance or more (only required in schools of five or more storeys), the heads and sills of windows should be separated by a continuous strip of wall of about one-hour resistance 3 ft. high or, alternatively, by non-combustible and unperforated horizontal projections of 12 in. from the wall face extending 12 in. beyond any openings (Appendix I, 6). This recommendation in fact seems to limit the half-hour requirement for walls (95) to schools up to four storeys beyond which either one hour or projections are required.

Wired glass is not listed in the Tables of fire-resisting materials, but is mentioned (Appendix V) as providing " fire-resisting glazing " in doors.

(*e*) CAVITY STOPS: All building regulations require that any cavities in walls should be adequately stopped at floor levels and at periodic vertical intervals to prevent the spread of fire by flue action in the wall thickness.





Building for health in Nigeria

With the completion of its first Teaching Hospital at Ibadan, Nigeria's health programme takes a tremendous step forward. Here is accommodation for 350 nurses, 80 midwives, 160 students and 500 patients. The efficiency and speed with which Costain (West Africa) Limited completed this contract is typical of the way in which the Costain organisation is carrying out other major building projects throughout the world.

Architects for the main hospital buildings are Watkins, Gray and Partners, FF.R.I.B.A., of London, and, for the ancillary buildings, Architect's Department of the Federal Public Works Department. Consultant structural engineers: Ove Arup and Partners.

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technical section

SOUND TRANSMISSION

Large areas of single glass window and lightweight panels—both normal in the curtain wall—make adequate insulation against airborne sound difficult, since this depends mainly on the use of heavy materials. The presence of air gaps round opening lights or in the joints of " dry-glazed " curtain walls further increases transmission.

The sound insulation problem, even more than that of thermal insulation or fire resistance, drives home the absolute necessity of considering the curtain wall as a single, comprehensive system and not as the piecemeal, additive result of the window, the frame and the opaque cladding panel.

Requirements

In order to design a wall for adequate sound reduction three things need to be known:

(*i*) *The Loudness and Characteristics of the External Noise.* The characteristic frequency of the noise needs to be known—*e.g.* whether it is the general low-frequency noise of traffic or the higher frequency of horns and gear changing or the characteristic frequency of open-cast coal mining machinery on a country site. There is also a psychological problem in that where there is a steady habitual sound the ear becomes accustomed to it and in the absence of other intruding sounds this is considered to be " silence." For instance, in many London mews or squares considered extremely quiet there is a background traffic hum of 20/30 dB. which is hardly noticed.

(*ii*) *The Permissible Noise Level in the Room.* This varies widely with occupation and function and its determination is a complicated physical and psychological problem. The levels will, for instance, vary according to the rank of the user (*e.g.* executive or secretary); also where habitual " masking " background noise is present considerably louder intruding noises can be tolerated than in normally very quiet rooms.

(*iii*) *The Sound Reduction Characteristics of the Wall.* This will vary at different frequencies but generally the average value over the 100/3,200 c.p.s. range is a good guide; where the most disturbing noise has a characteristic frequency then the behaviour of the wall at that frequency must be known.

Table 1 gives the typical leve's of some common outdoor noises. Table 2 shows the range of acceptable indoor noise levels.

TABLE 1

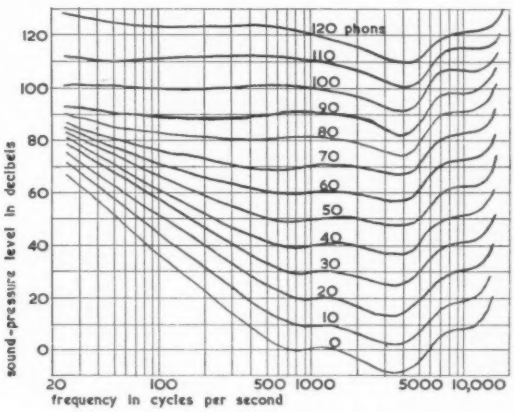
Heavy traffic at 25/30 ft.	70/80 dB
Average traffic at 25/30 ft.	55 dB
Light traffic at 25/30 ft.	50 dB

TABLE 2

Theatre, Concert Hall	30/35 dB
Hospitals	35/40 dB
Flats, Hotels	35/45 dB
Class Rooms, Lecture Rooms	35/40 dB
Conference Rooms, small	
Executive Offices	40/45 dB
Large Offices, Banks	45/55 dB
Restaurants	50/55 dB

Very approximately the difference between the Table 1 and Table 2 values is the sound reduction required of the wall, but the result may be substantially modified due to the causes described. However, the two Tables do demonstrate the wide variation in external conditions and internal requirements and the danger of giving a single minimum reduction range such as the 20/30 dB. given in BRS Digest 98. Since a wall composed 100 per cent. of single glazed fixed light window —this is virtually a greenhouse—is given a reduction value of 22 dB., the Digest range seems low in any case; such a wall or any other with similar values would not be considered adequate in most city buildings.

It must also be remembered that the human ear is more sensitive to high frequency sounds than to very high, medium or low ones. A measure of loudness is the " phon " and it is related to a subjective judgment of the loudness of 1,000 c.p.s. sound; a 20 dB. intensity sound at 1,000 c.p.s. has, by definition, a loudness of 20 phons; at any other frequency a loudness of 20 phons is that sound intensity which produces the same loudness sensation as a 20 dB. sound at 1,000 c.p.s. Fig. 3 shows the relationship between loudness (phons), sound intensity (dB.) and pitch or frequency (c.p.s.). For instance it will be seen that a 40 dB. sound at 1,000 c.p.s. produces a loudness of 40 phons (by definition); at 200 c.p.s. a loudness of 20 phons and at 7,000 c.p.s. a loudness of 30 phons. One is not, of course, dealing with pure sounds in buildings, but there may be prevalent bands of characteristic frequency.



Contours of equal loudness. (H. Fletcher and W. A. Munson)

Fig. 3. Graph showing relationship of loudness (expressed in phons). Sound intensity (expressed in decibels) and frequency.

Generally the sound reduction offered by partitions drops with frequency, but the slope of insulation against frequency is not necessarily pronounced and may not even be uniform. It is not therefore possible to argue, as the B.S. Code of Practice " Sound Insulation " does, that the reason why average dB. values over a large frequency range can be used is because the decreasing sensitivity of the ear at lower frequencies is balanced by the decreasing reduction value of the wall and that the net loudness reduction remains the same. It is disturbing to find that this nine-year-old

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Mains Contractors:
Geo. Wimpey & Co. Ltd.

This consultant-designed building is 250ft. wide in five clear spans of 50ft., 211ft. long, 19ft. 6in. high to eaves, and the construction provides for a 2-ton electric overhead travelling crane along each span. Posts are at 30ft. centres, tie trusses at 15ft. centres. Some of the special valley beams at the ends of the building are 28ft. long and weigh almost 4 tons.
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technical section

Code, still widely used by architects, has never been officially corrected although misleading arguments of this kind and other inaccuracies (see below) have been known to specialists for some years.

Application to practice

WINDOWS: Table 3 from BRS Digest 98 shows the overall reduction value of different types of wall with varying proportions of window. It shows that even if 75 per cent. of the wall is heavy and has the excellent value of 50 dB., if the remaining 25 per cent. is opening light window (closed), only 21 dB. overall reduction can be expected and fixed lights only raise this to 28 dB. As in the calculation of "U" values the great importance of adequately designed windows is striking and it is again necessary to warn architects against spending money on excellent cladding panels to provide high insulation if these give but marginal overall increase.

TABLE 3: VARIATION OF SOUND REDUCTION WITH AREAS AND TYPES OF CONSTRUCTION

Type of glazing	*Construction of wall spandrel*	*Decibels (dB) reduction of walls with windows*				
		Per cent. glazing				
		100	75	50	25	0
Single with opening lights	a	15	16	18	20-21	30-35
	b	15	16	18	21	40
	c	15	16	18	21	45
	d	15	16	18	21	50
Single with fixed lights	a	22	23	25	27	30-35
	b	22	23	25	27	40
	c	22	23	25	27	45
	d	22	23	25	28	50
Double with 4-8 in. cavity	a	44	40	38	36	35
	b	44	43	43	41	40
	c	44	44	44	44	45
	d	44	45	46	48	50

a. Single "sandwich" panel: weight 5-10 lb./sq. ft. giving 30-35 dB reduction.
b. Panels with cavity between faces: weight 10-15 lb./sq. ft. giving 40 dB reduction.
c. Panels cavity/back-up wall: weight 30-50 lb./sq. ft. giving 45 dB reduction.
d. 9-in. brickwork or equivalent: weight 120 lb./sq. ft. giving 50 dB reduction.

The three values given for opening light and fixed light single windows and for double windows are confirmed by measurements made in recent years but it is again disturbing to find that no official correction of the very much higher figures in the Code of Practice has ever been made nor does the Digest refer to it.

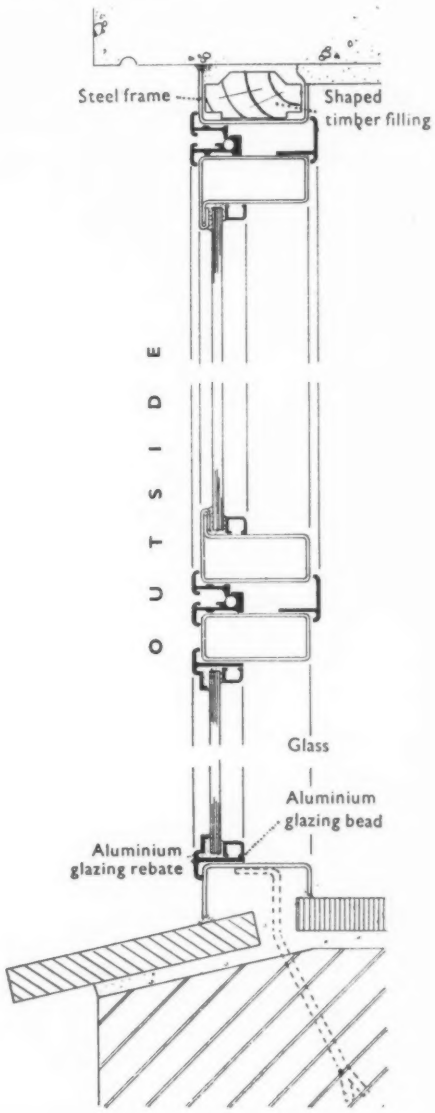
The Digest does not specify the glass thickness to which the figures apply—it can only be assumed that they are for 24/32 oz. sheet glass and it is not mentioned that the weight of glass is a crucial factor. It is true that within the sheet glass range there is only a 1·5 dB. difference between 24 oz. and 32 oz. on account of mass. However, since the curtain wall needs careful attention to detail at a number of points, each of which may only yield a marginal improvement, to reach its maximum effectiveness, it may be worth while to use the heavier sheet. Plate glass, of course, in $\frac{1}{4}$ in. thickness or more, will give an appreciable improvement.

Apart from the glass weight, the most important detail in single windows is the absence of gaps. Well made windows with tightly fittting opening lights are essential; it may be worth while to provide continuous sealing cushions (Fig. 4). Eventually the sound-insulation problem may be regarded as sufficiently serious in the curtain wall to make fixed light windows coupled with air conditioning the rule rather than the exception in city offices.

In double windows there are four additional important factors apart from glass weight and size of gaps:

(i) Distance between panes; for maximum effectiveness, especially at lower frequencies such as those of

Fig. 4. Section of single Aygee "Resistal" window. The aluminium extrusion which surrounds the opening light in the outside provides a resilient seal.



technical section

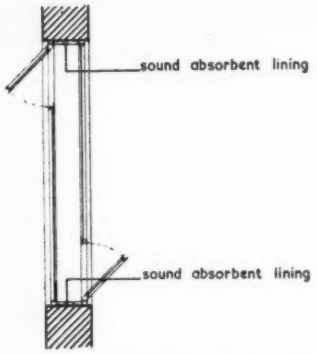


Fig. 5. Section through double window showing the locating of opening lights to produce a "baffle" effect.

traffic noise, this should be 4 in. to 8 in. Where space is limited the weight of glass should be increased since a decrease in spacing is somewhat less detrimental with a heavy glass than a light one. At ¼ in. space or less the effect is only that of a single pane of the same thickness as the two panes together and at 1 in. a 2 dB. or 3 dB. increase in insulation can be expected.
(ii) Separation of frames; the outer and inner panes should be held independently, both frames being fixed to the wall or to as heavy a member as possible. Prefabricated sealed double glazing units or two separate panes glazed into the same frame are less effective.
(iii) Treatment of sides of space. Lining the sides with sound absorbent material will give greater reduction.
(iv) Careful location of opening lights; by placing openings to act as baffles which provide a tortuous path for the sound, a fair degree of insulation can be obtained even when both inner and outer lights are open (Fig. 5).

Four-inch thick hollow glass blocks, which can be regarded as a form of double glazing, are a reasonable solution where through vision is not required, as they are heavy and provide an air space.

Bearing all these points in mind, the following values for windows can be used. Where these differ from those given in Table 3 (from Digest 98) they can be substituted and the other values obtained by interpolation.

TABLE 4

Single window	
Any glass normal opening lights (closed)	15 dB
24/32-oz. sheet glass sealed or fixed lights	20/22 dB
¼-in. plate glass sealed or fixed lights	25 dB
½-in. plate glass sealed or fixed lights	30 dB
Double window	
Opening lights (closed):	
24/32-oz. sheet glass, 4-in. space	22 dB
24/32-oz. sheet glass, 8-in. space	24 dB
¼-in. plate glass, 4-in. space	22 dB
¼-in. plate glass, 8-in. space	24 dB
Opening lights (closed) plus absorbent to sides:	
24/32-oz. sheet glass, 4-in. space	26 dB
24/32-oz. sheet glass, 8-in. space	29 dB
¼-in. plate glass, 4-in. space	26 dB
¼-in. plate glass, 8-in. space	29 dB
Doub e window	
Sealed or fixed lights plus absorbent to sides:	
24/32-oz. sheet glass, 4-in. space	30 dB
24/32-oz. sheet glass, 8-in. space	35 dB
¼-in. plate glass, 4-in. space	33 dB
¼-in. plate glass, 8-in. space	38 dB

It is interesting to note that the German Standard DIN 4109 for sound-insulation in high buildings gives the following window values:

Single window (opening light), without sealing	Up to 15 dB
Single window (opening light), with sealing	Up to 25 dB
Double window (opening light), without sealing	Up to 25 dB
Double window (opening light), with sealing	Up to 30 dB

It will be noticed from Table 4 that the difference between a sealed or fixed light single window and a normally constructed open light double window using the same glass is not as large as one might expect. It will also be noticed that where there are normal opening lights the effect of increased glass thickness has been ignored since, in comparison to the overriding effect of sound passage through the air gaps, it is insignificant; to give values to a greater accuracy than 1 or 2 dB. gives an altogether wrong impression of the precision which can be expected in this kind of exercise. If double windows are used the small extra cost of really well fitting lights or, preferably still, cushion seals and absorbent treatment to the sides of the cavity, should not be grudged—without these the advantage gained is small in proportion to the extra cost. Improvement and re-design of standard frames by the window manufacturers is required.

Where single windows are actually open little more than 5/10 dB. reduction can be expected depending on the relative size of the opening and the direction of the sound.

THE CLADDING PANEL: As in the case of windows, the main considerations are weight of materials, size of gaps around joints, size of air space and absorbency of sides to spaces. Mechanical linkage between the layers of a composite panel, as in some hollow core or faced honeycomb materials, is detrimental. The fact that many architects obtain the necessary fire resistance by building an independent brick, concrete or hollow block wall from the floor to cill ensures a reasonable standard of sound insulation for this portion.

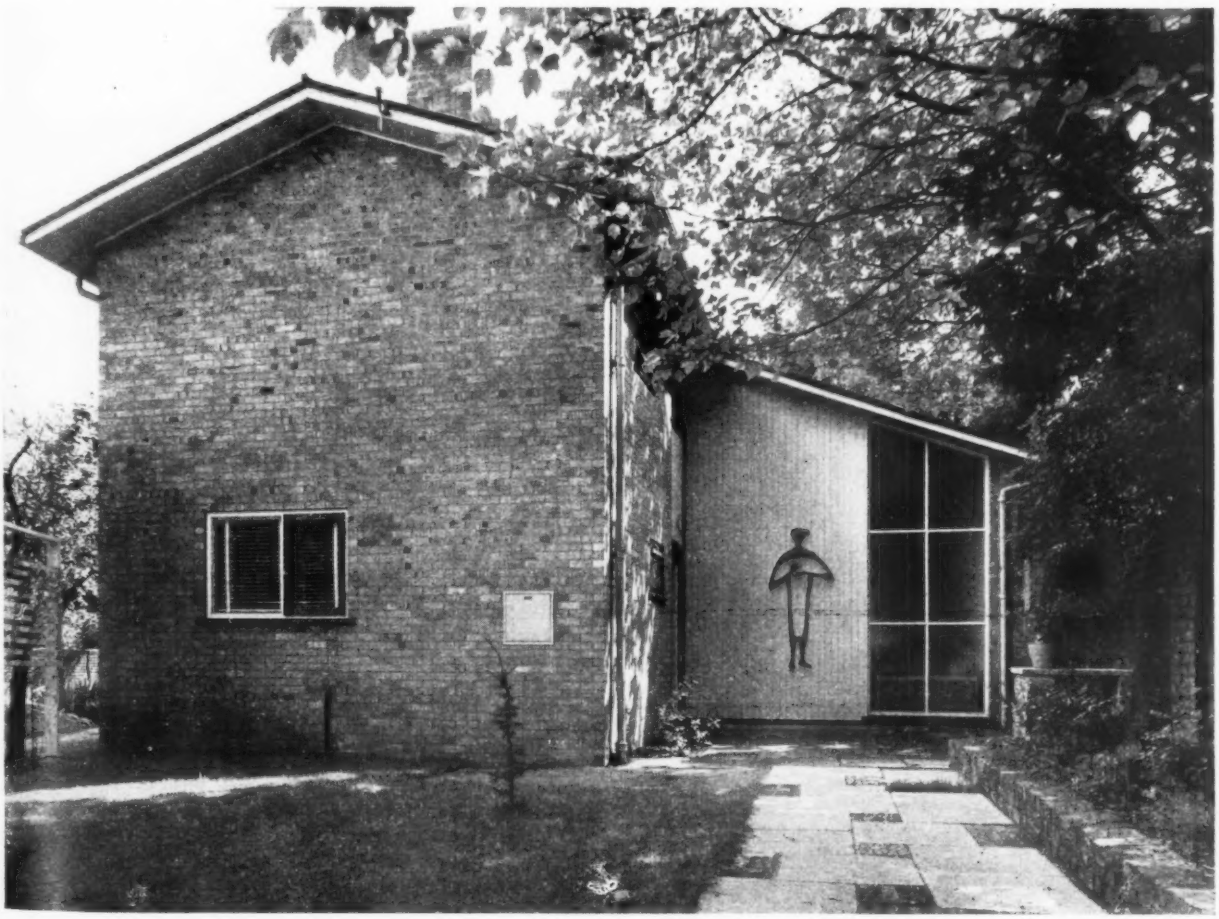
THE CURTAIN WALL FRAME: The chief precautions, all of which are a question of well designed manufacturing details, are:
(i) The joints must be adequately sealed with mastic, extrusions or packing. Dry glazing, as in some forms of patent glazing, is less effective.
(ii) Mechanical linkage between the various components at the edge should be avoided.
(iii) Gaps between the frame and floors or partitions reduces the sound insulation between storeys and rooms.
(iv) The continuous vertical mullion can easily transmit structure-borne sounds unless there is adequate cushioning between the joints and between the mullion and the structure. There are known cases where the sound of a window cleaner's cradle guided on the mullions can be clearly heard 10 storeys further up.

HOUSE

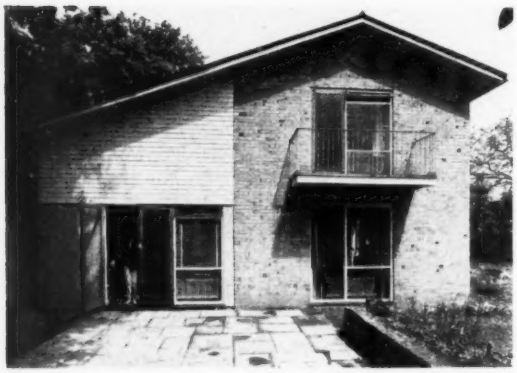
in TASKER ROAD, HAMPSTEAD, LONDON, N.W.3; designed by R. W. TREBILCOCK; quantity surveyor COLIN PRICE DAVIES

A studio-house designed by the architect for his own occupation; providing a large studio on the ground floor for the architect's wife, who is a sculptor, and a gallery, bedroom and bathroom on the first floor. A feeling of spaciousness has been gained, within a limited area, by the use of an open plan. Heating is by conventional radiators, served by a solid fuel boiler, and running costs are estimated at about £40 per annum.

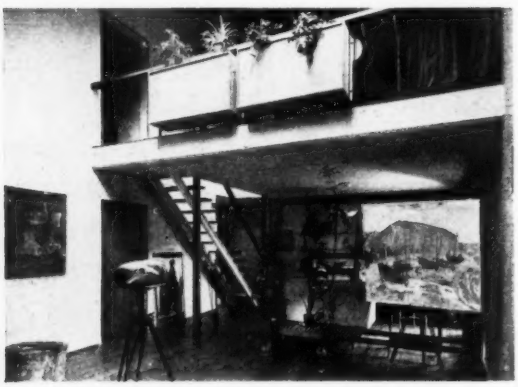
From the north. The main entrance is on the left of the weather-boarded north wall of the studio.



building illustrated



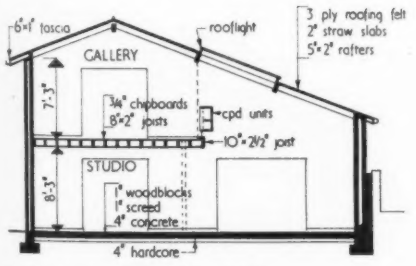
Left: the south facade. Above the French windows to the large ground floor studio is timber boarding over 9-in. solid brickwork. The balcony leads off the first floor gallery.



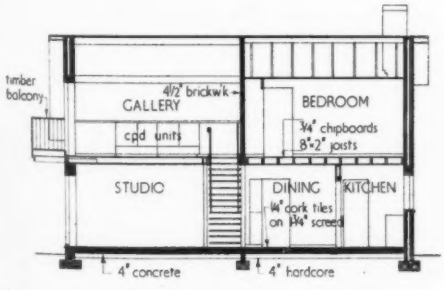
Above: the eastern half of the ground floor studio. Below: the dining area seen from the studio. The free standing staircase has hardwood treads, carried on mild steel channels. Left: the western half of the studio. The cupboard units and handrail at first floor level are at the open end of the gallery.

First floor plan

Ground floor plan [Scale: 1/16" = 1' 0"]



Section A-A [Scale: 1/16" = 1' 0"]

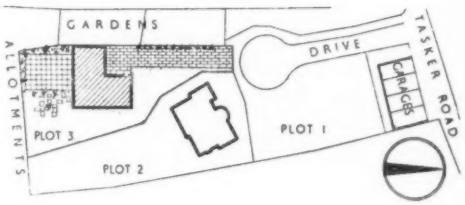


Section B-B [Scale: 1/16" = 1' 0"]

analysis

CLIENT'S REQUIREMENTS

A fairly large studio with living accommodation. The studio to be suitable for both painting and sculpture. Long views required inside.



Site plan

PLANNING AIMS

To give maximum effect of space possible, within the limits imposed by economy and the site.

	s	d
price per sq. ft.		
preliminaries and insurances	4	4
contingencies	1	2

STRUCTURAL ELEMENTS

Work below ground floor level — 4 3½

Concrete foundations 1:3: 6 hardcore fletton brickwork.
Concrete slab.

External walls — 6 6

12-in. cavity brickwork with breeze inner leaf.
9-in. solid wall faced with boarding.

$$\text{ratio: } \frac{\text{solid wall}}{\text{floor area}} = \frac{1.68}{1}$$

Windows — 1 6

Softwood frames with hardwood casements.

$$\text{ratio: } \frac{\text{windows}}{\text{floor area}} = \frac{0.26}{1}$$

External doors — 1½

External grade ply faced.

$$\text{ratio: } \frac{\text{doors}}{\text{floor area}} = \frac{0.0615}{1}$$

Upper floors — 1 5

Timber joists: 8 in. × 2 in. at 14-in. centres, spanning 12 ft. 6 in.; 8 in. × 2 in. at 18-in. centres, spanning 10 ft. 6 in.
Area of each type: 230 sq. ft.; 180 sq. ft.

Staircases — 7½

1 staircase, 3 ft. wide. Hardwood treads on m.s. channels.
Total rise: 8 ft. 9 in.

Roof construction — 3 8½

Compressed straw slabs in 5-in. × 2-in. rafters at 24-in. centres.
TDA truss over part. Area: 1,066 sq. ft., on slope.

analysis

	s	d
Roof lights 1 light, double glazed. Area: 64 sq. ft.		3¾
Glazing Sheet and plate glass. Roughcast ¼-in. and decorative obscured.		11½
Total of structural elements	15	1¾

PARTITIONING

Internal partitions 3-in. clinker blocks.		4½
Internal doors 6 standard ush ply-faced; 1 swing glazed hardwood.	1	2¾
Ironmongery Satin white metal. Swedish espagnolettes.	1	5
Fittings Wardrobe unit. Service unit to kitchen. Gallery balustrade.	3	0
Total of partitions and fittings	5	11¾

FINISHINGS

Floor finishes Lino and cork squares, 108 sq. ft., costing 25s. per sq. yd. Wood strip (gurjun), 680 sq. ft., costing 14s. 6d. per sq. yd. (for laying only—own wood).	1	0¼
Wall finishes Plaster render and set. Tiling. Pin boarding.	3	2¾
Ceiling finishes ⅜-in. gypsum plasterboard and setting coat.		10¾
Roof finishes 2-ply mineral surfaced felt on asbestos; 1,066 sq. ft. on slope.	1	2¾
Decorations Oil paint to softwood. Wax polish to hardwood.	2	3
Total of finishes	8	7

SERVICES

External plumbing Zinc gutters. Aluminium alloy r.w.p.s.		5½
Hot and cold water installation Copper tubing.	4	3½
Sanitary fittings Porcelain enamel.	1	11
Heating and ventilation Economy dictated the selection of the heating system, which is a low pressure gravity installation with pressed steel radiators and iron pipework. The pipes are for the most part concealed in floor ducts. The boiler is a solid fuel boiler with thermostatic control and has a rating of 85,000 B.Th.U. Fuel is coke or anthracite and running costs for 1956-57 (when there was a mild winter) came to £10. Internal temperatures: 65 and 70 deg. Air change 0.20 to 0.15. "U": 0.20.	5	1
Gas installation 5 points		3¾
Electrical installation 13-amp. ring main, 8. Lighting points, 17.	3	4½
Total of services	15	5¾
Drainage 4-in. G.E. drains and 1 M.H.	1	2
Other elements not shown above Balcony and balustrade Increases in cost of labour and materials.	1	9
Net cost including external works Shillings per sq. ft. of floor area = £3587 / 1256 sq. ft.	58	4¾

COST SUMMARY

Ground floor area: 748 sq. ft.
Total floor area: 1,256 sq. ft.
Type of contract: with quantities.
Tender date: June, 1955.
Work began: July, 1955.
Work finished: April, 1956.
Tender price of foundations, superstructure, installations and finishes: £3,400.
Final contract price: £3,587.
Tender price of external works and ancillary buildings:
Final contract price: £13.
Total: £3,600.

The gallery, with the staircase well on the left. The far wall is lined with pine boarding.

CONTRACTORS

General contractor: C. B. King Ltd. *Sub-contractors—Heating:* W. H. Gascoigne & Co. Ltd. *Electrical:* Johnson Pearce & Co. Ltd. *Flooring:* Bennetts' Wood Flooring (Tungit) Co. Ltd.; E. J. Elgood Ltd. *Sanitary fittings:* Shanks & Co. Ltd. *Door furniture:* W. J. Gibbons & Co. Ltd. *Windows:* Torno Trading Co. Ltd. *Light fittings:* Merchant Adventurers Ltd.

building illustrated

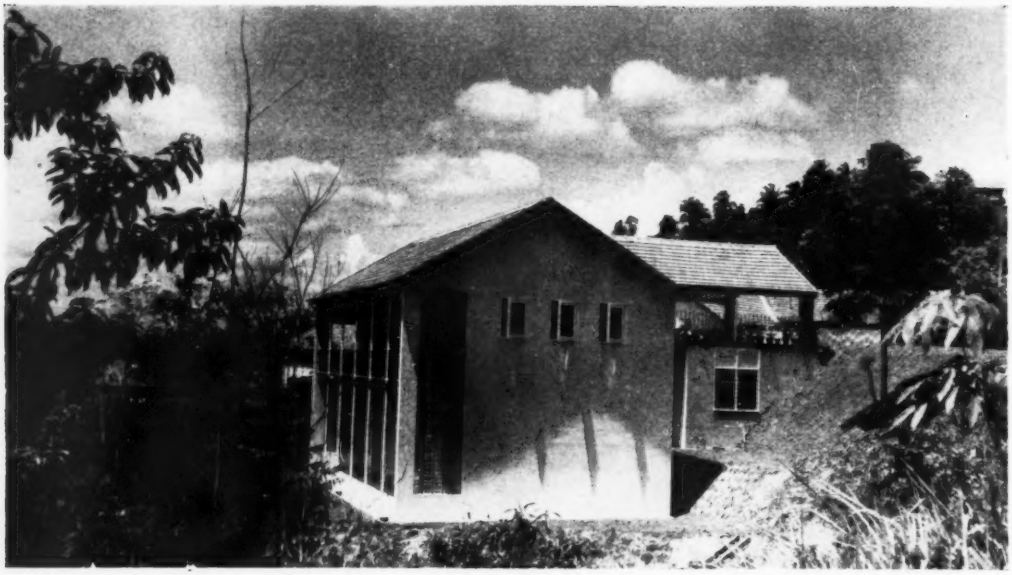
HOUSE

at KUALA LUMPUR, MALAYA, for the Housing Trust, Federation of Malaya ; designed by R. H. H. DAVIS, chief architect

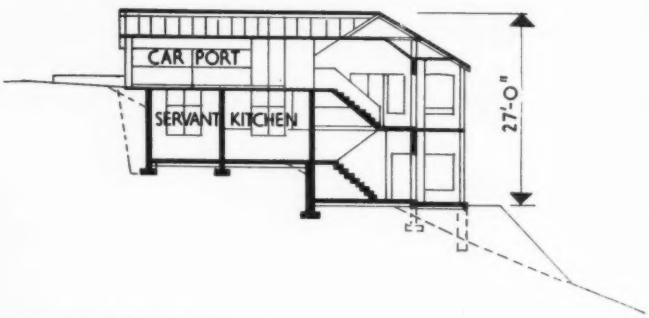
Two similar staff houses were required by the Housing Trust of the Federation of Malaya, one (illustrated in these pages) for their chief architect and one for their chief engineer. Owing to the steep slope of the site, accommodation was designed on four levels, with access at the highest level and bedrooms on the lowest level. Only two bedrooms were required, due to the practice of sending children back to the U.K. for their education, at an early age.

Above: from the west, showing the car port and main entrance at first floor level. Below: the south and east facades.

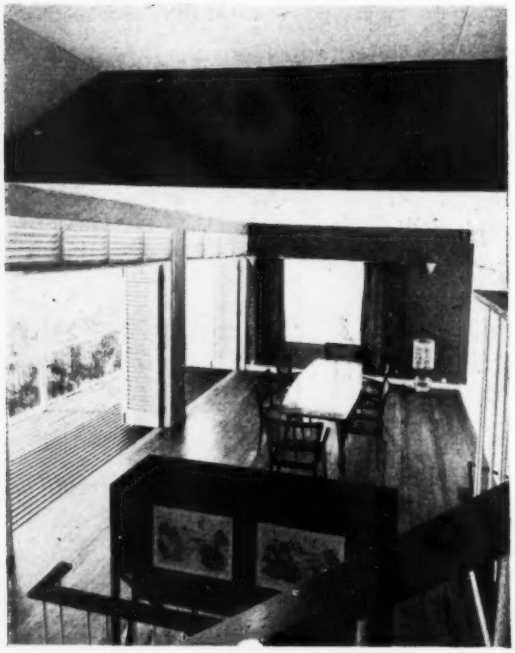
building illustrated



Above: from the north. The levels fall steeply from the road and entrance level, on the right, to the terrace outside the bedrooms on the left.



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



Centre left: from the top of the first flight of stairs, looking into the dining area and the wide balcony beyond. Below left: looking north to south across the whole living-dining area. Above: the south bedroom, at ground level on the east.

analysis

CLIENT'S REQUIREMENTS

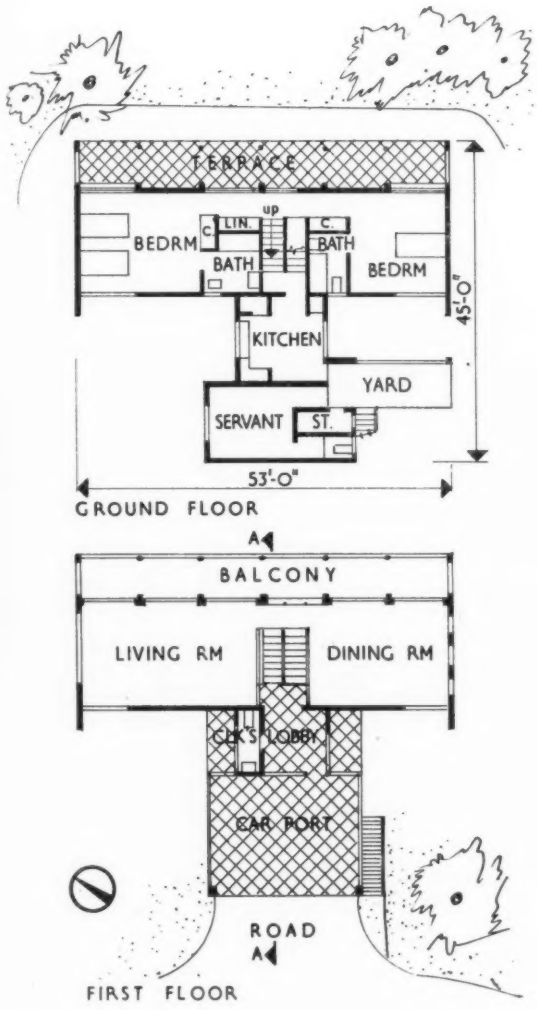
The house, which is owned by the Housing Trust of the Federation of Malaya, was designed by its chief architect as one of two staff houses for himself and the Trust's chief engineer.

Accommodation provided is restricted to two bedrooms owing to the practice of sending children back to the U.K. at the age of ten, which makes provision of a third bedroom unnecessary.

Climatic conditions, however, make provision of individual bathrooms desirable, and through ventilation is imperative.

The ideal orientation for all rooms is north-south, with blank walls to the east and west, and where this cannot be achieved—as in this case due to site conditions—the bad effects can be nullified by projecting piers and balconies.

The site was selected for its elevation, the view from it of the central mountain range and its proximity to the town centre (1½ miles). It was considered that these advantages outweighed the slightly incorrect orientation, which could in any case be overcome by the design.



Plans. [Scale: $\frac{1}{16}$" = 1' 0"]

PLANNING AIMS

The site was very steep and every effort was made to avoid unnecessary excavation and make maximum use of the slope. This was achieved by placing the car shelter and entrance at road level, with kitchen and servants' quarters beneath, as mezzanine floors to the living rooms and bedrooms.

The living room and dining room have been placed on the first floor in order to bring them close to the entrance.

In the initial stages an r.c. frame structure at right angles to the road was considered, but this was finally rejected in favour of load-bearing brick for reasons of speed and economy.

CONSTRUCTION AND FINISHES

Walls

9-in. and 4½-in. local clay brick, rendered both sides with lime plaster.

Roof of local concrete interlocking tiles on hardwood rafters at a pitch of 30 deg.

Ceilings

½-in. imported softboard.

Floors

Car shelter: r.c. slab finished with 12-in. × 12-in. × 1¼-in. local hand-made clay tiles.

Living and dining area: 4-in. × 1¼-in. t. and g. local hardwood boards, wax polished.

Bedrooms and bathrooms: terrazzo tiles made locally, using imported Italian marble chips, polished in situ.

Kitchen: local limestone terrazzo tiles.

Joinery

Hand made on the site from local hardwoods.

Furniture

It is the policy of the Trust to provide all " heavy " furniture, which is then rented with the house. As there is practically no imported furniture, and the majority of furniture is made to clients' requirements from pattern books, it was possible to design all the furniture specially for the house. Red meranti, a local hardwood, was selected for all furniture and it was decided to make full use of the strength of this timber in the design, keeping the sections as small as possible although this is against accepted practice.

For example, the legs of the sideboard are 1 in. square tapering to ¾ in., and this, with ½-in. diameter bracing bars, has proved perfectly satisfactory.

COST

The houses were built on full specification and drawings and so a breakdown of cost is not possible. As a basis for comparison the following figures are given:

Craftsman's wage 18s. 8d. a day (8 Straits Dollars).

Labourer's wage 9s. 4d. a day (4 Straits Dollars).

Land £762 (0.6 acre).

House £4,115, including all site works and septic tank.

Electrical installations and fittings, £166.

Total: £5,043.

Furniture: £402.

Time taken: the two houses were constructed in five months, but one was ready for occupation in four months.

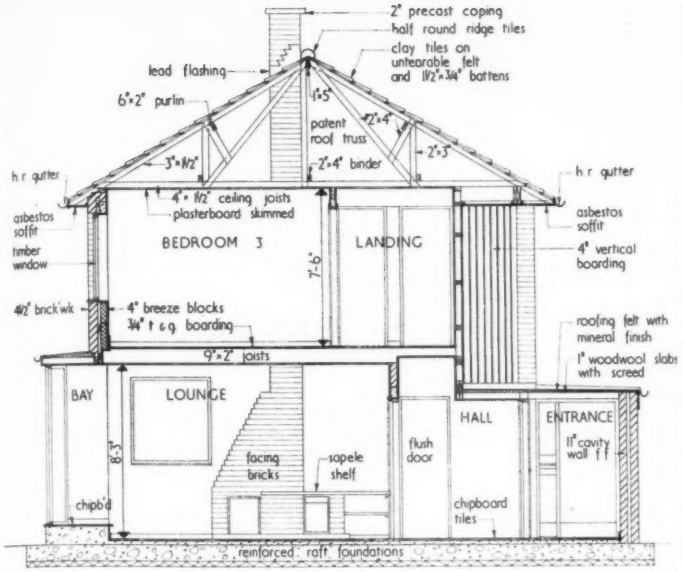
building illustrated

HOUSE

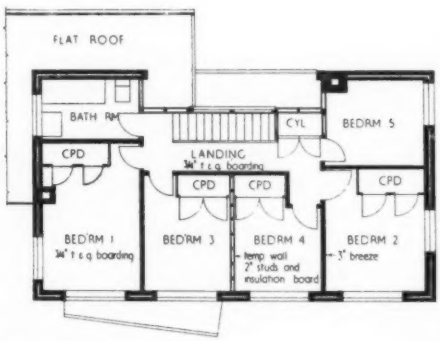
in FIRS ROAD, EDWALTON, NOTTS; designed by PAUL RITTER; quantity surveyor M. E. G. FELTON

The clients for this house, built on a flat open site of just over one-third of an acre, required five bedrooms, two double and three single. Two of the single bedrooms are to be converted into one double bedroom later. The house is heated by copper floor coils on the ground floor and by skirting heating in all rooms on the first floor, and on the landing. Each floor has a separate circuit with its own circulation pump, served by an oil-fired boiler fed from a 600-gallon tank. The total floor area is 1,748 sq. ft. and the final cost, £5,334.

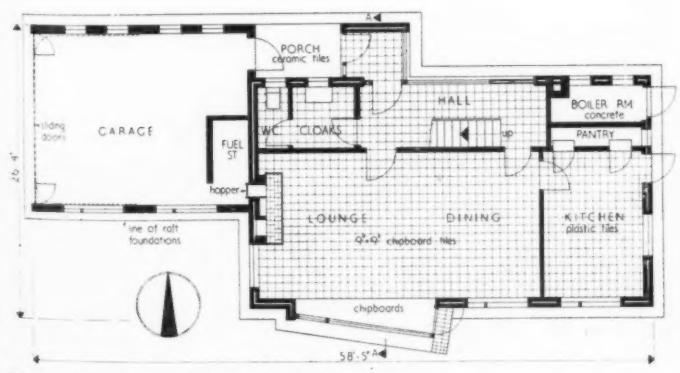
The house from the south-west.



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



First floor plan



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

analysis

CLIENT'S REQUIREMENTS

Five bedrooms, two minimum double, three minimum single. Two of the single to be converted into a double later. Four of the bedrooms for a child each. Living space: dining-kitchen, cloakroom with separate w.c., bathroom combined with w.c. Double garage, to be used for table tennis.
Oil fired central whole-house heating. Open fire.
Anti-subsidence foundations.

PLANNING AIMS

1. To give impression of vertical and horizontal size beyond normal, to get away from " cottage " effect.
2. To modify the " box " shape without incurring expense of greater periphery of complex plan.
3. Minimum circulation for bedrooms.
4. Living space to contrast with other minimum dimensions.
5. Orientation, south, east and west for habitable rooms.
6. Oil storage not to increase size of building. Solid fuel to be directly accessible to fireplace.

SITE

Over $\frac{1}{3}$ of an acre, flat and liable to subsidence. Sports field on east. South remains open. Views in four directions.

PLAN

The house is unified with the garage to create a long south elevation to utilise fully the open site and warmth of the sun. In addition, the kitchen has morning sun and the living space evening and setting sun. Front door, on the north side, protected by a covered link with the garage back door. The same path leads to the kitchen back door on the east side.
Oil storage tank in an earth bank on the north side, to break up monotony of flat site, to protect the front entrance and to allow economical solution of housing a bulky object. The boiler is effectively insulated from the pantry.
To avoid " box " effect and to reduce volume to be heated, the first floor on north side has a re-entrant over the hall. The spacious sitting room is designed to contrast with the tight planning elsewhere and the raised bay is planned to provide a play space and stage for the children. There is provision for a folding-sliding door in the living space, to create a small dining room on the kitchen side.

DESIGN CONSIDERATIONS

Garage and house are given similar window treatment, which gives a long elevation of 60 ft. on north and south sides. On the north side the garage covered way and hall are kept as low as possible with a deep unifying fascia so that the vertical impression of the house is exaggerated. Internally the change from the low hall to the 8 ft. 3 in. living space is again a contrast adding an impression of height to the spaciousness of the living space.

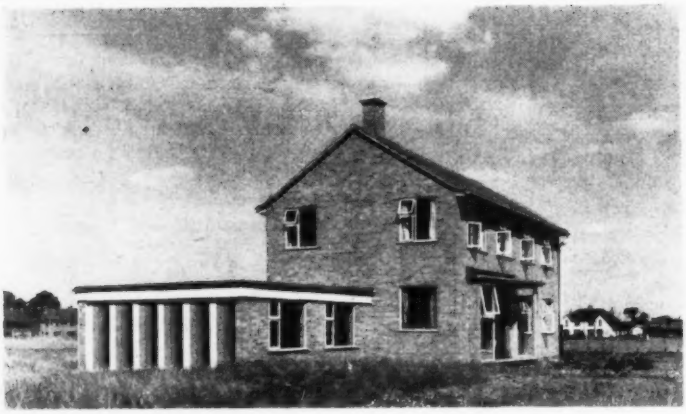
	s	d
cost per sq ft.		
preliminaries and insurances	9	¾
contingencies	—	

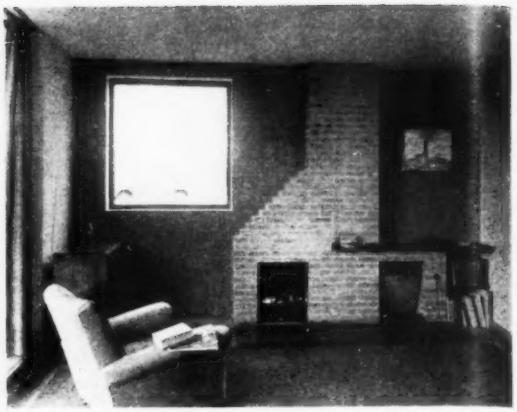
Analysis based on final account, contingencies deducted.

Work below ground level 3 2

Foundations and solid ground floor, 9-in. 1 : 2 : 4 concrete top and bottom No. 65 B.R.C. 6-in. × 6-in. mesh anti-subsidence raft on 3-in. granular base.

building illustrated





Above: the west and south facades. On the left is the double garage, which is also used for table tennis and consequently has large windows. The garage doors are painted in vertical stripes, white, two shades of grey and black. In the background, right, are playing fields. Above right: the living room fireplace and stack, faced with 2-in. hand made golden brown bricks. The specially designed coal hopper enables fuel to be obtained from the coal store without leaving the room.

Below: part of the north facade. External wall finishes are pink facing bricks to 10½-in. cavity walls and vertical sapele boarding on 2-in. sq. timber studding. Below right: the open-riser staircase has treads of sapele, with cork insets, a handrail, also of sapele, and softwood balusters.

analysis

STRUCTURAL ELEMENTS

	s	d
External and internal load-bearing walls	7	10½
Load-bearing cavity peripheral wall, 4½-in. brick, 2-in. cavity, 4-in. breeze blocks. Garage, 9-in. brick. Ground floor spine partition, 4½-in. brick. Ratio: solid wall / floor area = 0·78 / 1		
Windows	4	3½
Specially designed proportions to standard EJMA sections. Bay on concrete plinth, with steel angle above. Ratio: windows / floor area = 0·31 / 1		
External doors	1	3
External openings steel lintol combined angle arch and dampcourse tray. Timber panels of ⅞-in. sapele vertical boarding on felt on 2 in. × 2 in. studding. ¾-in. glass wool and plasterboard. Front door sapele, flush. Ratio: doors / floor area = 0·11 / 1		
Upper floors	1	7½
Timber board on 9-in. × 2-in. joists 13-ft. 6-in. span, 486 sq. ft. Timber board on 4-in. × 2-in. joists. 6-ft. span, 168 sq. ft.		
Staircase		6½
12-ft. × 2-in. bearers. Risers open. Treads 10½-in. × 1⅛-in. × 2-ft. 9-in. Treads in sapele with cork inset. 2½-in. × 1½-in. handrail, in sapele. Soft wood balusters, 1-in. diam. 4½ in. between. Last two in steel, anchored in r.c. slab. Width of staircase 2 ft. 9 in. Total rise, 9 ft. 1 in.		
Roof construction	2	4½
Pitched roof above upper floor, TDA trusses at 30° 1,030 sq. ft. Flat roof, above single floor, 522 sq. ft.		
Glazing	1	4½
Total of structural elements	19	4

PARTITIONS AND FITTINGS

	s	d
Internal partitions		6½
First floor partitions, 3-in. breeze block 82 sq. yds. Timber, 2-in. studded, between bedrooms 3 and 4 (designed for conversion later).		
Internal doors	1	10
13 single doors.		
Ironmongery	1	5¼
Cost includes special fuel hopper. Cast aluminium throughout, except front and french doors, which are BMA throughout.		
Fittings	2	6
2 double and 2 single wardrobes, sycamore, ply-framed, with internal lining in cedar of Lebanon against moths. Cylinder cupboard in softwood.		
Total of partitions and fittings	6	3¾

FINISHES

	s	d
Floor finishes	2	4¾
External floor to covered link by front door, green tiles. Garage and boiler room, smooth trowelled concrete, 387 sq. ft. Price 9d. per sq. yd. Kitchen, cloak and bathroom, vinyl-plastic sheeting, 219 sq. ft. Price 30s. per sq. yd. Living space, hall and lobby, pressed timber tiles, 9 in. × 9 in. with 3-in. skirting, 513 sq. ft. Price 33s. per sq. yd. First floor, T.G. boarding, 585 sq. ft. (price under " Upper floor ").		
Wall finishes	1	8¼
External: walls to covered link by front door, pink facing bricks. Sapele panels finished two coats varnish. Plinth and surround of bay window, black bituminous paint. Garage door, white, light and dark grey and black stripes. Internal: garage and boiler house, fairfaced brickwork. Lobby, facing bricks. Sapele sill, pelmet, hearth surround, mantelshelf and bookshelves in living space. Sycamore ply panelling on stairs. Bathroom, kitchen and cloakroom, emulsion painted. Timber screens, finished scrim and distemper on plasterboard. All other walls, ⅛-in. plaster and washable distemper. Partition between bedrooms 3 and 4, fibreboard, for pinning. Fireplace, handmade 2-in. golden brown bricks, with blue brick hearth. All softwood finished emulsion paint. All hardwood, beeswax.		
Ceiling finishes		6¾
Scrim on plasterboard, washable white distemper. Hall, scrim and washable distemper on woodwool slab, exposed joists. Garage and boiler house undecorated.		
Roof finishes	2	0¾
Pitched roof, red clay interlocking pantiles on felt. Flat roof, three layers roofing felt on 2-in. woodwool, last layer green mineral finish. Soffits, asbestos cement left natural. Fascia to low buildings, asbestos fluted left natural.		
Decorations		10½
Colour scheme: outsides of all windows painted yellow, timber sills yellow, opening lights white. Back and boiler flush, painted yellow emulsion in grey frames. Walls, largely white and light grey. Living space, dark blue end walls. Hall, dark red end walls. Doors, white, yellow, dark red. Skirtings and door frames, dark grey. Black strings to stairs, white balusters. Coal hopper, vermilion. First floor: walls light grey, ceilings, white, skirtings, dark grey. These contrast with the six colours combined in six colour schemes of two colours each		

analysis

s d

to give doors, windows and sills individuality for each room upstairs. This was done especially for the children.

Total of finishes 7 7

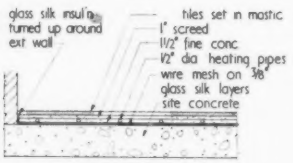
SERVICES

External plumbing 9½
Asbestos cement, left natural; 4-in. half-round gutter, 4-in. downpipes, one on each side of house, with the last 6 ft. black in soil quality asbestos cement. Back inlet gulleys.

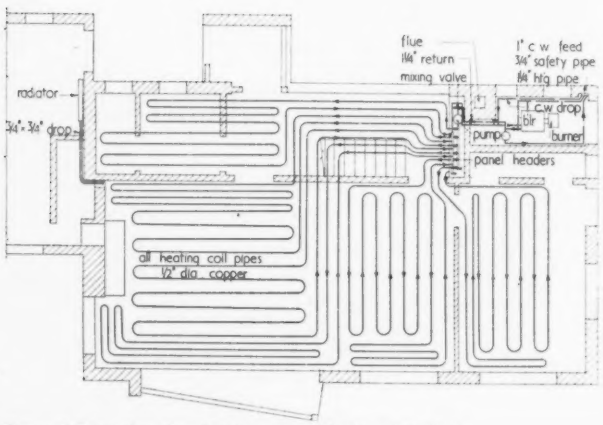
Hot and cold water installation 1 8½
Hot water from oil-fired boiler. Water storage, two tanks, both lagged, one raised to maximum height in roof space. One for heating system, one for hot water.

Sanitary fittings 11
Two low-level w.c.s; 2 basins, in bath and cloak-room; 1 sink, 1 bath, 6 ft. × 2 ft. 3 in. with asbestos panels.

Heating and ventilation 13 0½
(cost includes primary hot water)
Automatically controlled oil-fired burner, fed from 600 gallon standard tank in earthbank with gravity feed.
Two floors served by separate circuits each with own circulation pump.
Ground floor, ½ in. diameter copper pipes laid on glass wool in screed on concrete in panels at 12 in., 9 in. and 6 in. centres.
First floor, skirting heating in all rooms and on landing. Heated towel rail in bathroom.
Circuit also includes radiator in garage and calorifier in cylinder.
Control panel for all heating in recess in hall, adjoining boiler room wall.



Typical section through floor



Ground floor plan, heating layout [Scale: ⅛" = 1' 0"]

s d

Flue to boiler, 9-in. brick for good insulation.
One solid fuel open fire in living space, with specially designed coal hopper, easily removable, draughtproof, capacious and easy to handle by children. (Cost £15.)

Gas installation 5¼
Three points.

Electrical installation 1 9
Earth wiring for fluorescent fittings, connections to oil burner on separate control panel in boiler house.
P.V.C. cables.
Eighteen ceiling points, 4 wall points, 1 bell, 8 power points, 3 clock and shaving points, 2 pumps, 1 burner.

Total of services 18 7½

Drainage 3 2½
Separate; 4-in. salt-glazed earthenware pipes, manhole some 70 ft. from site.

Other elements not shown above 7½
Fireplace.
Shillings per sq. ft. of floor area,

$$59s.\ 8d. = \frac{£5214\ 7s.\ 4d.\ \text{(net cost excluding external works)}}{1{,}748\ \text{sq. ft.}\ \text{(floor area measured inside external walls)}}$$

Increased labour cost excluded.

COST SUMMARY

Ground floor area: 1,103 sq. ft.
Total floor area: 1,748 sq. ft.
Type of contract: RIBA/Q competitive tender.
Tender date: December 19, 1955.
Work began: May 1, 1956.
Work finished: December 15, 1956.
Tender price of foundations, superstructure, installations, finishes: £5,333 14s 9d. Final contract price: £5,214 7s 4d.
Tender price of external works and ancillary buildings: £360 18s. Final contract price: £120.
Total: £5,334 7s 4d (excluding labour increases).

CONTRACTORS

General contractors: George Wood & Son. *Sub-contractors—Electrical installation:* W. Camm & Co. Ltd. *Heating:* G. N. Haden & Sons Ltd. *Weyroc flooring:* R. W. Brook & Co. Ltd. *Phenco Sheeting:* Phoenix Rubber Co. Ltd. *Tiled roof:* Palfreymans (Slater) Ltd. *Flat roof:* Unity Asphalt Ltd. *Paths:* W. F. Holmes Ltd. *Roof tiles:* Langleys London Ltd. *Facing bricks:* Nottingham Patent Brick Ltd. *Sanitary fittings:* Twyfords Ltd. and Adamsez Ltd. *Boiler:* Crane Ltd.

46.Z ALPHABETICAL INDEX TO DEC. 12, 1957 (A-FO)

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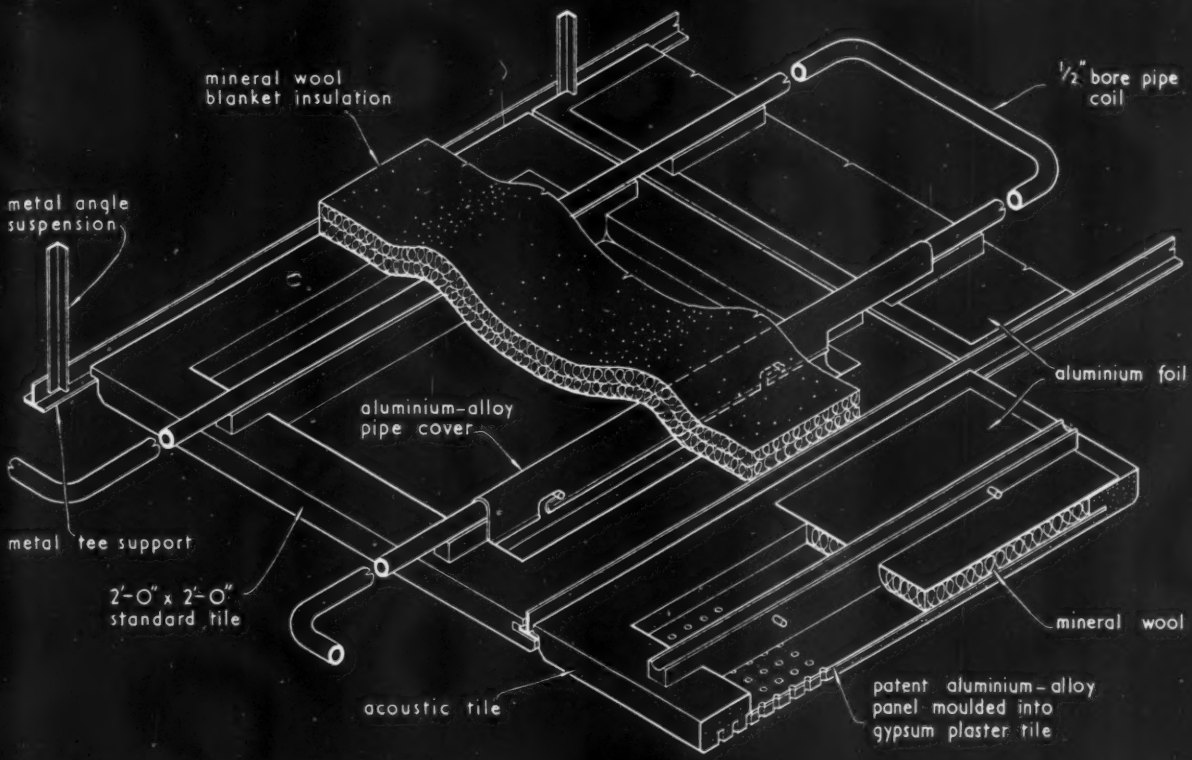
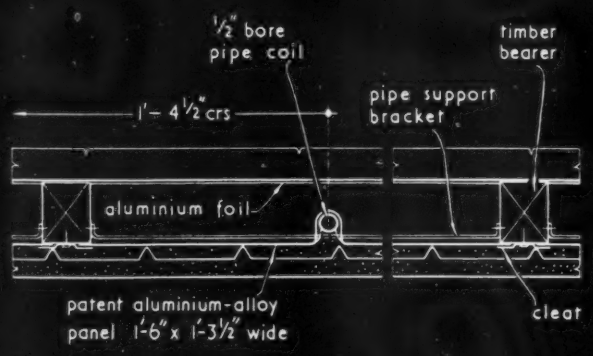
SPACE HEATING | HOT WATER

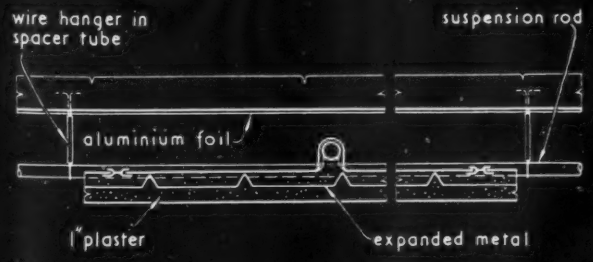
The Architects' Journal Library of Information Sheets 650. Editor: Cotterell Butler, A.R.I.B.A.



GENERAL ASSEMBLY OF COMPONENT PARTS. (tiled ceiling)

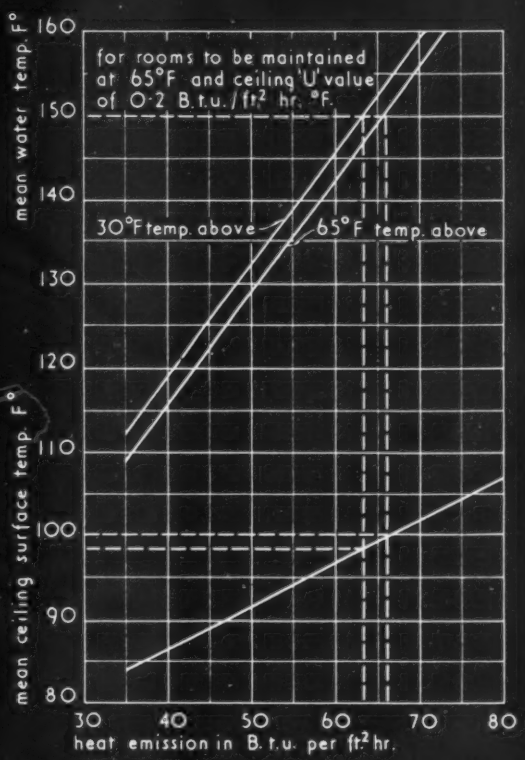


fixing to timber.



fixing to concrete.

TYPICAL FIXINGS. (plastered ceiling)



HEAT EMISSION AND MEAN CEILING TEMPERATURES. (tiled ceiling)

·STRAMAX· RADIANT HEATING AND ACOUSTIC CEILING.

Manufacturer: Stramax Ceilings (GB) Ltd. in conjunction with Clark and Fenn Ltd.

29.H5 · STRAMAX · RADIANT HEATING AND ACOUSTIC CEILINGS

This Sheet describes Stramax radiant heating and acoustic ceilings. Two types are available, tiled or plastered, and both may be suspended from any type of structure. The drawing on the upper face of the Sheet shows the general assembly of component parts with the tiled ceiling, and the typical fixing details on the lower part show the plastered ceiling. The heat emission and mean ceiling temperature graph is for the tiled ceiling.

Principle

The system consists of a suspended ceiling incorporating a hot water pipe coil to which is clipped a patent aluminium-alloy panel. Heat is transmitted through the aluminium-alloy panel, by conduction, to a plaster and expanded metal construction or plaster tiles and then, by radiation, from the under surface to the room below. The upper surface is insulated by aluminium foil or a mineral wool blanket. Services can be concealed behind the suspended ceiling and are accessible in the case of the tiled ceiling.

Weight

The weight of the suspended ceiling, including pipework plus water, is approximately 6 lb. per sq. ft.

Components

Pipe coil: This is prefabricated to close limits in steel tube of ½-in. diameter nominal bore and is welded throughout and hydraulically tested before fixing.

Plaster tiles: The tiles are made from gypsum plaster and those required for heating have an aluminium-alloy panel moulded in during manufacture, as shown on the face of the Sheet.

A ceiling is erected with a proportion of unheated tiles (which may vary according to requirements). and these latter are without the aluminium-alloy insert. Sound-absorbing tiles have the perforations carried right through the plaster tile and aluminium-alloy insert where this is fitted. Heating tiles are each provided with two channels at the back for fixing to the pipe coil by means of specially-formed aluminium-alloy pipe covers: tapered slots on the pipe cover engage with pegs on the side of the tile channel.

Patent aluminium-alloy panel: Those for use with plastered ceilings are 1 ft. 6 in. by 1 ft. 3½ in. wide and those inserted in the gypsum plaster tiles are 1 ft. 8 in. by 1 ft. 8 in.

Fixing

Tiled ceiling: The plaster tiles are clipped to the pipe coil, using two pipe covers for each heated tile, and mineral wool placed over the backs of the tiles. Where standard tiles are used, mineral wool is placed over the upper surface but acoustic tiles are pre-filled with mineral wool and sealed over with aluminium foil. The ends of the pipe coil are suspended from the roof structure with rust-proofed hangers. All types of light fitting, particularly the 2 ft. 0 in. module type, can be accommodated in the ceiling.

Plastered ceiling: The pipe coil is suspended on a steel rod system which is attached to the roof structure as shown in the sections on the lower face of the Sheet. The brackets of the wire hangers used in the fixing to concrete are usually cast in the roof slab. The patent aluminium-alloy panels are clipped to the pipe coil along the straight run and expanded metal wired up hard to their underside. Plastering is carried out to a Stramax specification.

Finish

Pipe coil: This is painted to resist corrosion.
Plastered ceiling: The plaster can be plain or rough-finished
Tiled ceiling: Tiles are available with many decorative treatments, plain and perforated, and can be painted almost immediately after erection.

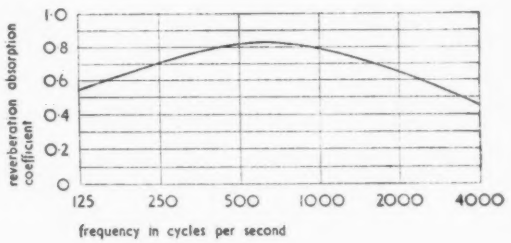
Heat Emission

The graph on the face of the Sheet gives the heat emission, mean ceiling and water temperatures for the tiled ceiling. The figures are slightly improved for the plastered ceiling, as shown in the following example:

With a mean water temperature of 150° F. and a room temperature of 65° F., the ceiling surface temperature will be 101° F., giving an emission of 68 B.t.u./ft.² hr. For a top floor having a roof "U" value of 0·2 B.t.u./ft.² hr., ° F. and external air at 30° F., the emission will be 65 B.t.u./ft.² hr.

Sound Absorption

The small graph shows the reverberation absorption coefficients for varying frequencies. The peak has been arranged to coincide with the frequency of noise level which is encountered in the majority of requirements for sound-absorbing treatment. The graph shows values achieved under test by the National Physical Laboratory.



Further Information

The manufacturer maintains a technical service to advise on problems relating to the Stramax ceiling and to prepare detailed schemes for installations.

Compiled from information supplied by:

Stramax Ceilings (G.B.) Ltd.
Address: 19, Rea Street South, Birmingham, 5.
Telephone: Midland 4674.
Telegrams: Stramax, Birmingham, 5.

In conjunction with:

Clark and Fenn Ltd.
Address: 16, Old Town, London, S.W.4.
Telephone: Macaulay 2455-9.
Telegrams: Plasdecor, Clapcom, London.

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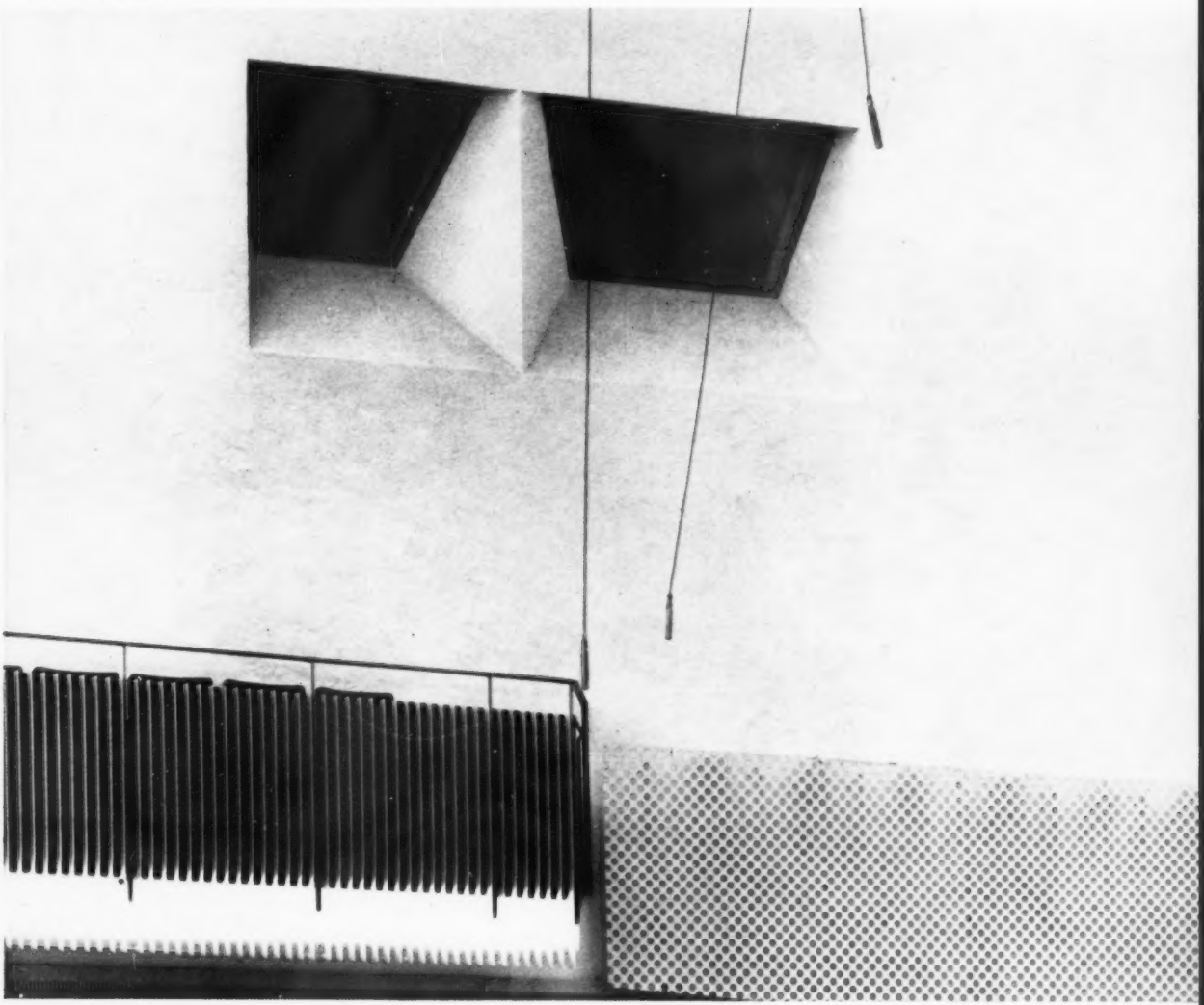
Architects Journal 12.12.57

OBSERVATION WINDOW: CONCERT HALL IN BERLIN

Paul Baumgarten, architect (material supplied by Hans Haenlein)

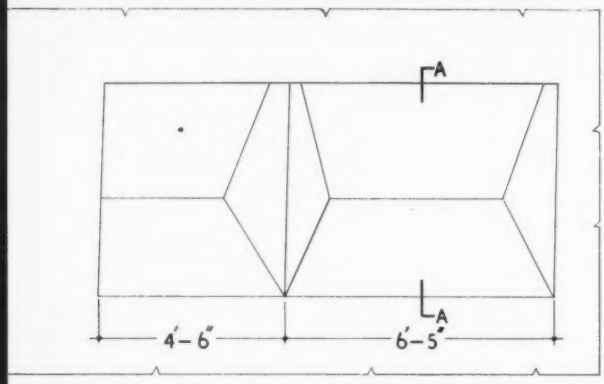


These windows have been designed to enable radio and television staff to have a clear view of the platform while themselves remaining in soundproof conditions. The technical interest of this detail (which is apparent only in the drawing) lies in the use of a mild steel lining to the window opening into the joints of which are inserted rubber pads to prevent the transmission of sound through the metal.

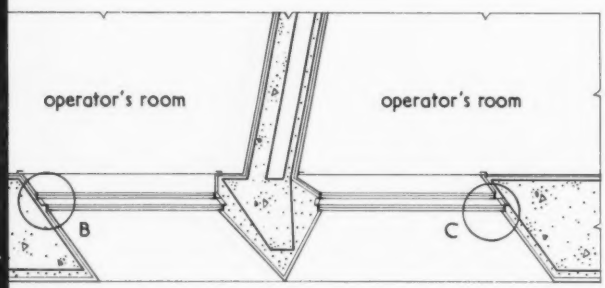
working detail

OBSERVATION WINDOW: CONCERT HALL IN BERLIN

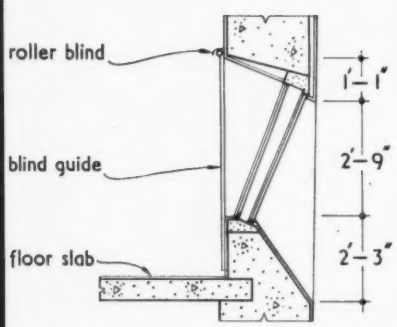
Paul Baumgarten, architect (material supplied by Hans Haenlein)



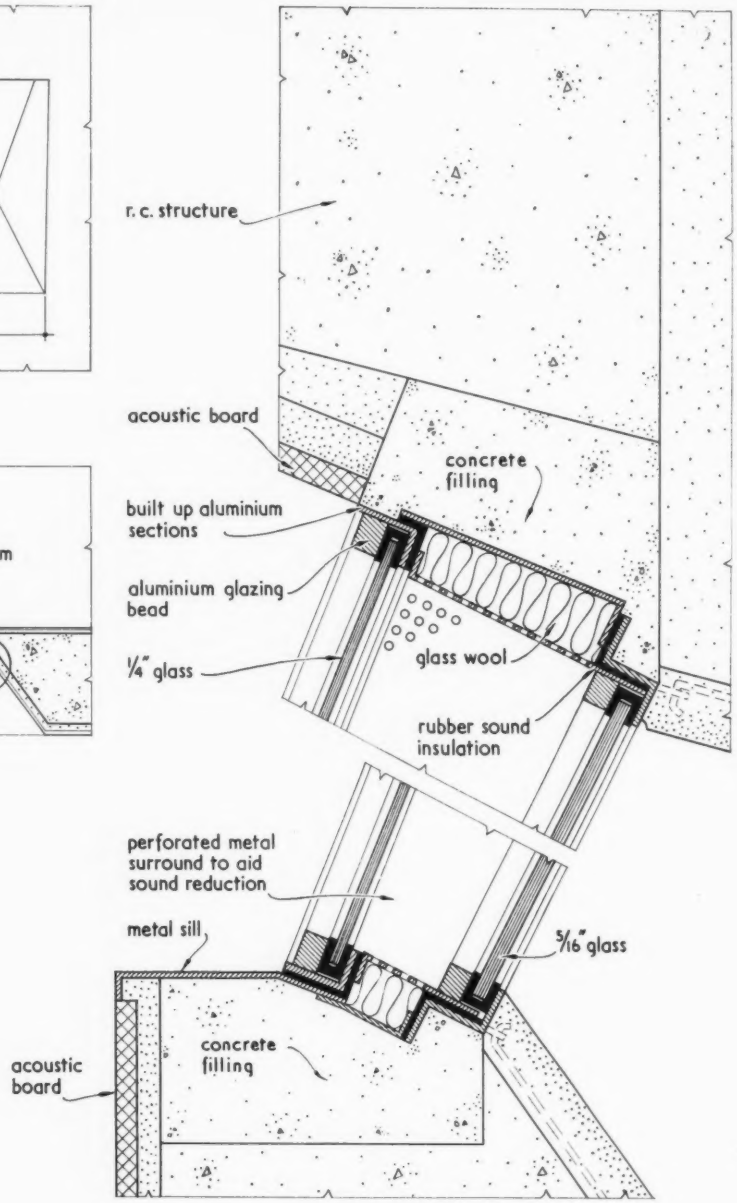
ELEVATION. scale ¼" = 1'-0"



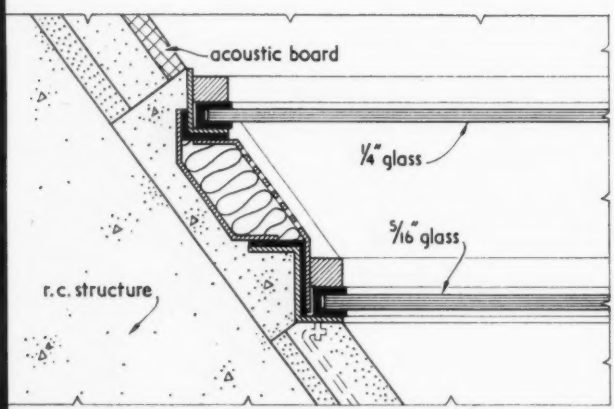
PLAN. scale ¼" = 1'-0"



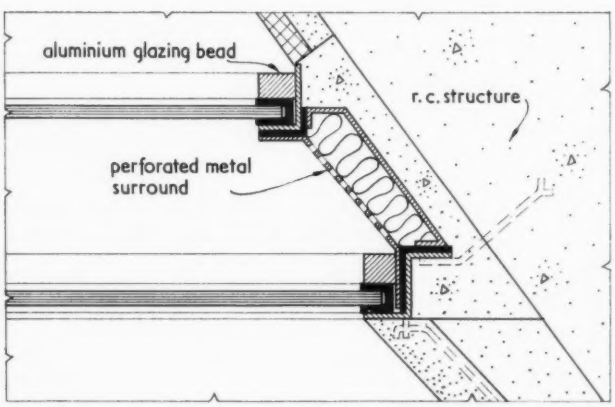
SECTION. scale ¼" = 1'-0"



SECTION A–A. scale ¼ full size



DETAIL AT B. scale ¼ full size



DETAIL AT C.

note: figured dimensions in feet and inches are approximate

This modern, attractive, 4-bedroomed house is the home of Mr. C. R. Lindsey, member of C. H. Lindsey and Son Ltd., a leading firm of Heating Engineers. The central heating system is oil-fired, with fuel supplied by Shell-Mex and B.P. Ltd.

Heating engineer chooses oil-fired heating for his own home

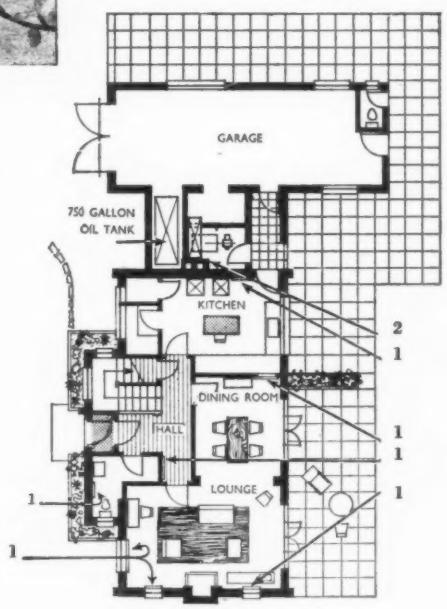
'KINGSDOWN', GALLOWS GREEN, near Colchester, owned by Mr. C. R. Lindsey, stands on land which was used as a burial ground during the Great Plague, when it was known as 'The Great Orchard'. A gallows at one time stood on the common land in front of the house.

Mr. Lindsey is an expert in house heating. He was careful to install the most efficient form of heating he knew – oil-fired heating. Central heating and hot water at 'Kingsdown' are provided by an oil-fired boiler using fuel stored in a 750-gallon tank. His expert knowledge is also responsible for refinements in the choice of radiators; for instance, the radiator in the hall backs on the part of the cloakroom where the coats are hung up, providing a gentle warmth to dry wet raincoats.

Oil-fired heating is clean, labour-saving, and economical. Automatic controls can ensure steady, even warmth and ample hot water whenever it is wanted. There is no fuel to carry, no stoking to be done and no ash or clinker to clear away.

Boiler and burner manufacturers have now produced special oil-fired units for every requirement, from hot water supply in the smaller home to full central heating in the large country house. Shell Domestic Fuel Oil is used for the larger installations and BP Domesticol has been specially developed for the smaller boilers with vaporising burners.

If you are designing or modifying almost any kind of building, public or private, you may well find it worth your while to make provision for this modern, efficient heating method. To find out more about oil-fired heating write for a copy of 'Oil Fuel at Home' to Shell-Mex and B.P. Ltd., Fuel Oil Dept. D6L, Shell-Mex House, Strand, London, W.C.2.



1. *Dunham convector type radiator*
2. *Boiler room*

PRICE COMPLETE: £148

(LIST PRICE)

'POTTERTON' 53

OIL-FIRED BOILER

fully automatic, with pressure-jet burner and photo-electric controls

There is a big demand for an oil-fired boiler for the smaller house and here is one that is *fully*-automatic with *all*, repeat *all*, the features of the larger 'Potterton' Boilers.

The 'Potterton' 53 Boiler is a packaged unit; the preformed combustion chamber is already cemented into position and the wiring between burner and controls is completed and tested. It is the last word in ease of installation and maintenance! And its output of 53,000 B.t.u/hr makes the 'Potterton' 53 Boiler eminently suitable for the supply of hot water and central heating in the average four bedroom house.

The pressure-jet burner, with photo-electric control, burns 35 seconds fuel oil and, for further economy, a clock control can be fitted. With all this, there is the 'Potterton' efficiency and reliability. No other boiler can offer as much as the 'Potterton' 53 Oil-Fired Boiler at that price.

We shall be pleased to supply full details.

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OIL-FIRED OR GAS-FIRED

The Key to comfort

POTTERTON DIVISION, Thomas De La Rue & Co. Ltd. 20/30 Buckhold Road, London S.W.18.

DL804

AT THE BUILDING EXHIBITION

In the last two weeks we have illustrated several of the best stands at this year's Building Exhibition. Here, and overleaf, are two more. This one was designed by Arthur C. Braven.

Announcements

TRADE

Concrete Ltd., of Green Lane, Hounslow, Middlesex, announce that their northern organization is now a separate company, Concrete (Northern) Ltd. The directors are: T. S. Lucas, T. H. G. Mathews, A. E. S. Jackson, W. Dickinson and L. Wright.

British Insulated Callenders Cables Ltd. announce that they have opened a new depot at 511, Roumelia Lane, Boscombe, Hants (telephone Boscombe 36223). A. J. Pearson will be in charge of the depot.

Fibre Building Board Development Organisation Ltd., FIDOR, announce that, at the invitation of the Swedish Wallboard Manufacturers' Association, their fifth conference will take place at the Hotel Gillett, Stockholm, on June 3 and 4, 1958.

Federated Foundries, one of the largest producers of pipes and fittings in the country, have sponsored a series of talks designed to give architects and plumbers the latest information about single stack

THE NEW
IBSTOCK OLD ENGLISH SANDFACED
RUSTIC Natural Coloured BRICK

To meet the demand for a reasonably priced natural coloured sandfaced brick we have now produced one ranging in shade from a red-brown, a salmon-brown and a pale brown with a slightly roughened sandfaced texture.

Prompt delivery from stock can be arranged at present in 2⅝" and 2⅞" sizes.

Send for sample and full particulars.
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IBSTOCK, Near LEICESTER
Phone: Ibstock 591 (3 lines)

London: L.M.R. Goods Depot, Wright's Lane, Kensington, W.8.
Phone: Western 1281 (2 lines)

Ibstock
FACING BRICKS

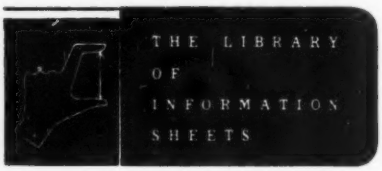
AT THE BUILDING EXHIBITION continued

This stand, which was built for the Building Exhibition, was designed by Michael Broughton.

TRADE ANNOUNCEMENTS *continued*

plumbing. The talks are being given by J. Croft, F.H.S.H., F.INST.P.H.E., F.P.H.I.A., late chief inspector of health of the LCC. Further information can be obtained from J. Oswald, Federated Foundries, 75, Hawthorn Street, Glasgow, N.2.

The Gas Council of 1, Grosvenor Place, London, S.W.1 (telephone: Sloane 4554) announce that their Press and Information Office is open from 9 a.m. to 6 p.m. to deal with enquiries about general matters concerning the gas industry. At other times enquiries should be addressed to one of the following: C. L. Elliott, Primrose 2638; J. Hamson, Hurstway 5905; D. Polini, Cunningham 4583; or R. S. Hinder, Buxted (Sussex) 3251. Enquiries concerning gas supply, charges or events confined to any specific area will usually be handled by the gas board concerned.



29.H5. *REFERENCE BACK*

Readers are asked to cancel this Sheet (published 28.11.57*) from their collections. It is replaced by a revised version in this issue.*

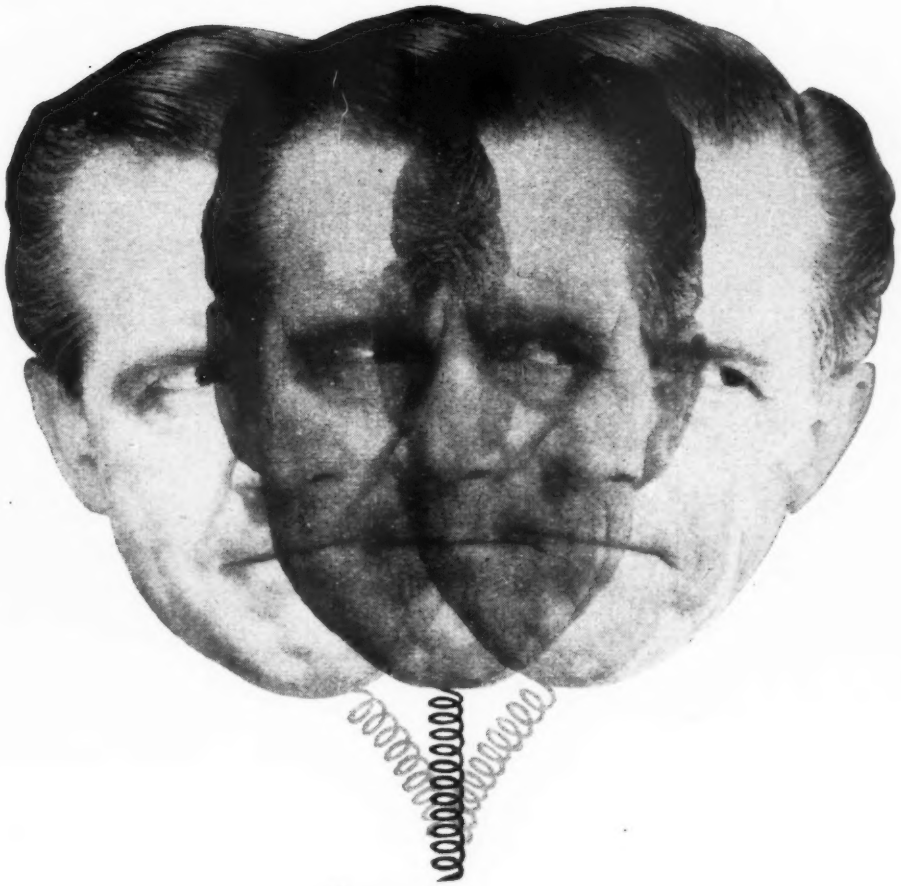
pensions for the self-employed

THOSE eligible include professional men and women in practice, controlling directors of companies, individuals and partners in business and employees for whom no staff pension scheme is available. In view of the widely differing circumstances of the individuals concerned, the United Kingdom Provident Institution has designed two separate contracts, on very favourable terms, of which one or the other can be adapted to suit most requirements.

Send for our new booklet "Your Pension —Which Way ?" for full details of these two plans.

UNITED KINGDOM PROVIDENT INSTITUTION

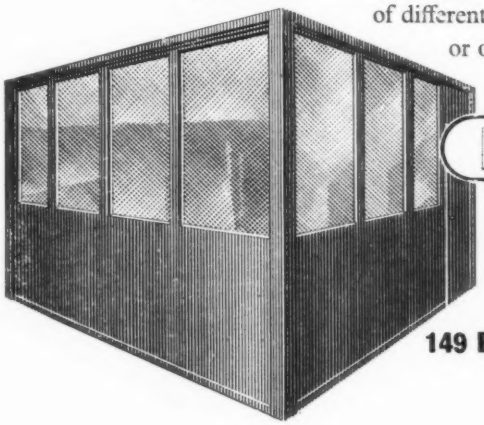
33-36 Gracechurch Street, London, E.C.3 Telephone: *Mansion House* 6543



don't get rattled...

don't slam the door on new ideas!

New but well tested is N.S.E.—the *non-vibrating* steel-and-glass partitioning that is better than anything for a quiet life. Divide and rule your floor-space into neat, bright offices, passages and bays with N.S.E., the handsome non-vibrating partitioning that looks permanent but can actually be altered in minutes to make rooms of different sizes. With or without top filling. Glass transparent or otherwise. N.S.E. partitioning is *even cheaper than wood.*



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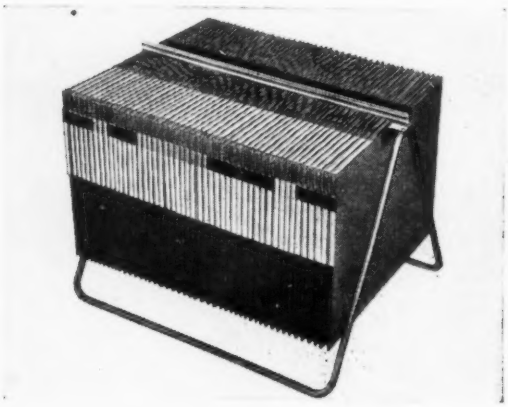

68% FLOOR SPACE SAVED

by New Lateral Filing System

In your office, you need constant reference to a multitude of plans, drawings, bills of quantity, contracts, letters, etc.

These must be housed somewhere; yet the best of your office space must not be cluttered by filing.

The new Lateral Filing System gets to the very core of this problem. With it, you can put your files almost anywhere (Lateral is the 'thin man' of filing); yet *it actually occupies 68 per cent. less floor space.*

That odd corner or unused passageway (too wide to be wasted, too narrow for orthodox filing) fits it like a glove.

How? Lateral Filing embodies two revolutionary space-saving principles:—

1. Utilisation of *height*.
2. Abolition of filing drawers.

Special tall cabinets (similar to Library bookshelf units) are used. Files go in sideways—just like books—but are suspended from a single rail for really quick handling, convenient grouping and freedom from wear.

Results:—

(*a*) Instant finding of any file by means of permanently visible title strips (no sorting through drawers).

(*b*) Great compactness, allowing one clerk to handle up to 10,000 files with ease.

(*c*) Congestion relieved by building *up* instead of *out*.

Briefly then, Shannoblic Lateral Filing means this to the Architect: considerable relief from high office costs; filing space coverage condensed to less than half—*plus* a ready-made control centre with coloured file signals 'flashing' contact progress, cost levels, approval dates, and so on.

A brochure has been prepared which will explain to you exactly how urgent problems of office congestion may be solved. May we send you a copy? Just write 'Shannoblic Lateral' on your letterheading and post to—

Shannon Systems

FIRST IN FILING

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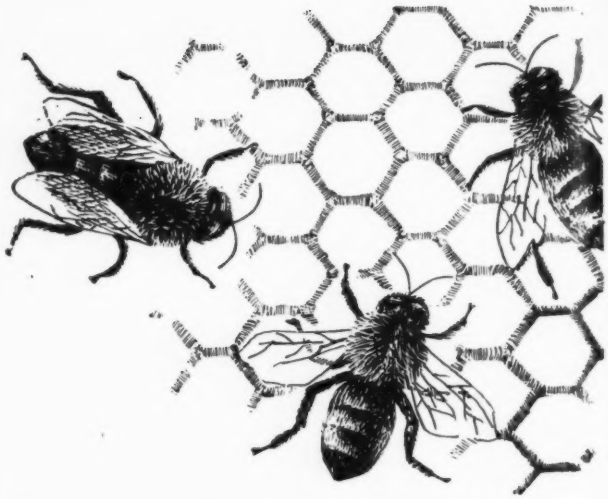

Space is valuable! Make full use of it

There is no waste space in the hive. Although storage capacity is used to the full, yet every individual section is immediately accessible, and there is the correct amount of room to permit freedom of movement.

Occupied space costs no more than waste space, but pays for its keep. Handy Angle enables you to combine storage capacity with accessibility. The slotted design and range of fitments provide shelving for the accommodation of stores of any size, type and weight, quickly and at low cost. Extension or revision of storage arrangements are easily carried out without waste of existing materials and at little expense. A complete range of angle sections is available, whilst accessories include anchor plates for strength and rigidity, shelves, panels in steel or aluminium and joining pieces.

May we send you further particulars and details of Handy Angle service? Technical Representatives are always at you disposal.

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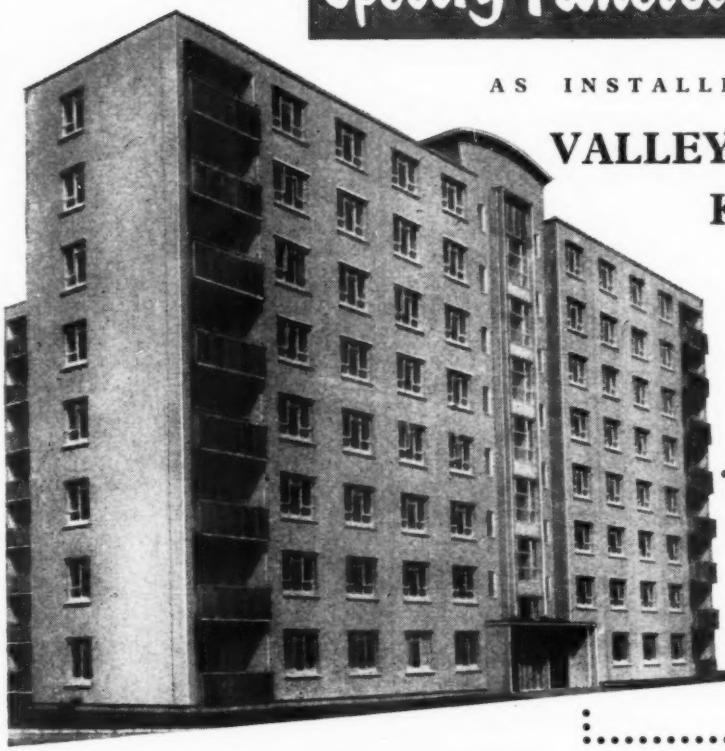
specify Panelec Floor Warming



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VALLEY GARDENS FLATS KIRKCALDY

★ ECONOMICAL
★ CLEAN
★ AUTOMATIC

Publication No. PAN 657 gives full details of the Panelec system. We have a copy for you.

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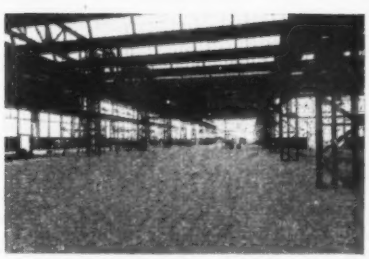
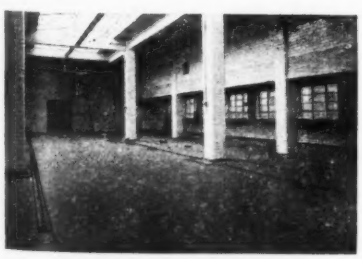
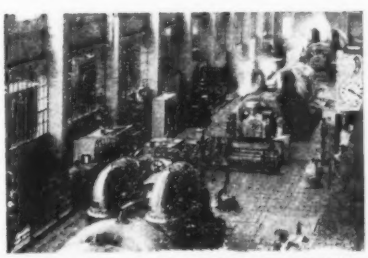


"FERROGRAN" STEEL FACED FLOOR FLAGS



ACID RESISTING FLOOR SURFACES



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TO SUIT EVERY TYPE OF TRAFFIC CONDITION

Now!

translucent roofing sheet that

retards fire

and

extinguishes itself

when flame source is removed.

SELF-EXTINGUISHING FIRE-RETARDANT

Cascalite 'Selfex'

REINFORCED CORRUGATED ROOFING SHEET

Cascalite shatterproof translucent fibreglass-reinforced sheeting, made by Cascelloid of Leicester, is well known. It lets in the light—but not the heat—without glare. It is virtually shockproof—a dropped hammer merely rebounds. Now an alternative version of Cascalite is in production—Cascalite 'Selfex' retains all the advantages of standard Cascalite sheet but in addition it incorporates a resin which *limits flame-spread.* 'Selfex' burns only when a hot flame is in direct contact with it—remove the flame and the fire 'snuffs out'. At the manufacturers' request, a special investigation of Cascalite 'Selfex' was conducted at the Fire Research Station, Boreham Wood, Herts. A summary of the test findings appears below.

Fire Research Station Test F.R.O. S.I. No. 987

Two sheets of corrugated Cascalite 'Selfex', each 27in. by 72in., were tested, fixed successively in an opening in a roof section of corrugated steel sheet at an angle of 40 deg. A continuous strip of asbestos wool approximately 3in. wide was inserted between the roof light and the steel sheeting.

On Sheet No. 1 well-lighted brands of various weights in the range 1 to 100g. were placed successively on the upper surface. All the brands from the 5g. size upwards ignited the sheeting immediately beneath but the flames died out when the brands had been consumed. There was no spread of the flaming beyond the brands, and no flaming drops were formed.

Sheet No. 2 was placed at an angle of 40 deg. to the horizontal in front of a vertical furnace panel giving out an intensity of radiation equivalent to that which would be experienced at a distance of 60 ft. from a burning building 100ft. long by 40ft. high with 40 per cent. window openings through which flames at a temperature of 1,000 deg. C. were being emitted. Emission of gases accompanied by charring of the upper surface occurred. A luminous gas flame 3in. long from a $\frac{1}{8}$in. diameter pipe was applied after one minute to the upper surface of the sheeting, when ignition occurred and the flames gradually spread over the whole face. The flaming started to diminish at two minutes and by three minutes the only flaming was along the front edge and this finally died out at 5 minutes 15 seconds. No penetration of fire to the underside occurred nor were any flaming drops formed. The sheet was able to support the weight of two bricks placed on it after this test.

A verbatim copy of the report, together with the fullest information about Cascalite 'Selfex' will gladly be posted, free of charge, to any enquirer.

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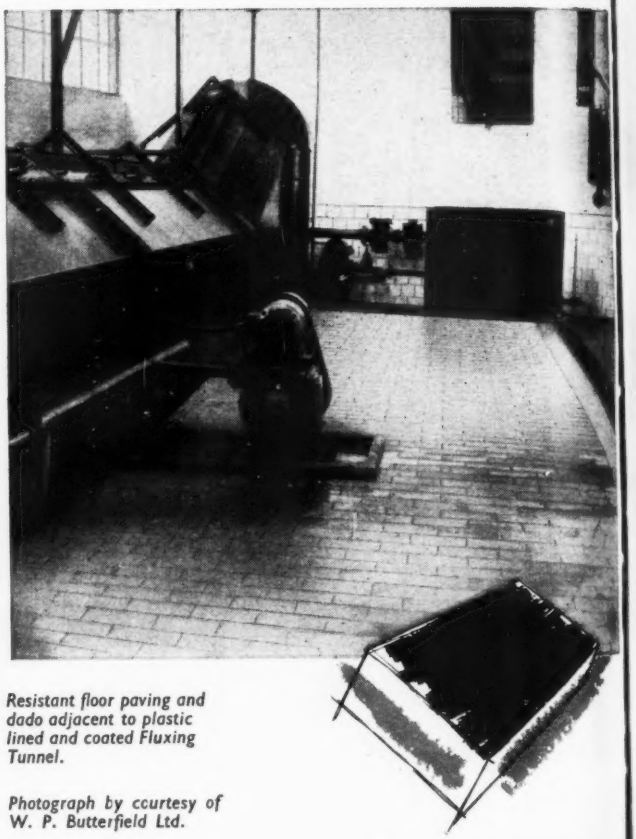
Acid & Alkali Resisting TILING



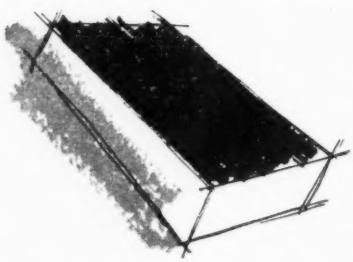
Resistant floor paving and dado adjacent to plastic lined and coated Fluxing Tunnel.

Photograph by courtesy of W. P. Butterfield Ltd.

The design and installation of all types of industrial corrosion proof masonry undertaken.

Also acid proof plastics for chemical plant, tank linings, etc ; acid and alkali resisting paint.

The photograph shows the prefluxing shop of a galvanising plant incorporating all the above.



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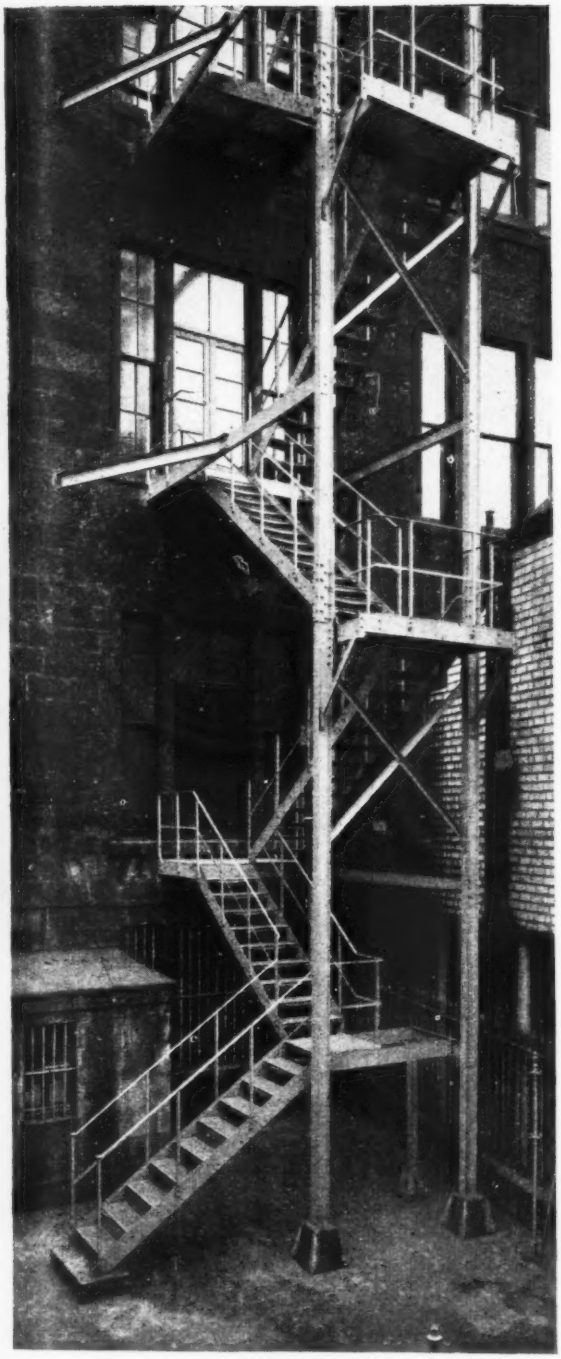

Lion Fire Escape Stairs are made for strength and safety. Available either straight or spiral, they are constructed in steel with cast iron perforated treads and landing. For over sixty years Lion Foundry Co. Ltd. have been supplying and erecting fire-escape stairs for Government Buildings, Local Authorities, Hospitals, Office Blocks, Theatres, etc.

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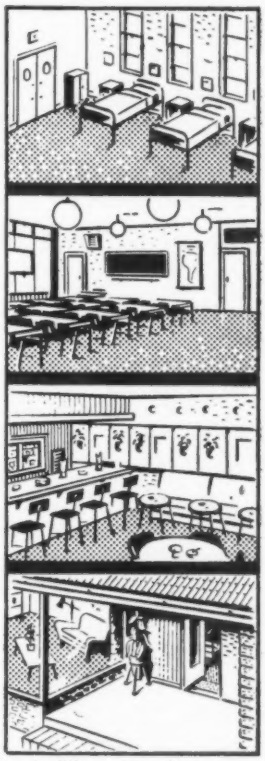
Hard, smooth, seamless . . . and gleaming with contemporary colours . . . the new COLORAZZO thermo-set plastic floorings are ideal for all types of buildings, even outside on terraces or loggias. So easy to lay . . . so inexpensive in first cost and upkeep.



Advantages of COLORAZZO

* Ready mixed for laying on site.
* A completely seamless, satin-smooth finish with excellent insulating properties. Pleasant and warm to the touch.
* A most restful floor for pedestrians, yet extremely hard-wearing and abrasion-resistant. Non-slip.
* Unaffected by water and offers high resistance to all acids.
* Equally satisfactory laid indoors or outdoors, being unaffected by weather.
* Does not require polishing. Simply clean with a damp cloth.
* Can be scrubbed repeatedly.
* Can be laid on any suitably prepared surface—wood, cement, tiles etc. and on table-tops, shelving, window sills.
* No trowel marks.
* Extremely strong. Tensile strength 47,000 lbs. per sq. inch. Flexural strength 63,720 lbs. per sq. inch.

COLORAZZO TERRAZZO Any builder can produce a most attractive terrazzo flooring, simply by incorporating 1/16th inch marble chippings to the COLORAZZO. The result is indistinguishable from traditional terrazzo, but it gives everyone the means of laying this superior flooring at a very competitive price. It is non-cracking, dust-free and acid-proof . . . and wears evenly all over! Builders with good cement or plaster finishers can lay this floor with excellent results.

Colorazzo Flooring will be laid by our own team of expert craftsmen anywhere, at short notice if required.

★ *Full details of Colorazzo and other Surfex Floorings will be gladly sent on request.* ***We are Manufacturers and Contractors.***

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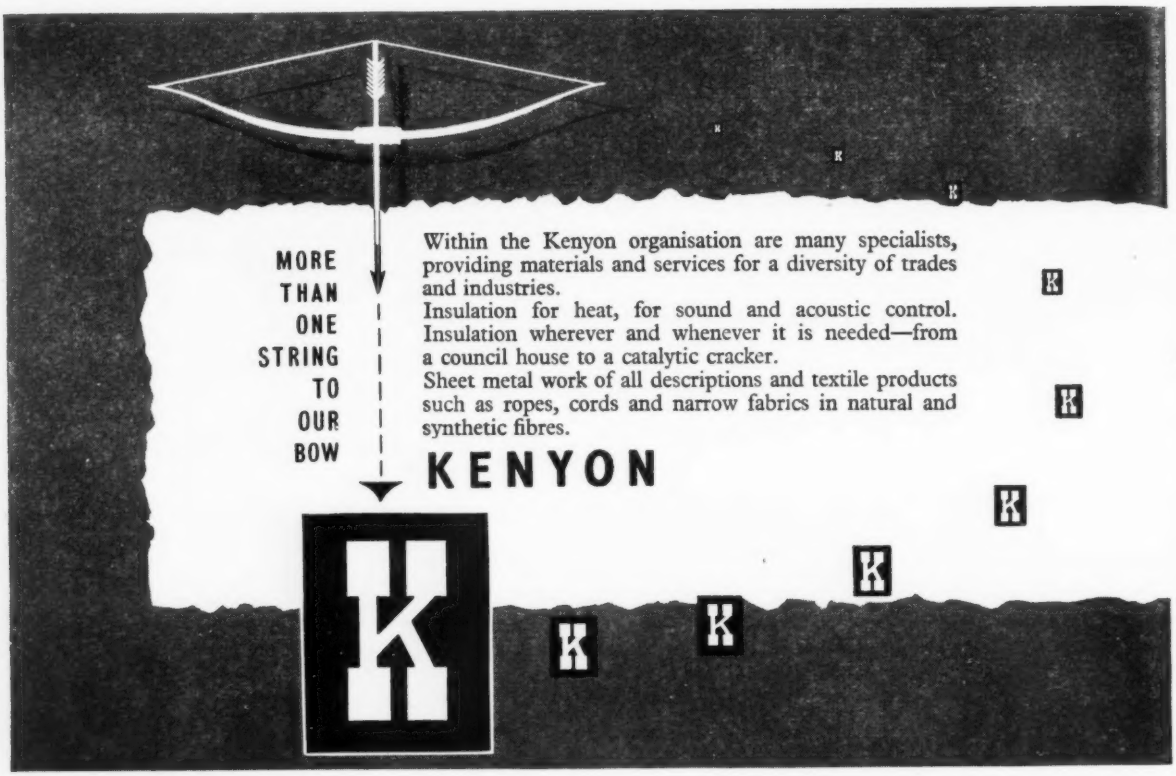

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Fibrolene floor tiles can be laid on concrete or timber. Sizes 12" x 12" and 9" x 9". Thickness 3/32". Available in a range of seventeen colours. Delivery two to three weeks.

High resistance to acids, alkalies, oils and greases. Hard wearing, warm to the tread, fadeless, resilient, non-absorbent.

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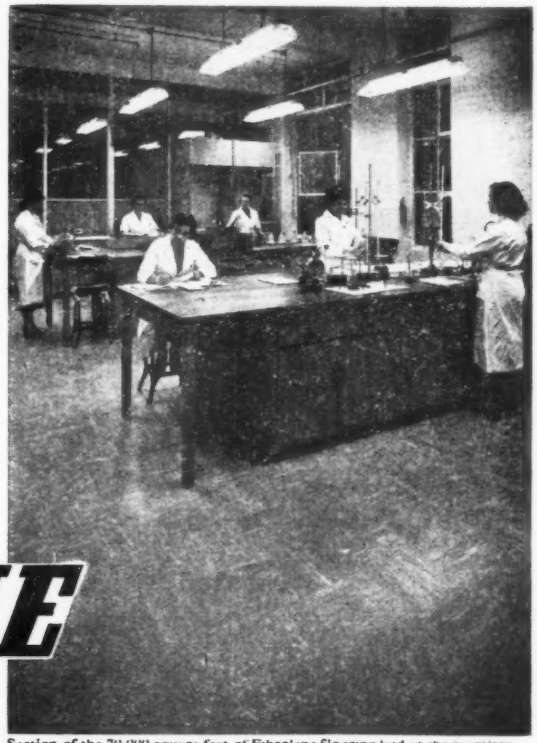

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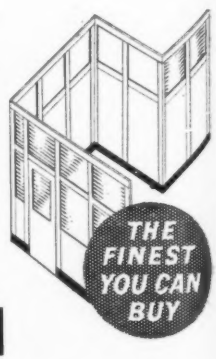

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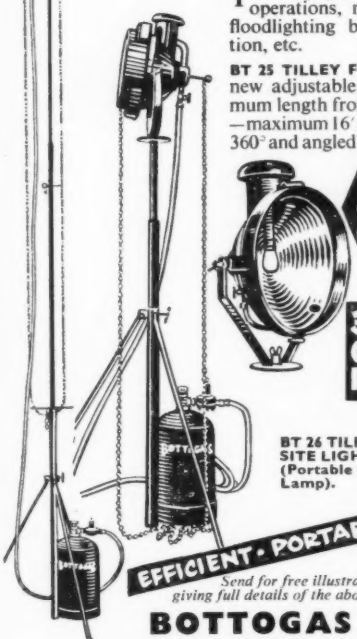

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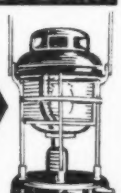

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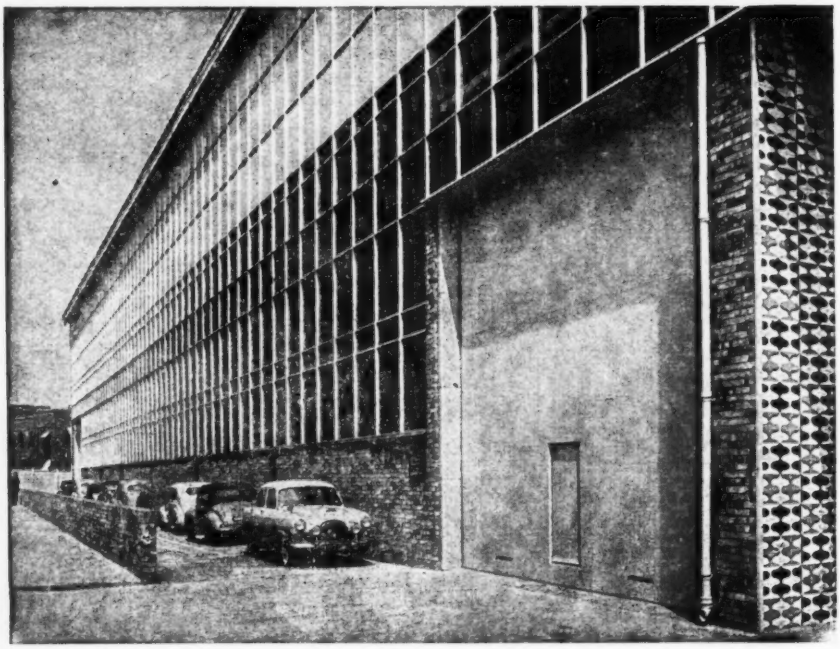

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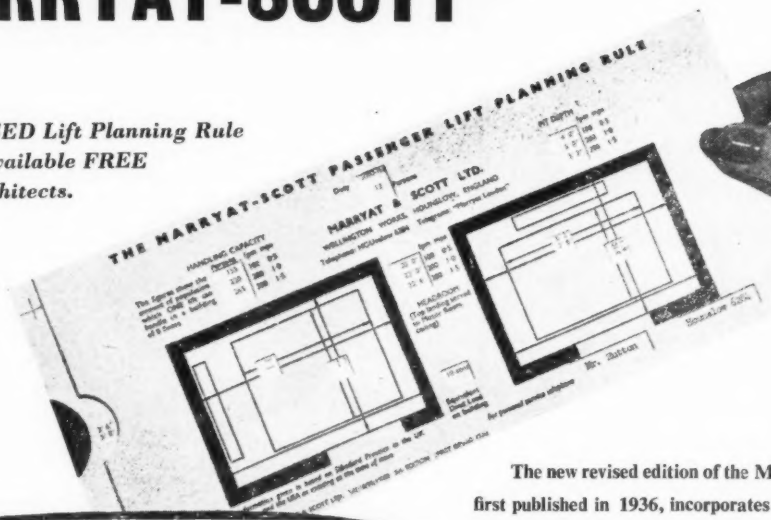

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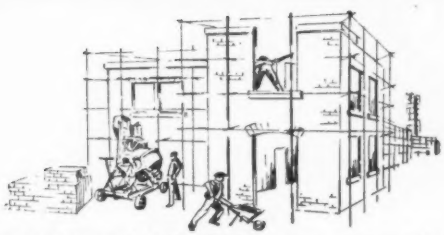

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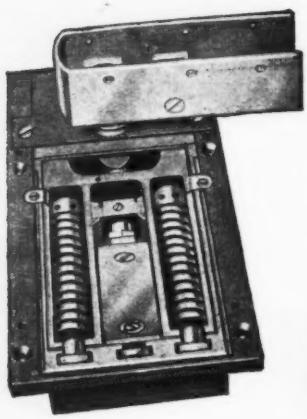

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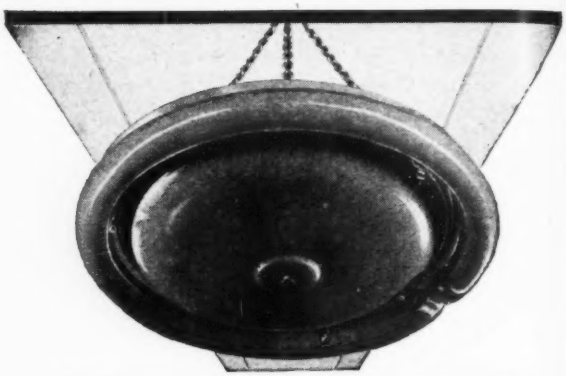

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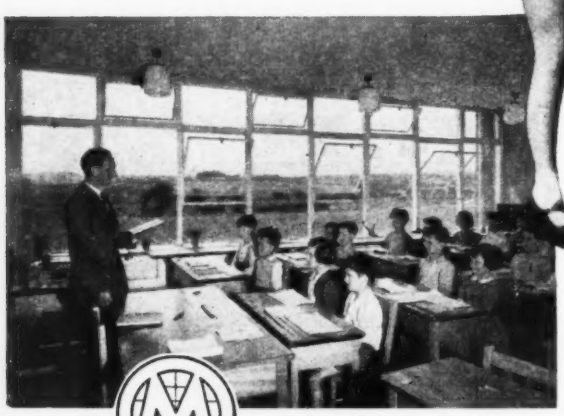

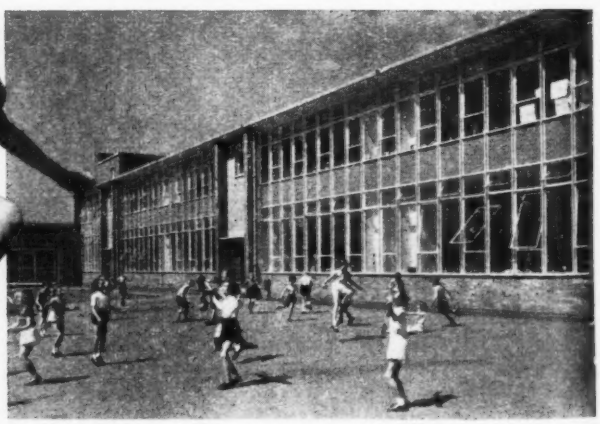

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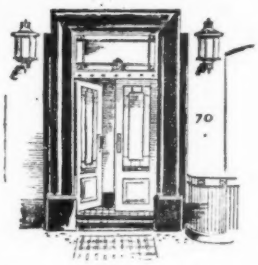

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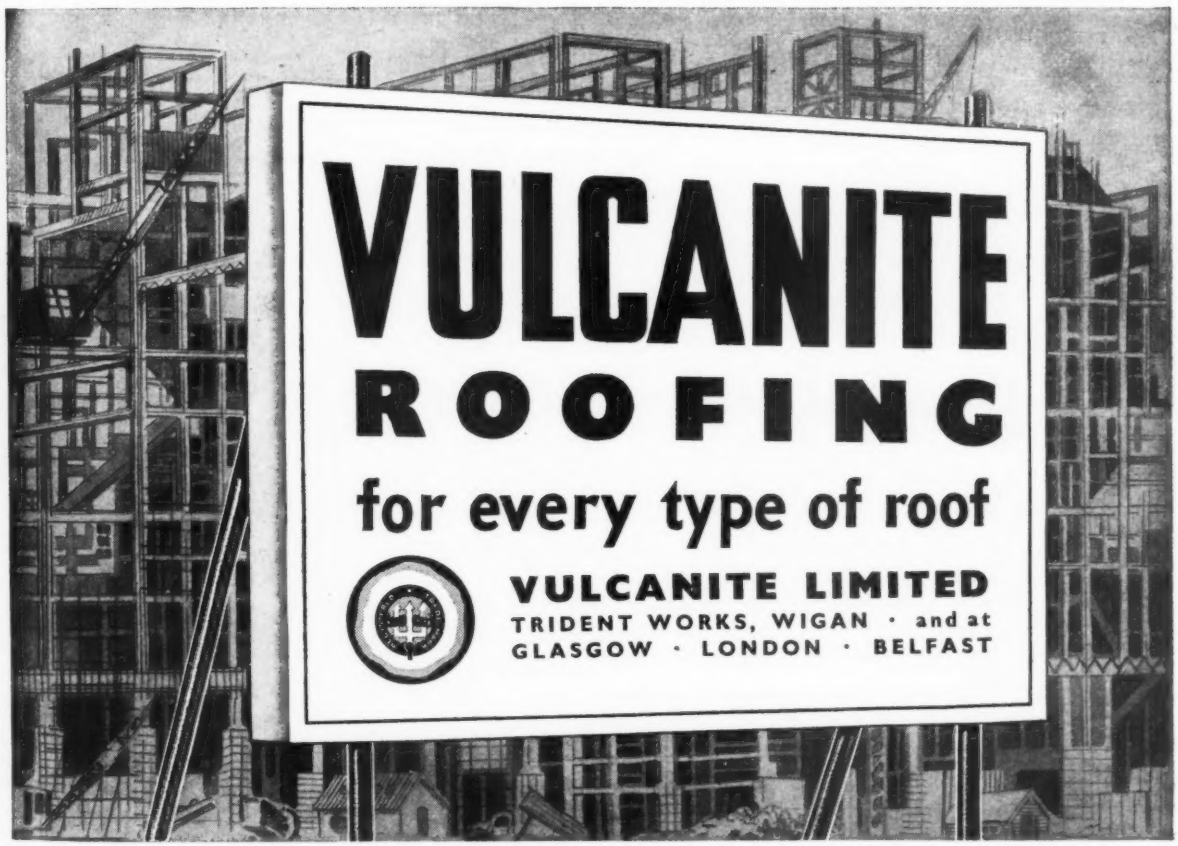

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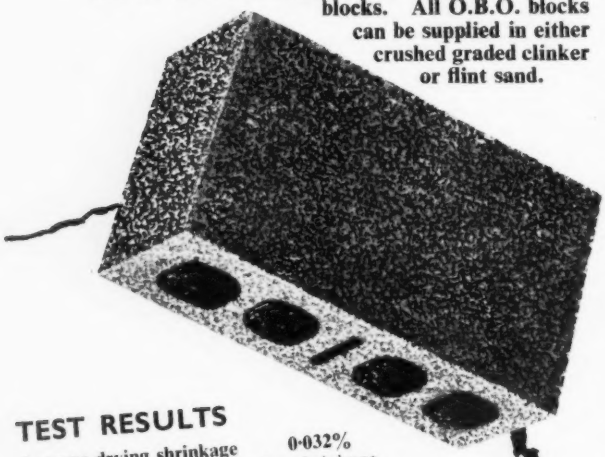

TEST RESULTS

Average drying shrinkage 0·032%
Note: Maximum average drying shrinkage requirements for type 'B' blocks 0·06%

Average moisture movement 0·028%
Note: Maximum average moisture movement requirements for type 'B' blocks 0·05%

CONCLUSION

The 6·18" × 9" × 4¼" hollow clinker blocks meet the specified test requirements of B.S. 2028: 1953, as type 'B' blocks, in respect of drying shrinkage and moisture movement.

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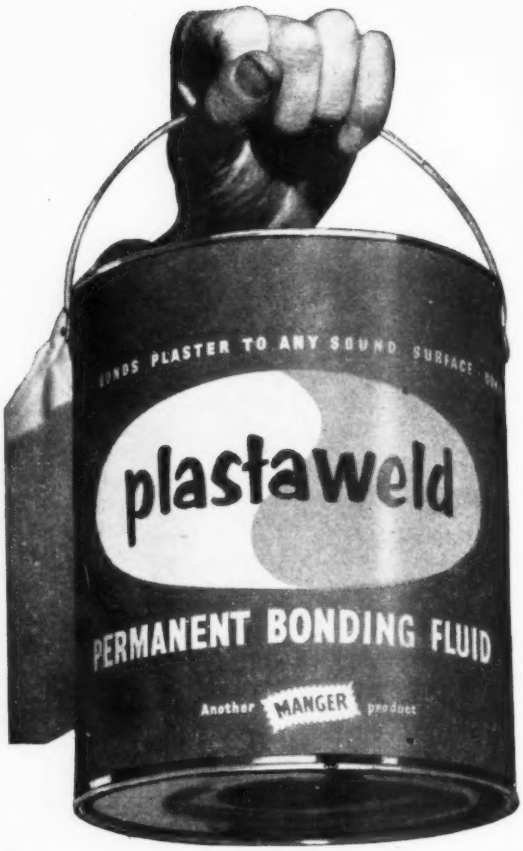

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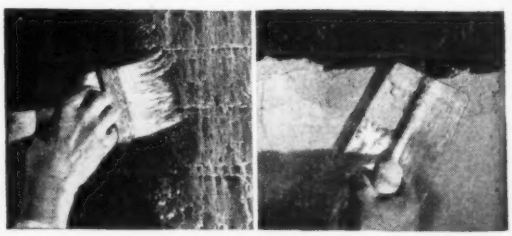

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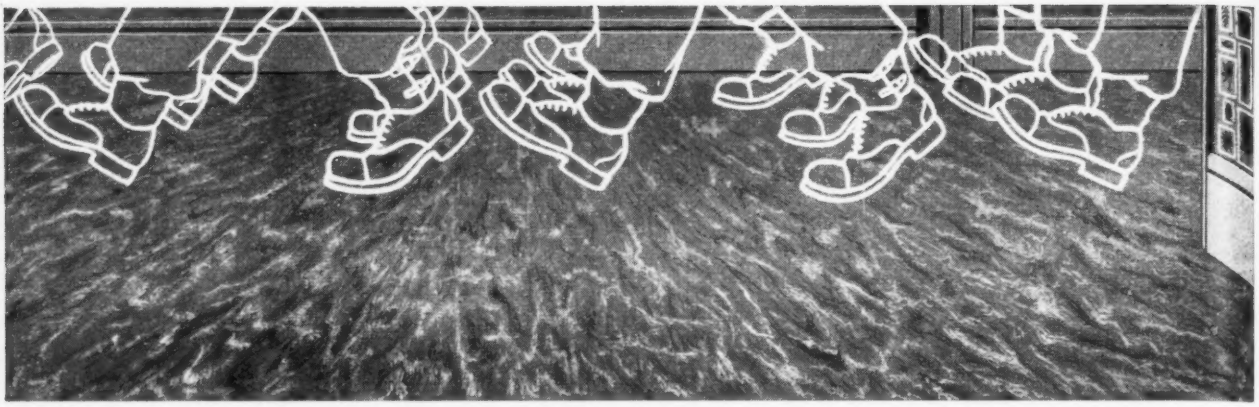

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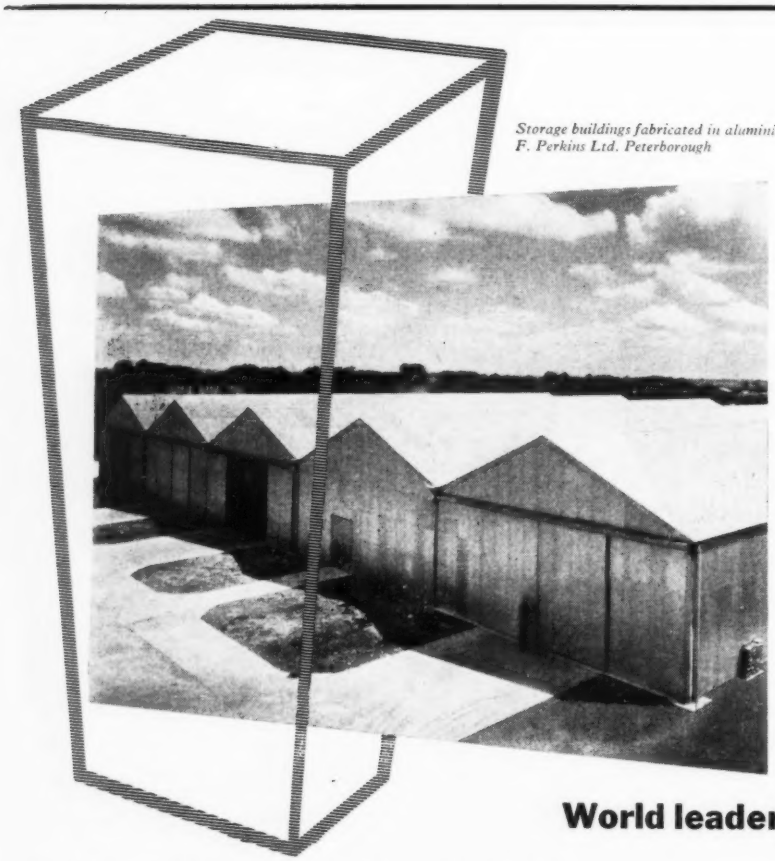

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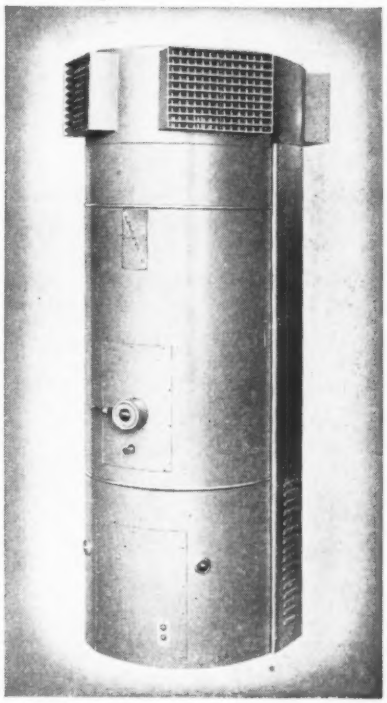

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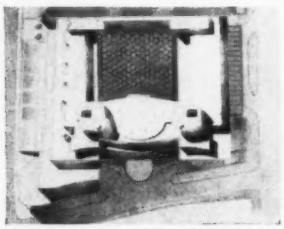
TUC
Brasilia
Street Lighting

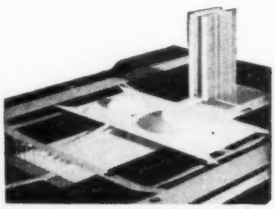
December Architectural Review

Design for public and administrative functions will form the subject of the two most important features in the Review for December. The *TUC Memorial Building*, designed by David Aberdeen, which is only the



Airview drawing of David Aberdeen's TUC Memorial Building.

second public building of consequence to go up in London since the War, will be described and illustrated for the first time in complete form, and a supporting article in *Skill* will examine in detail the finishes and mechanical equipment that make this one of the most lavish buildings—outside the commercial field—of recent years. The other major feature is concerned with *Brasilia*, the projected new capital city for Brazil, typically grandiose and Latin-American in conception, but more likely than most such schemes to achieve completion. Sir William



Oscar Niemeyer's design for the Congress Building at Brasilia.

Holford who was one of the jury who assessed the competition for the new capital's plan, introduces the project and its site, discusses the competition, and adds a few words by way of introduction to the brilliant and unconventional winning scheme, by Lucio Costa father of Brazil's modern movement, whose report is published in English for the first time. Another father of his art, *John Britton*, founder of English topographical studies, will be the subject of an historical article by Peter Ferriday, and the bicentenary of the birth of the great neo-Classical sculptor *Antonio Canova* is celebrated by one of England's leading neo-Classical scholars, F. J. B. Watson, with a chronicle of English visitors and admirers at the sculptor's studio in Rome. Gordon Cullen will tackle one of the most vexed and debated problems of outdoor detailing, *Street Lighting*, in terms of distribution and siting, as well as the design of equipment, and interiors to be described include the IBM offices and the Garden Centre, both in new office blocks in Wigmore Street. Foreign reports will cover the *Triennale di Milano*, and the *Berlin Interbau* exhibition, and regular features like the *Counter Attack Bureau* and Robert Melville's provocative art-criticism will continue.

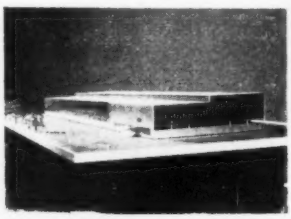
Preview

January Architectural Review

Each New Year, the Review devotes an entire special issue to a survey of what the leading architectural offices in Britain have in hand on the first day of the year.

Assembly Hall of a girls' comprehensive school at Southwark. Architects, Chamberlin, Powell and Bon.

The view presented by *Preview* is an extremely varied one; the buildings it covers range from a pub to a synagogue, by way of schools, universities, colleges, hostels, hospitals, factories, office blocks, churches, airports, planning schemes, housing layouts, a market and a seaside pavilion; and the offices and architects responsible for these projects-in-progress read like a directory of the country's top talent (as indeed they are)—the L.C.C., the Ministry of Works, ACP, T. P. Bennett and Sons, Bridgewater and Shepheard, James Cubitt and Partners, Llewelyn Davies, Easton and Robertson, Frederick Gibberd, Erno Goldfinger, Gollins Melvin and Ward, Sir William Holford, Arthur Ling, Sir Leslie Martin—and so on down the alphabet to Yorke, Rosenberg and Mardall.



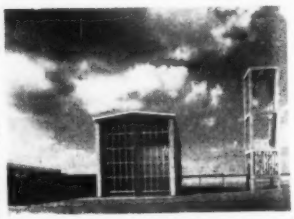
Factory at Wokingham. Architects, Yorke, Rosenberg and Mardall.

The reflection in *Preview's* mirror may prove flattering or alarming, but even where there appear to be grounds for satisfaction at the design of the buildings themselves, the environments into which they are being fitted still leave much to be desired, and though this is beyond the architext's control, it is not exempt from the watchful eye of the *Counter Attack Bureau*, whose month by month vigilance will be maintained even in this special issue.

Churches
Adam & Berkeley
Lettering

February Architectural Review

The variety and scope of the buildings illustrated, and subjects discussed, in the February issue will be catholic, even for the Review. *Three Churches* around Coventry by Basil Spence will show what the imaginative use of a modicum of rationalisation can



Church at Bell Green, Coventry, by Basil Spence & Partners.

do even for a church building programme; the spectacular *Teatro de los Insurgentes*, designed by Alejandre Prieto exhibits Latin-American design at its most exuberant and effective; while Erno Goldfinger's precise *Office-block in Albermarle Street* is the kind of building our cities sorely need. Historical studies will re-examine aspects of eighteenth-

Offices Albemarle Street, W.1. by Erno Goldfinger.

century architecture: *Bishop Berkeley's* contributions to architectural theory will be the subject of an article by Marcus Whiffen, while a sheaf of papers on *Robert Adam* by various hands will include some unknown Clérisseau drawings from Russia. Gordon Cullen will complete his set of townscape studies for Bristol University with an analysis of *Trowbridge*, and Jacqueline Tyrrwhit will examine the planning of *Fatehpur Sikri*, the ideal city of Akbar the Great, somewhat in the manner of Sir Hugh Casson's memorable studies of Peking. In *Skill*, John Sharp will complete his survey of methods and materials in *Architectural Lettering*, *Design Review* will continue to note worthwhile new products and equipment, while the *Interiors* include new showrooms, by Design Research Unit, an officers' mess for the U.S. Air Force, and an ingenious conversion of a house near the docks in Hull.

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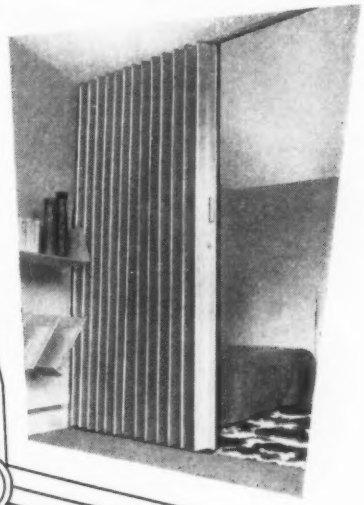

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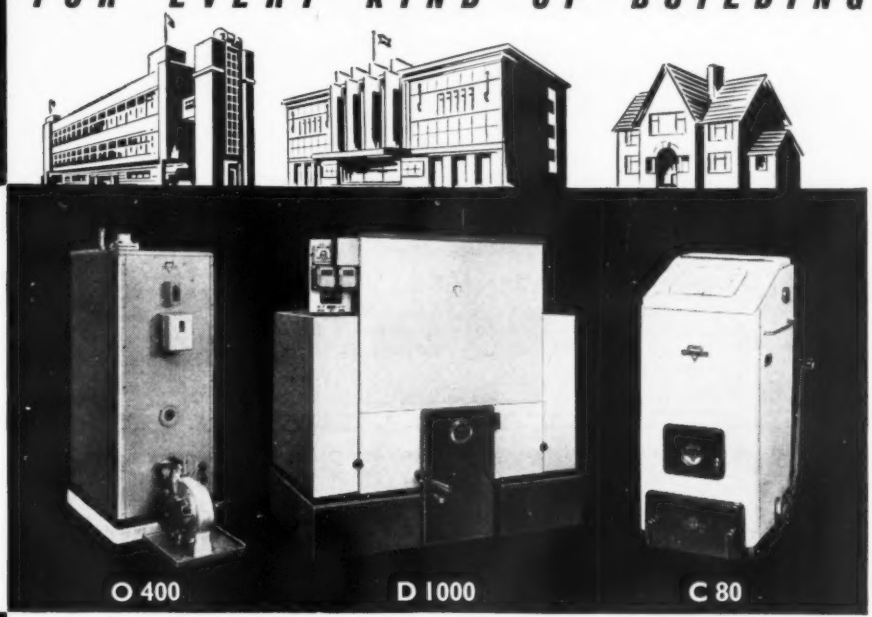

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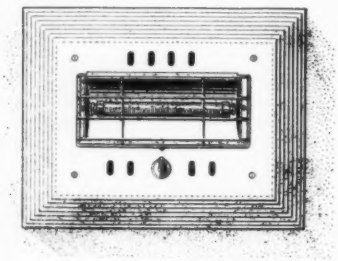

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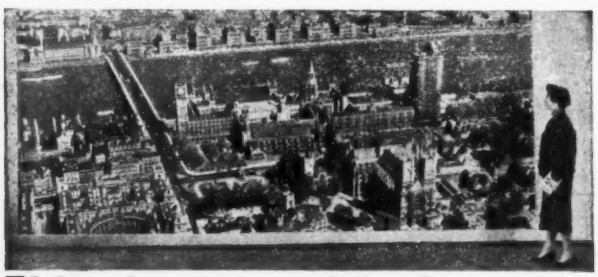

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L. EDGAR STEPHENS,
Clerk of the Council.

Shire Hall, Warwick.
December, 1957. 8227

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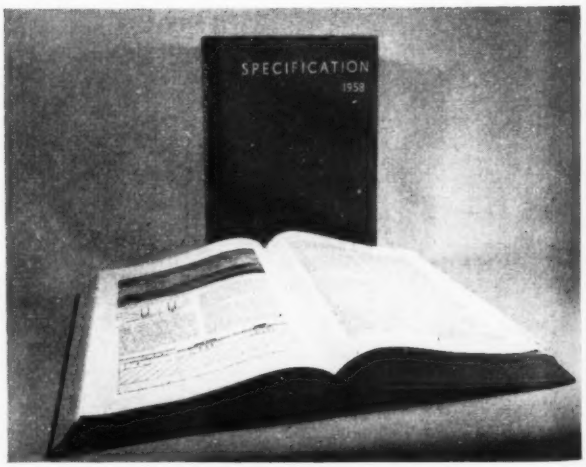

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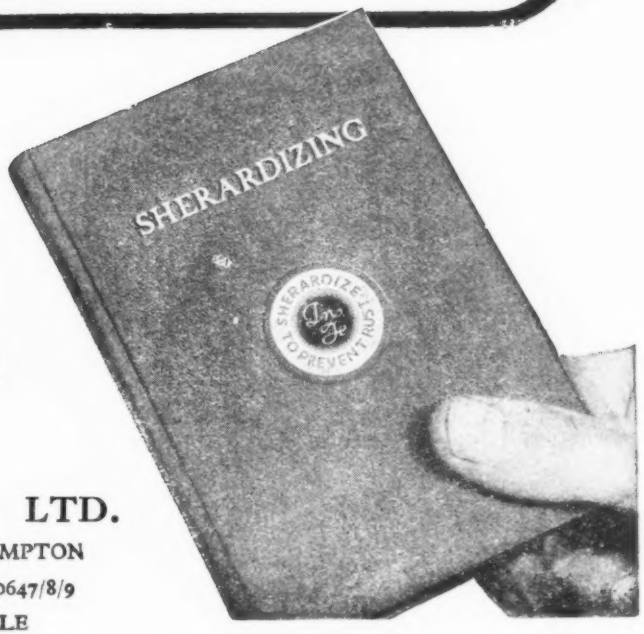

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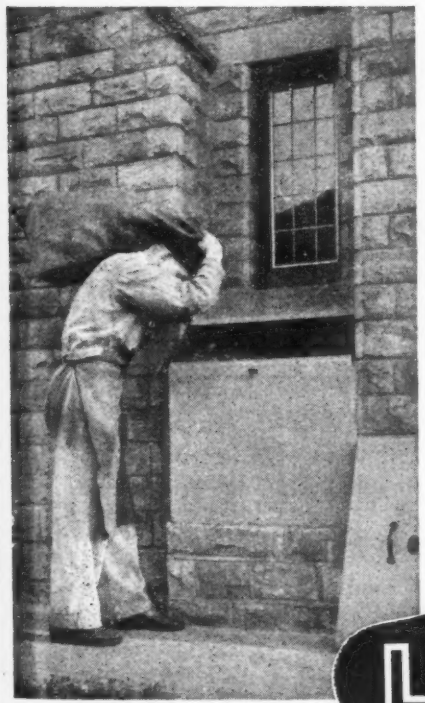

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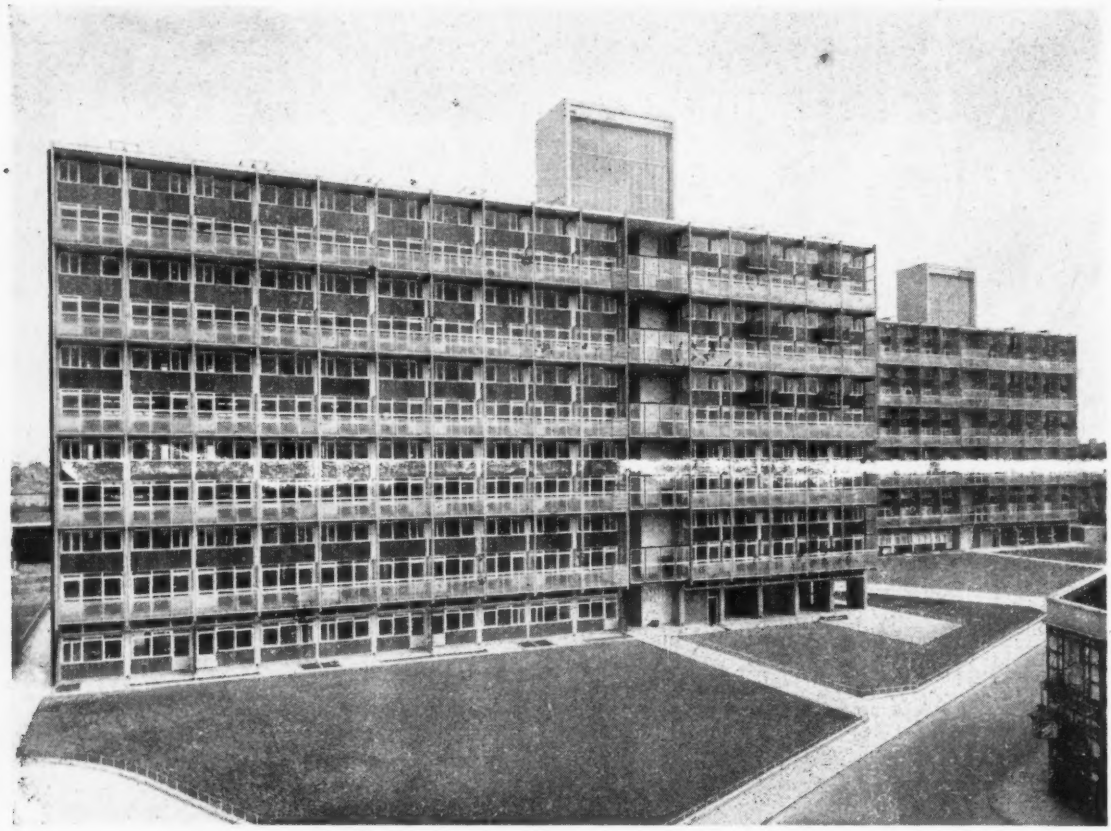

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