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No. 3176] [VOL. 123

THE ARCHITECTURAL PRESS

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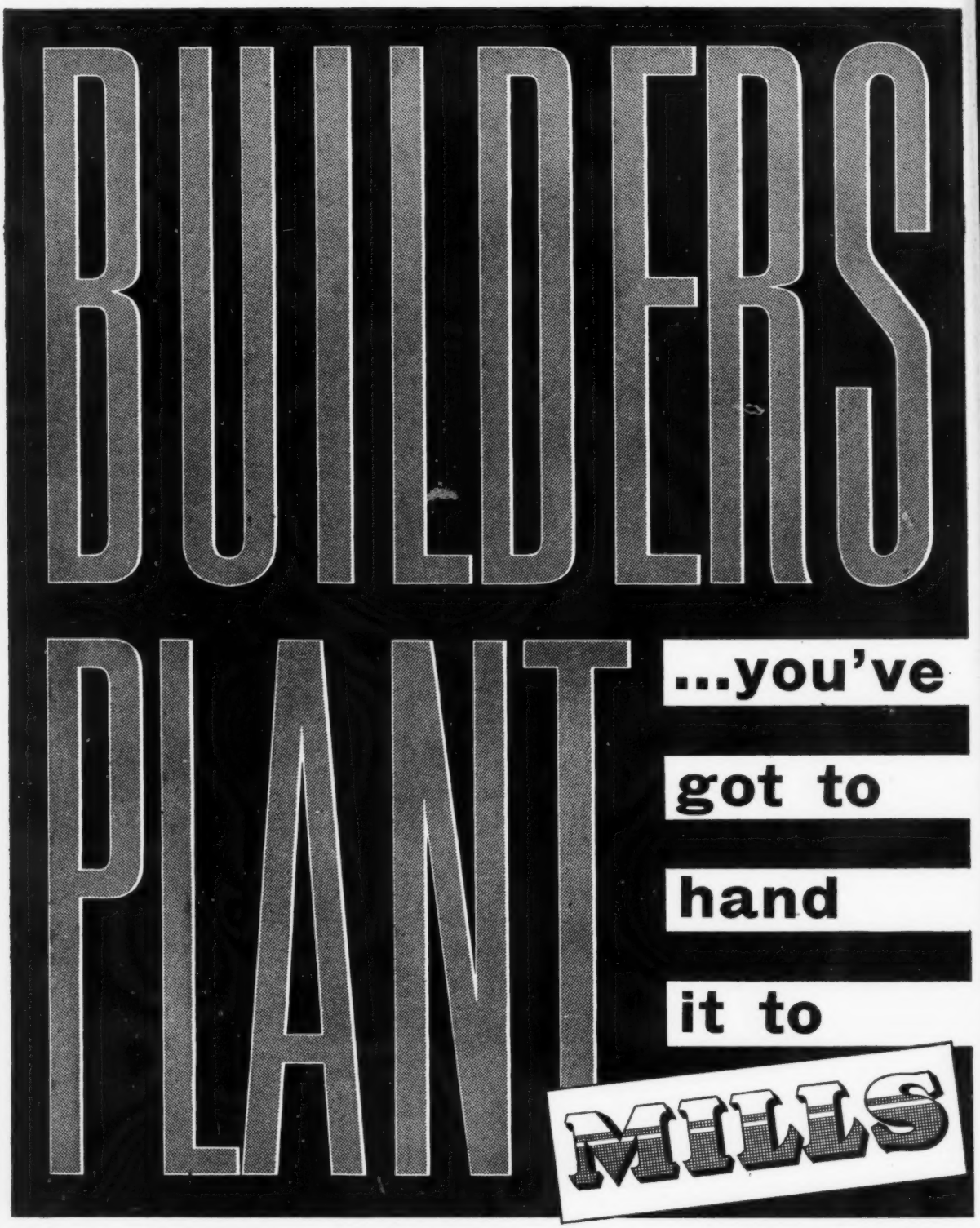
Registered as a Newspaper.

★ 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 Ie one week, Ig to Z the next. In all cases where the town is not mentioned the word LONDON is implicit in the address.

AA	Architectural Association, 34/6, Bedford Square, W.C.1.	Museum 0974
AAI	Association of Art Institutions. Secy.: W. Marlborough Whitehead, "Dyneley," Castle Hill Avenue, Berkhampstead, Herts.	
ABS	Architects' Benevolent Society. 66, Portland Place, W.1.	Langham 5721
ABT	Association of Building Technicians. 1, Ashley Place, S.W.1.	Victoria 0447–8
ACGB	Arts Council of Great Britain. 4, St. James' Square, S.W.1.	Whitehall 9737
ADA	Aluminium Development Association. 33, Grosvenor Street, W.1.	Mayfair 7501/8
ArchSA	Architectural Students' Association. 34/36, Bedford Square, W.C.1.	
ARCUK	Architects' Registration Council. 68, Portland Place, W.1.	Langham 8738
BAE	Board of Architectural Education. 66. Portland Place, W.1.	Langham 5721
BATC	Building Apprenticeship and Training Council. Lambeth Bridge House, S.E.1.	Reliance 7611, Ext. 1706
BC	Building Centre. 26, Store Street, Tottenham Court Road, W.C.1.	Museum 5400
BCC	British Colour Council. 13, Portman Square, W.1.	Welbeck 4185
BCCF	British Cast Concrete Federation. 105, Uxbridge Road, Ealing, W.5.	Ealing 9621
BCIRA	British Cast Iron Research Association. Alvechurch, Birmingham.	Redditch 716
BDA	British Door Association. 10, The Boltons, S.W.10.	Fremantle 8494
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
BRDB	British Rubber Development Board. Market Buildings, Mark Lane, E.C.3.	Mansion House 9383
BRS	Building Research Station. Bucknalls Lane, Watford	Garston 2246
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 F. R. Steele, F.R.I.B.A., County Hall, Chichester.	Chichester 3001
CCA	Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1.	Sloane 5255
CCP	Council for Codes of Practice. Lambeth Bridge House, S.E.1.	Reliance 7611 Ext. 1284
CDA	Copper Development Association. Kendals Hall, Radlett, Herts.	Radlett 5616
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 Association of Specialists and Sub-Contractors, Artillery House, Artillery Row, S.W.1.	Abbey 7232
FBBDO	Fibre Building Board Development Organization, Ltd. 47, Princes Gate, Kensington, S.W.7.	Kensington 4577
FBI	Federation of British Industries. 21, Tothill Street, S.W.1.	Whitehall 6711
FC	Forestry Commission. 25, Savile Row, W.1.	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
GBPA	Gypsum Building Products Association, 11, Ironmonger Lane, E.C.2.	Monarch 8888
GC	Gas Council. 1, Grosvenor Place, S.W.1.	Sloane 4554
GG	Georgian Group. 16, Hanover Square, W.1.	Mayfair 5454
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Whitehall 2881
IAAS	Incorporated Association of Architects and Surveyors. 75, Eaton Place, S.W.1.	Sloane 5615
ICA	Institute of Contemporary Arts. 17–18, Dover Street, Piccadilly, W.1.	Grosvenor 6186
ICE	Institution of Civil Engineers. 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



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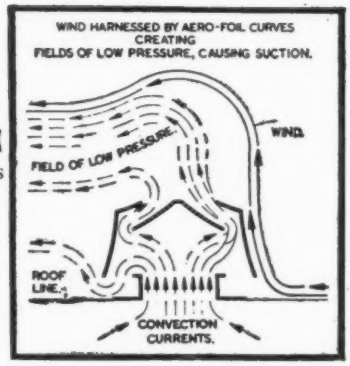

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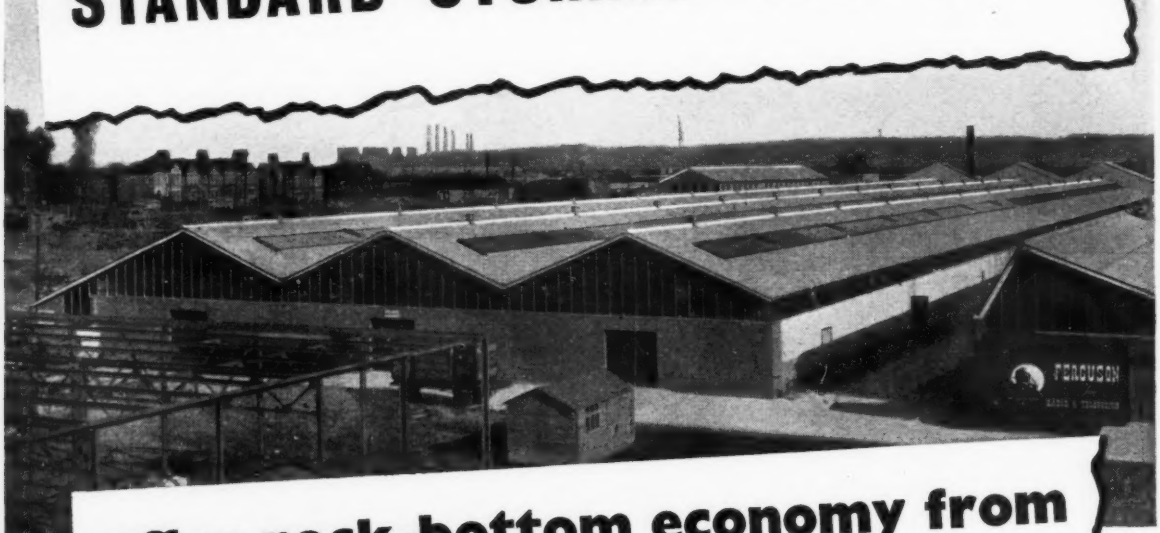

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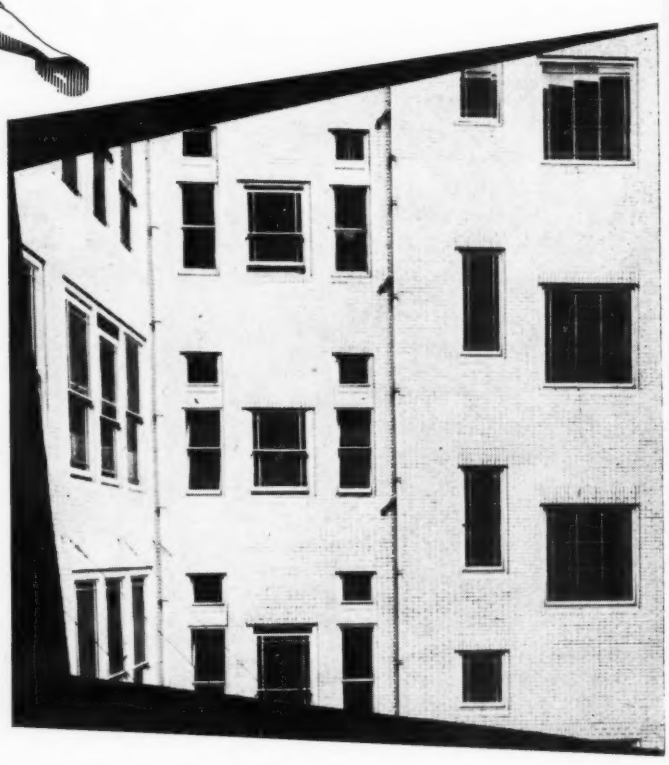

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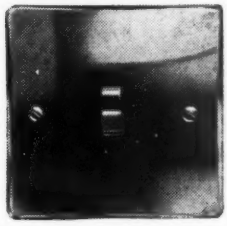

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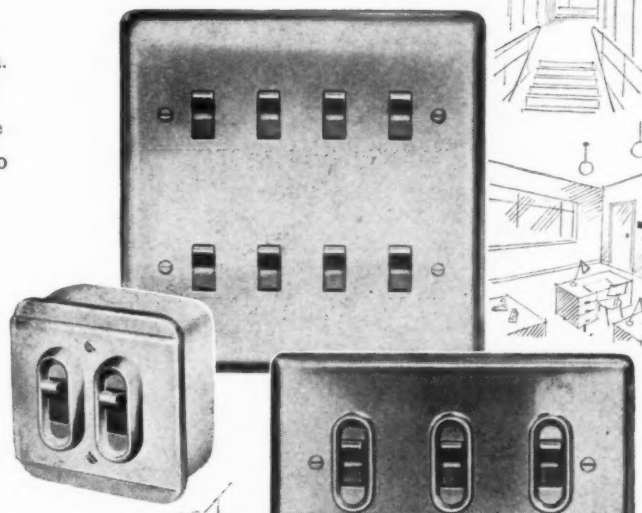

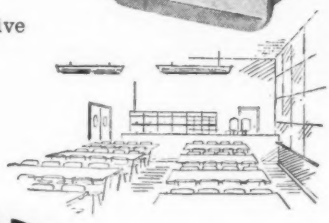

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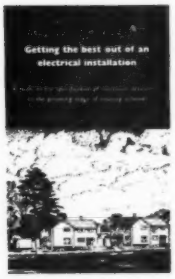

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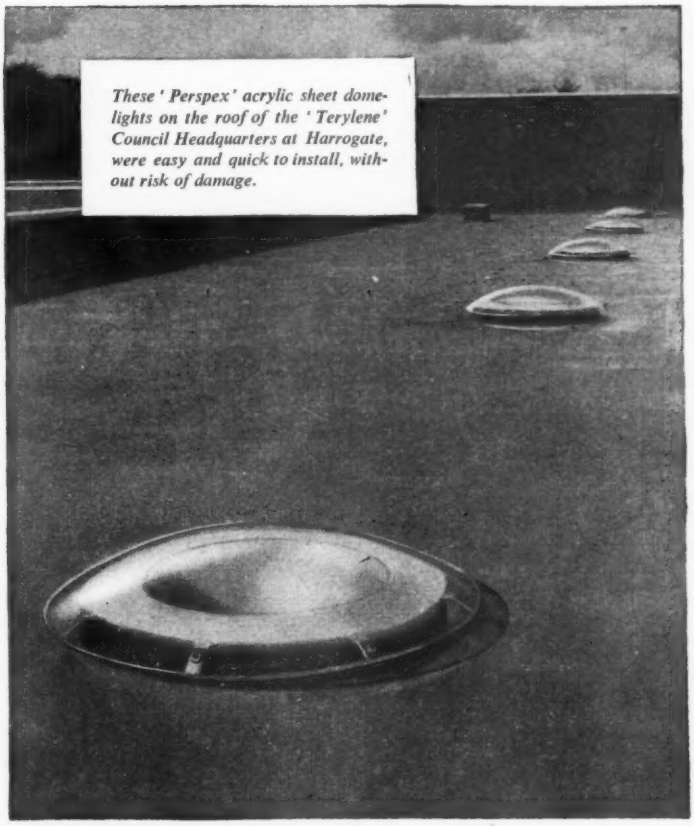

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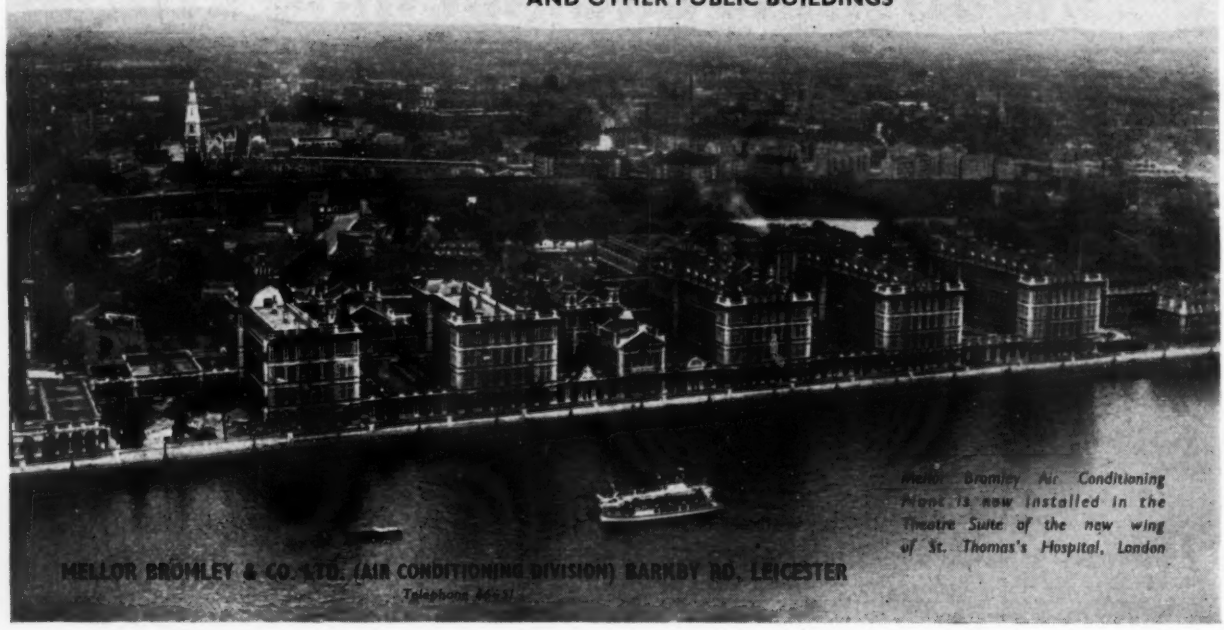

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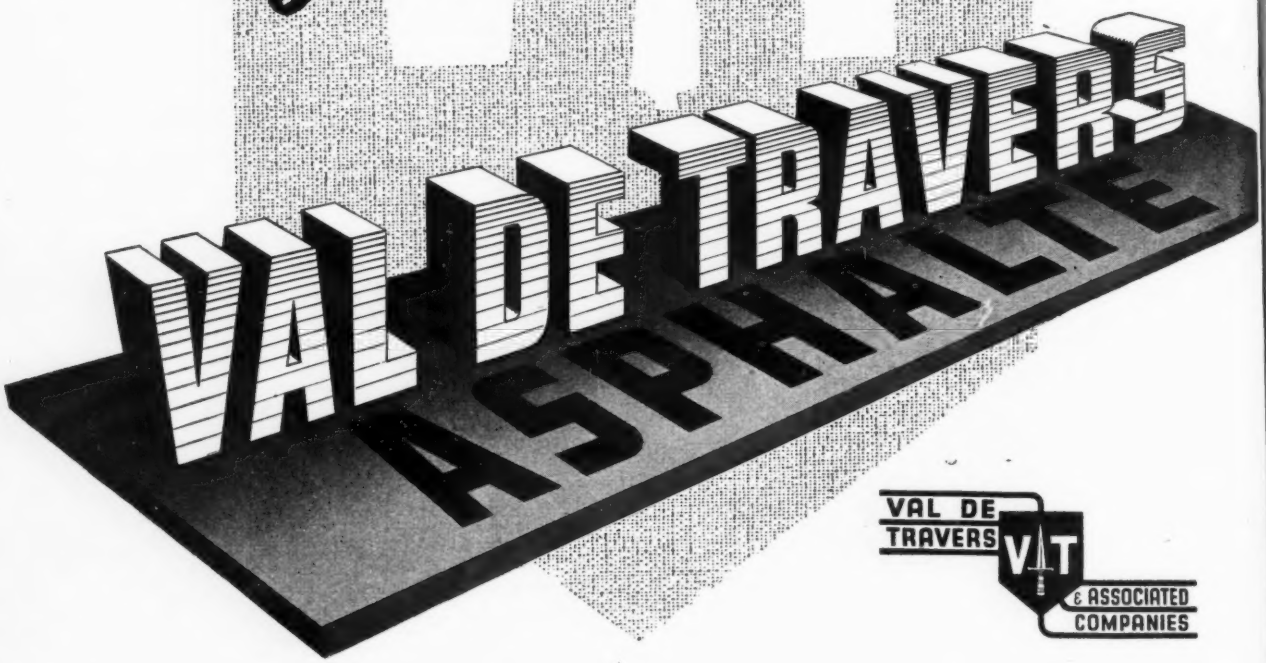

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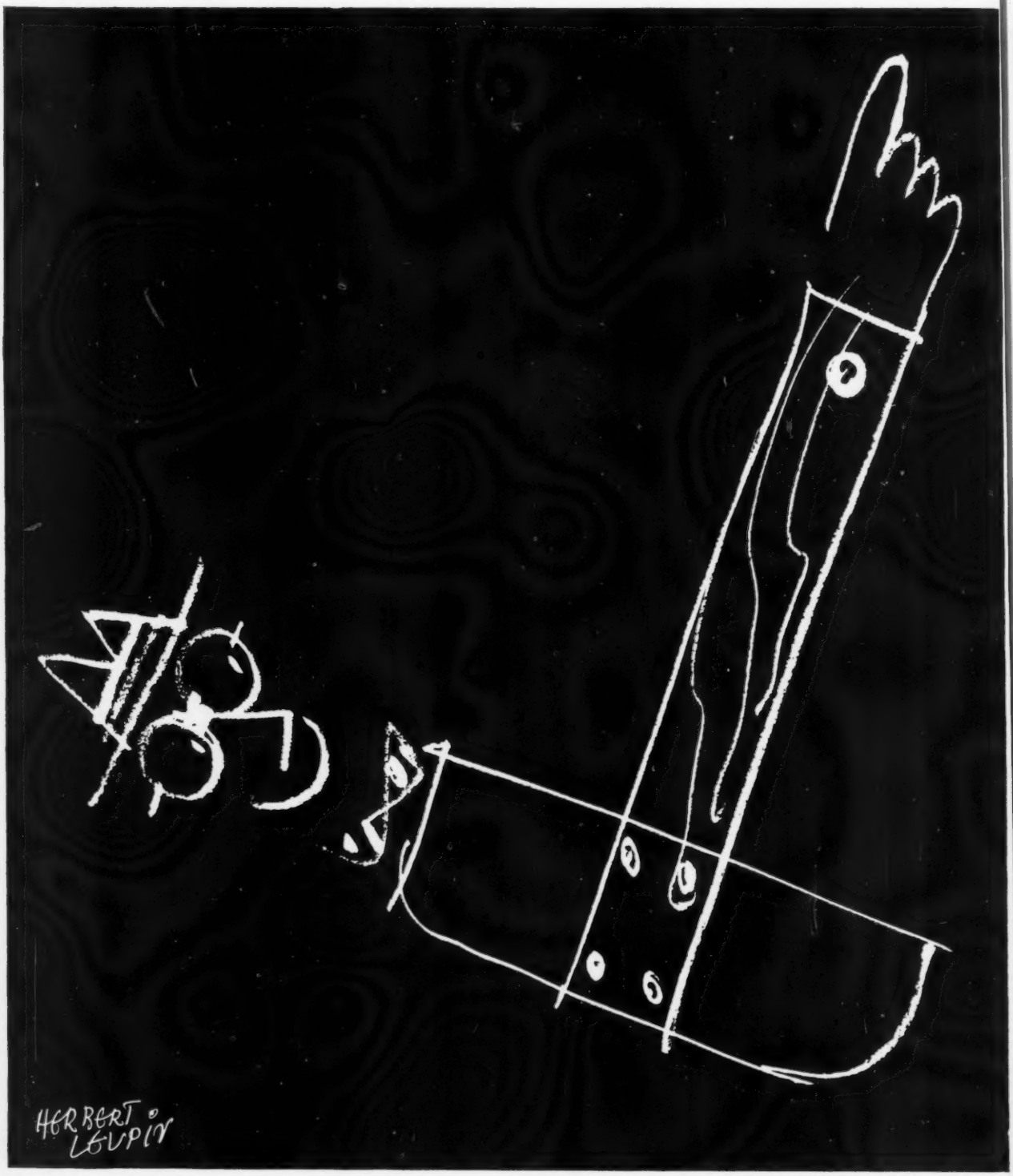

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First and foremost our representatives know paint.

Naturally we believe in our products; we manufacture, as we always have manufactured, with an eye to pleasing architects and decorators—professional men with professional standards and professional responsibilities. We make it our aim to maintain those standards and ease those responsibilities.

When we offer service, we mean *service;* and we hope experience will make our representatives welcome to you if it has not already done so.

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THE INVENTORS OF OILBOUND WATER PAINT

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Maximum economy,

For the Engineer:-

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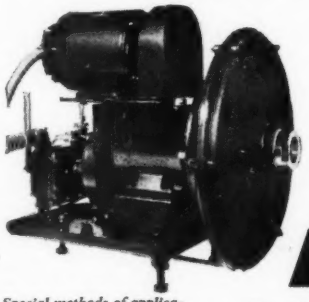
Hydra burners' famous design, incorporating the patented metering pump, and power-driven rotary cup atomiser, has put them in the forefront of British oil-firing equipment. Remember the great **practical** advantages :-



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Special methods of application for Cochran and other vertical boilers. Enquiries invited. Write for fullest technical details to

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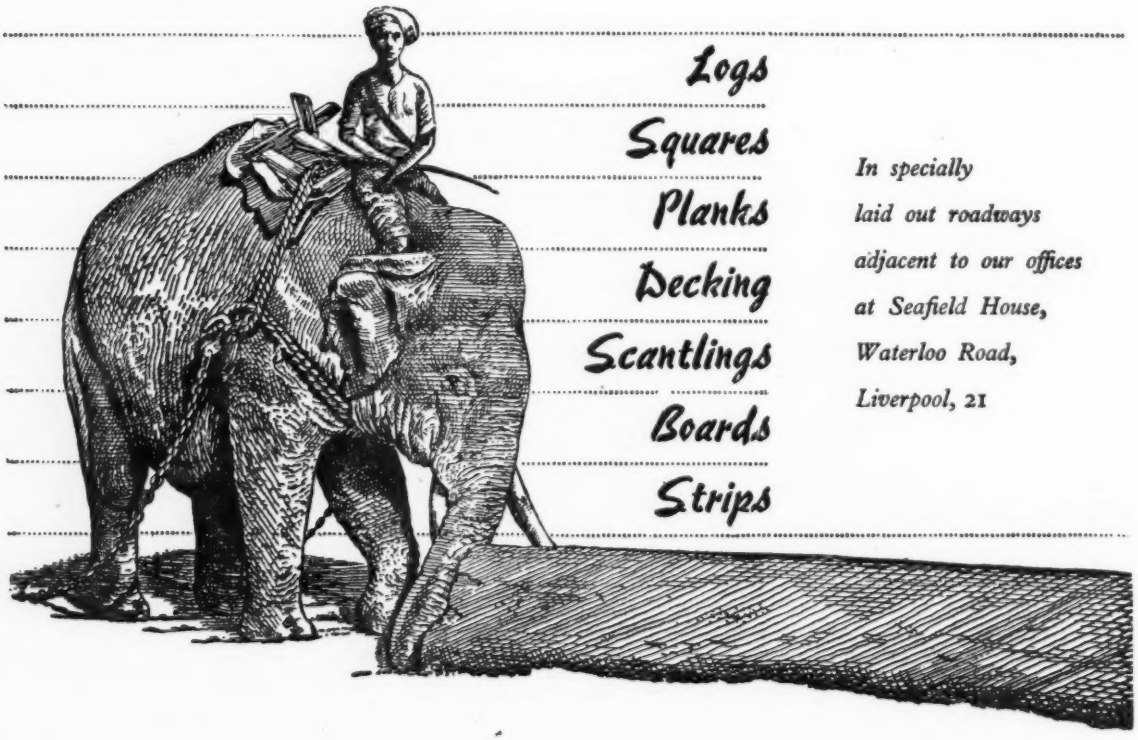

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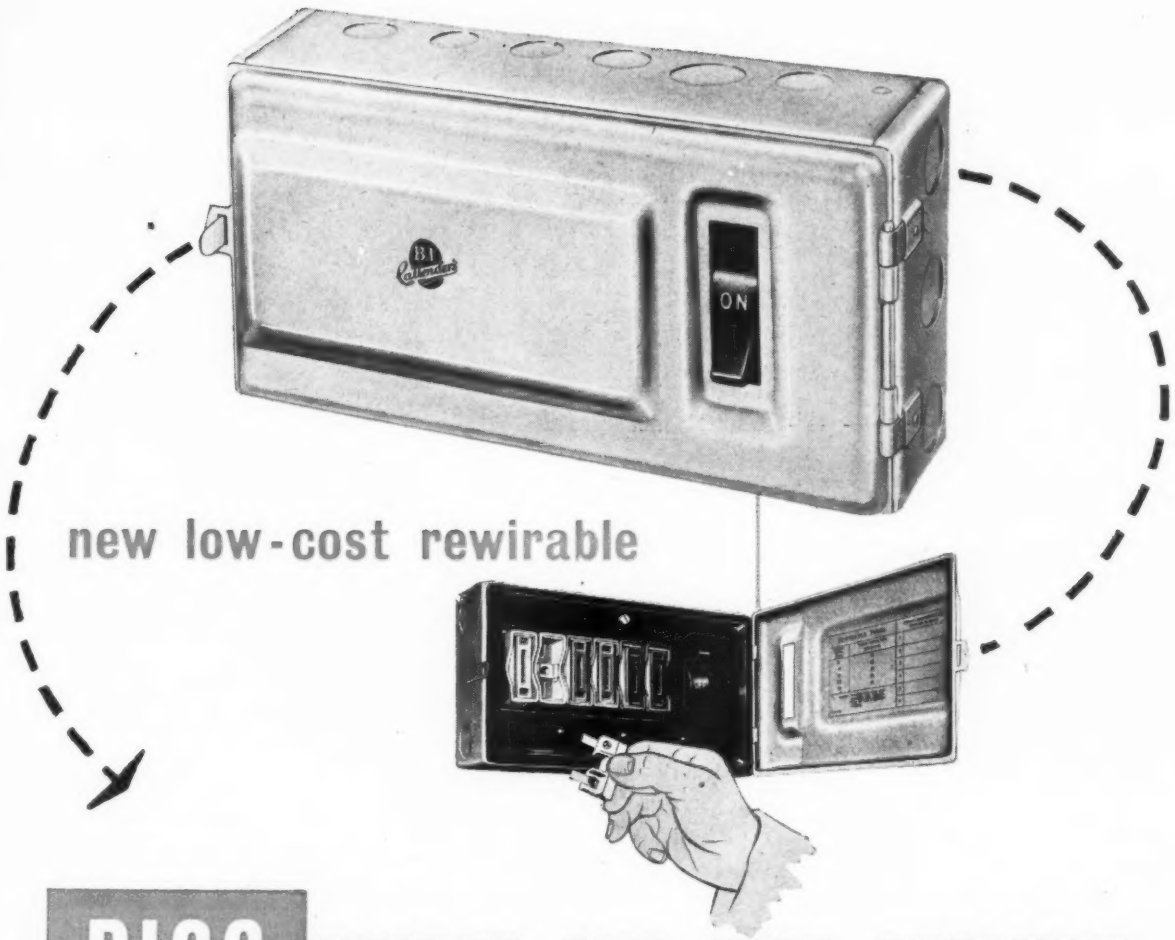

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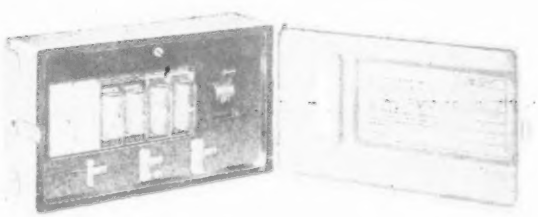
BICC SWITCH AND FUSE CHAMBER

SPECIALLY DESIGNED FOR SMALL DWELLINGS

If you are engaged on domestic wiring contracts you will find the new BICC Switch and Fuse Chamber exactly the equipment you've been needing—and at the right price too. It is a combined unit, free of all non-essential "extras", yet it meets all the demands of the small modern house with complete safety. Full information is contained in BICC Publication No. 342, which also describes the alternative unit with cartridge-type fuses (below). Your copy is available on request.



THIS NEW UNIT OFFERS:

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- Popular rewirable fuses, involving minimum replacement costs to consumer. Rating 250 A.C.1 in accordance with B.S.88.
- Easy wiring in any installation through knockouts in sides, ends and back. Suitable for conduit or non-metal-sheathed cables.
- Handsome cream enamelled case of rust-proofed heavy-gauge steel.
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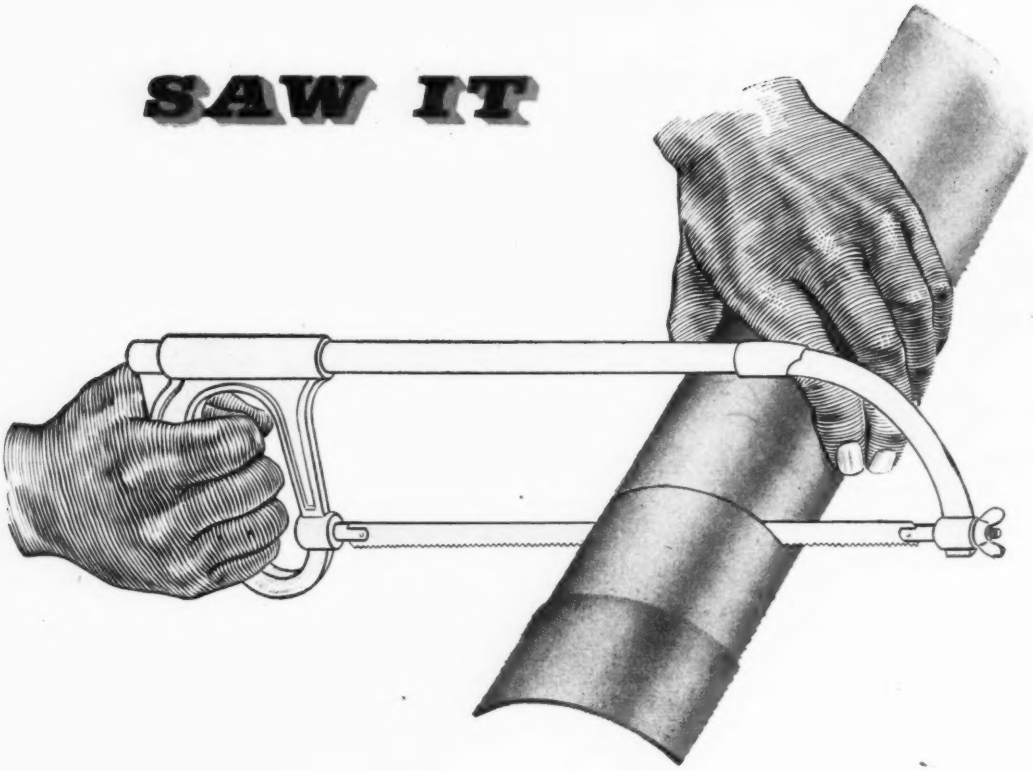

The ease with which a Birmid aluminium alloy gutter can be cut with a hack-saw—without any fear of splitting or cracking—is something which you can quickly prove for yourself. This *toughness plus light weight* means that Birmid Rain-Water Goods are exceptionally economical in use; breakages in transit and on site are almost unknown, whilst handling costs are reduced to a minimum. All Birmid Rain-Water Goods are made of the finest quality materials and workmanship ensuring perfect fitting, a long life, and a lasting good appearance. In fact, for long-term economy, you can't beat Birmid.

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THE *CELLULOSE* FILLER WITH THE PERFECT POSITIVE BOND

POLYFILLA is an amazing NEW discovery. IT DOES NOT SHRINK OR EXPAND AND WILL NOT BECOME LOOSE OR SHAKE OUT. It BONDS itself to surfaces with strong elastic cellulose adhesion as it does *NOT* depend solely on mechanical cling of easily shattering plaster crystals. It is made by the makers of POLYCELL.

For plaster or brick—filling cracks or holes, large or small. Brush out. Slightly damp surface. Press Polyfilla well home so as to fill crack or cavity completely in one application.

Use as a Putty. Forms a resilient bond between wood or metal and glass. Easy to work. Does not follow the knife.

UNIQUE POLYFILLA ADVANTAGES

- **PREPARE AS MUCH AS YOU NEED**—it will stay workable for an hour or more.
- **NO need to cut back** or enlarge crack. Only fillers which expand require "cutting back" to give anchorage. POLYFILLA holds firmly in place by strong positive *cellulose* adhesion.
- **Won't shake loose by vibration.** Use for gaps between plaster boards, behind door frames, skirting boards, between floorboards, etc.
- **Produces a perfectly self-sized surface.** Needs no SIZING, oiling in or shellacking. Decorate directly on to the self-sized surface—no hot spot.
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- **Easy to mix.**

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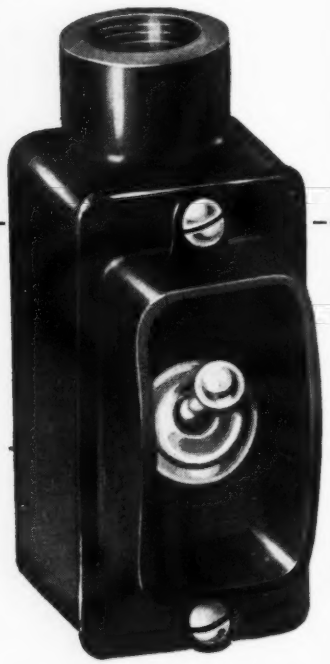
Positive Bond means that Polyfilla bonds itself to plaster, brick or wood with strong cellulose adhesion. Look at this ordinary brick. After a hammer blow, strong enough to break brick, POLYFILLA *STILL ADHERES* to both parts! Nails hammered in have not split or broken POLYFILLA away. Clear proof of POSITIVE BOND. Screws take the weight of ordinary household fixtures without further preparation.

for economy in space and cost . .



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finishes

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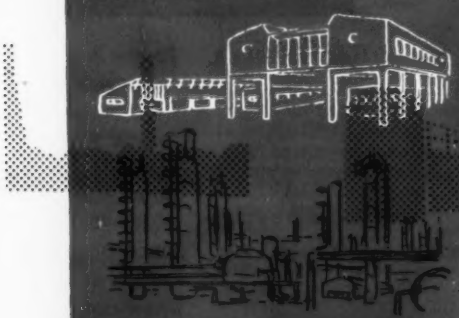

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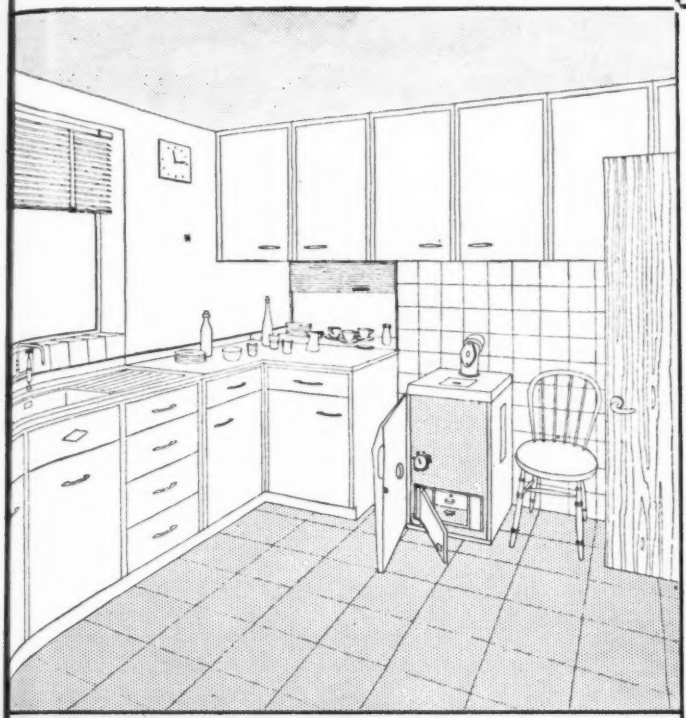
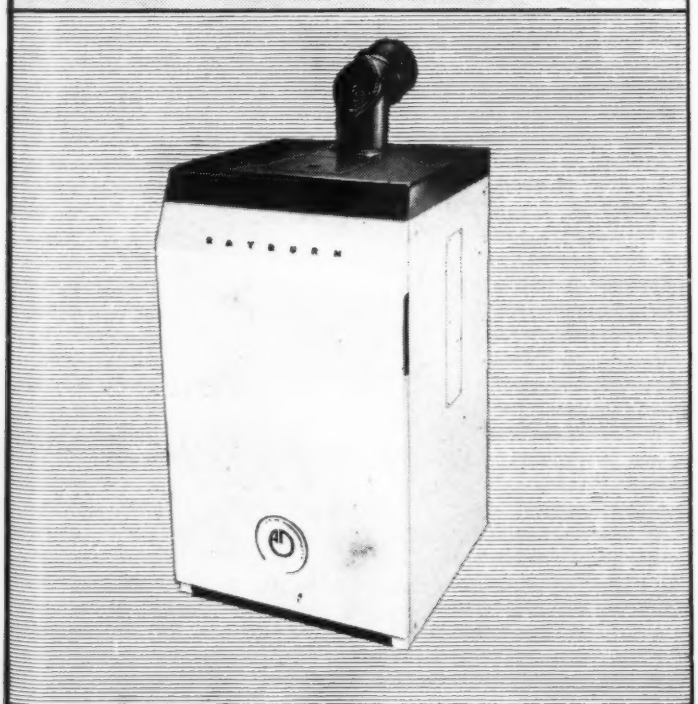


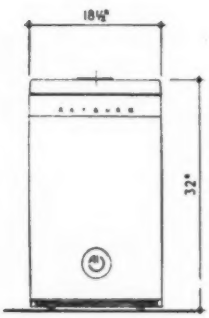
The RAYBURN Boiler

a good looking and technically perfect job
—for domestic hot water and radiators

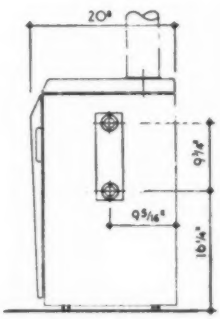


NOTES

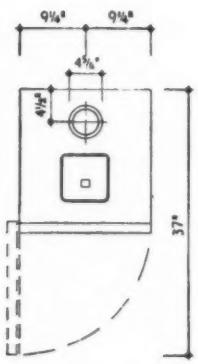
The Rayburn is thermostatically controlled, free-standing and suitable for all smokeless fuels. The smooth design harmonises perfectly with today's kitchen plan. It is extremely clean and every precaution has been taken in its construction to ensure that—when it is riddled—no ash flies about the kitchen. The boiler is available in cream or white stove enamel—with black vitreous enamel top plate.



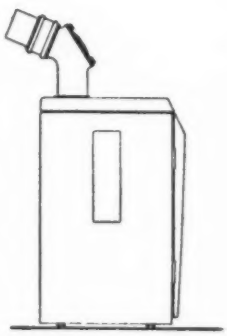
FRONT ELEVATION



SIDE ELEVATION
showing vertical outlet when fitted in recess



PLAN



SIDE ELEVATION

PERFORMANCE

The Rayburn is highly flexible in output and when supplying domestic water only, it is suitable for connection to cylinders of 30 to 60 gallons capacity.

When used in conjunction with a 30 gallon indirect cylinder the boiler will heat up to 75 sq. ft of radiation surface, including unlagged piping, in addition to supplying domestic hot water.

When used to heat radiators only, 150 sq. ft of radiation surface, including unlagged piping, may be heated.

For further details about the RAYBURN BOILER write to the Housing Division of—

ALLIED IRONFOUNDERS LTD

Makers of cookers, boilers, fires and baths

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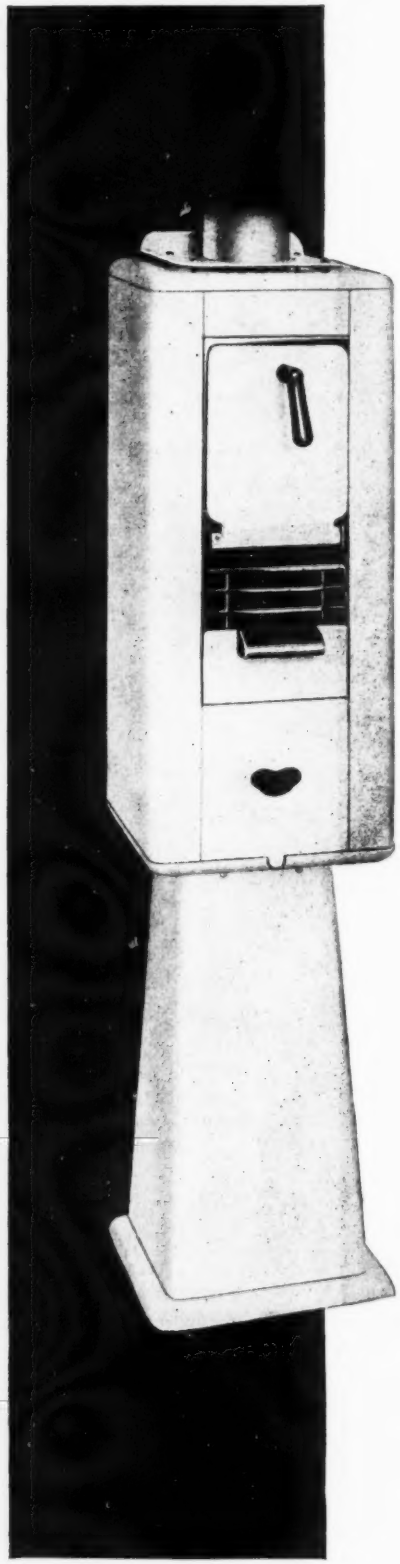

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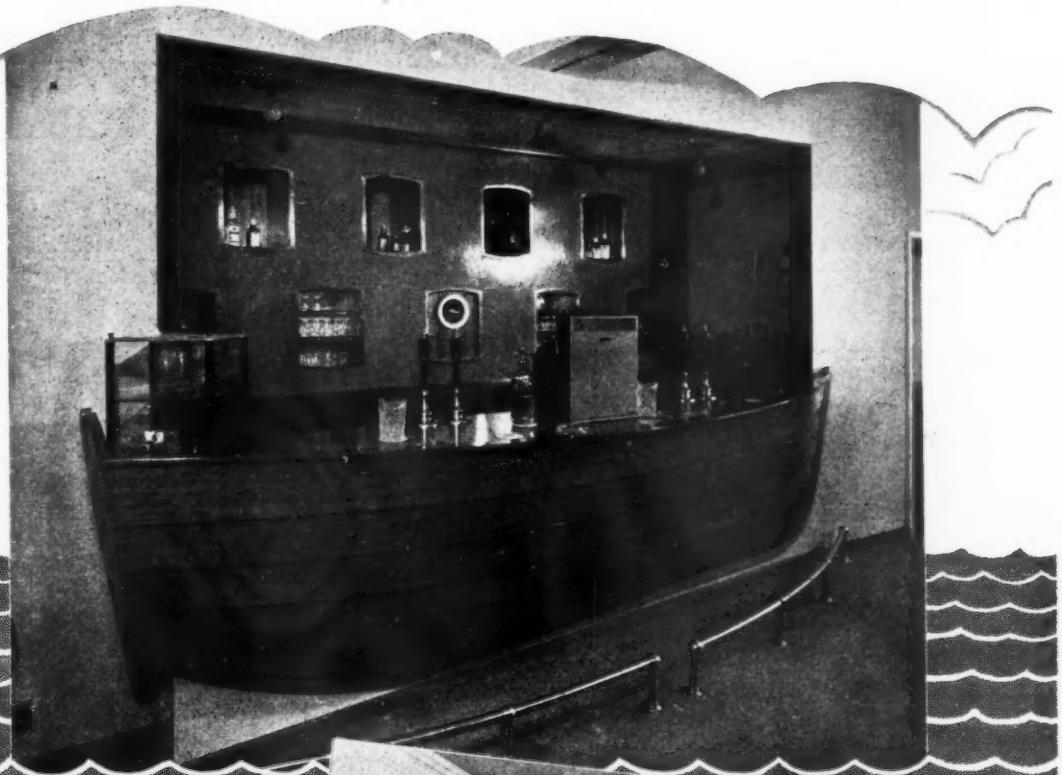

By courtesy of Plymouth Breweries Ltd. Architects: Louis de Soissons & Partners.

Call it charming, appropriate, practical or different, all would be right—and RIGHT is the one word which best describes a G. & C. Bar installation.

For a pub in Devon, a club in Mayfair or a hotel in Scotland you can rely upon a RIGHT result if you call in Gaskell and Chambers right at the start.

In this case the counter depicts a typical Brixham dinghy with the stern and keel correctly carried out in oak and mahogany strakes and planks, all fixed with copper boat nails, and the rest.

But above all this, over the last hundred years or so C. & G. have learned, perhaps more than anyone, how to make all such installations practical from the hotelier's and the barman's point of view.

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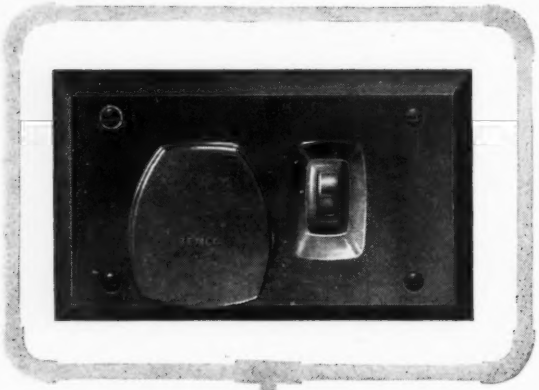

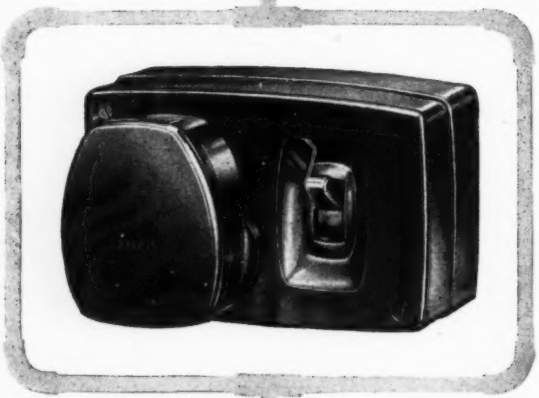

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A.C. SWITCH SOCKETS & PLUGS

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RIGHT FOR EASY WIRING with ample terminals that are easily accessible. Heat Resistant Back Plates for the Surface Types are available to form an enclosure for the Cable Sheath.

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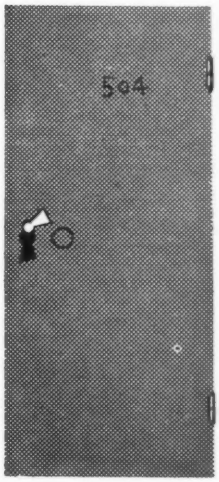
"Eeney, meeney, miney, mo . . ."



Antiquated is the word for this laborious "security" system . . . After all, time's money and patience often an irksome virtue, so it's no wonder that many executives welcome the simplicity, extra security, and flexibility of control offered by Yale master-keyed suites. A Yale Grand Master key will open up to 12,000 *different* locks which may be arranged in subordinate suites under the control of various sub-master keys.

Master-keyed suites are among the many Yale products which bring security, convenience and dignity to doors of every kind—in factories, office blocks, hotels, homes and every other type of building.

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

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MASTER KEYED SUITES
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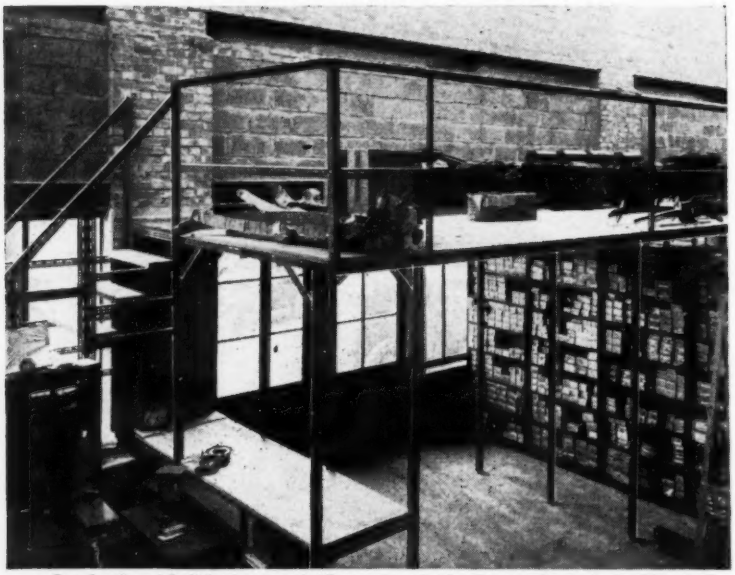
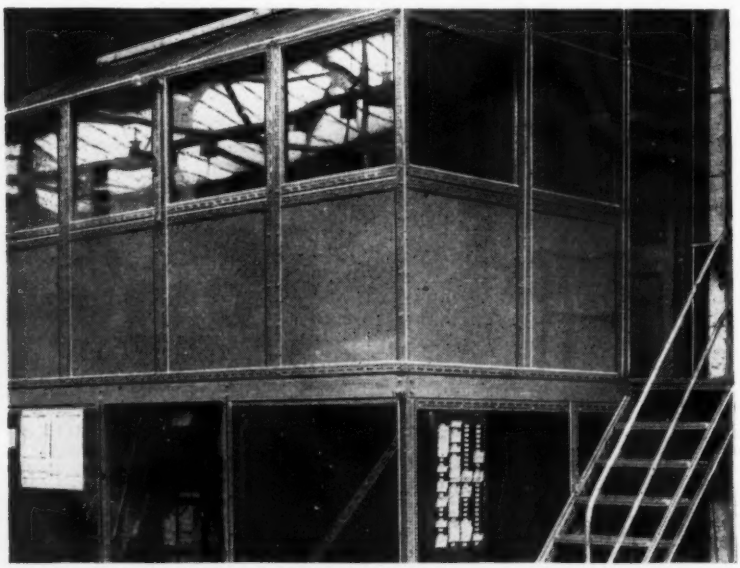
IT PAYS TO THINK OF DEXION
–at the planning stage



Service Depot builds storage platform. *Iron Bridge Service Depot Ltd. of Southall, Middlesex, built this overhead storage platform to carry 20 tons of motor-car parts. It effects a big saving in space, and the supports also serve as dividers for storage bins. Storage structures of Dexion can make full use of any existing space; and they have the great advantage of ensuring easy adaptability to changing needs.*



Machine Shop Engineer's office quickly built. *Thomas Allan & Sons Ltd. of Thornaby designed this office with tool store underneath to be built with conventional materials. They used Dexion instead when they found it was quicker and cost less. In jobs of this sort, Dexion invariably supersedes old-fashioned materials and methods.*

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There is no more versatile material for building stores and equipment, exactly to your own designs, than Dexion Slotted Angle. Such Dexion equipment is quick and cheap to install. And any Dexion structure can be readily adapted and altered to meet changing needs. There is no waste, no scrap: Dexion is fully recoverable, and can be used again and again.

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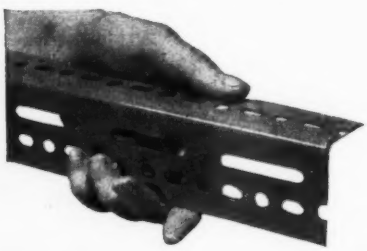
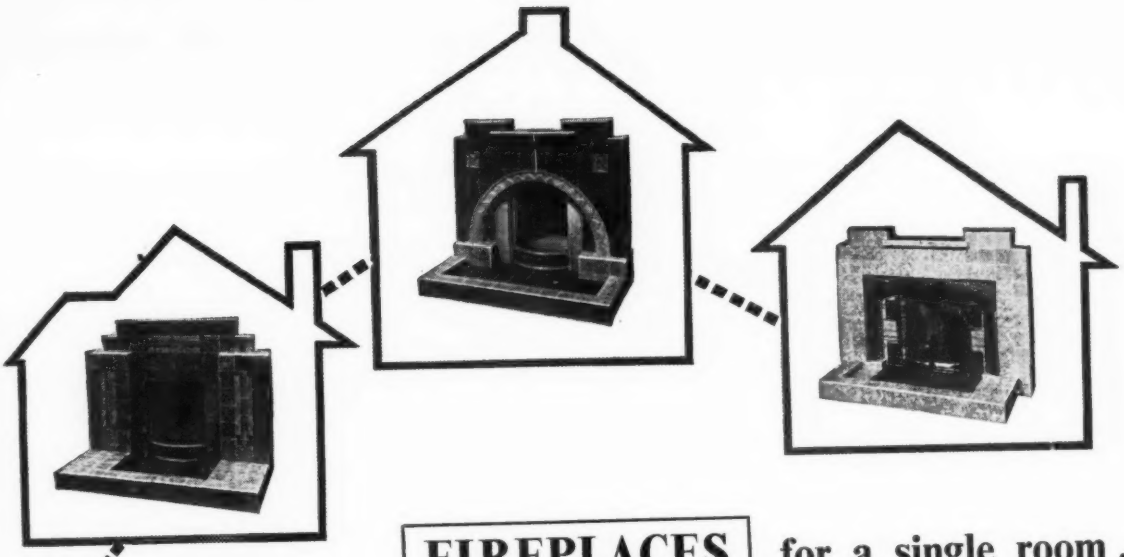
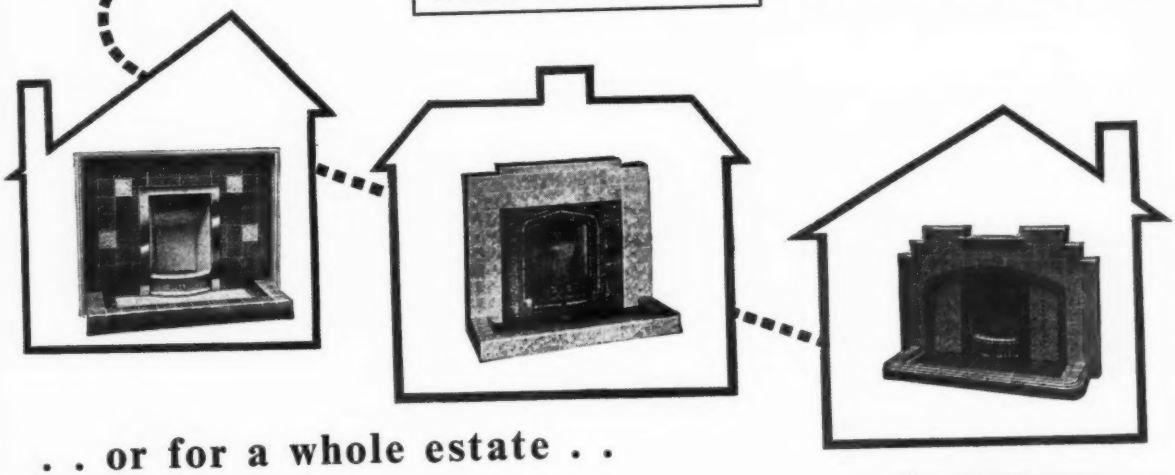


DEXION
REGD.
SLOTTED ANGLE



FIREPLACES for a single room . .



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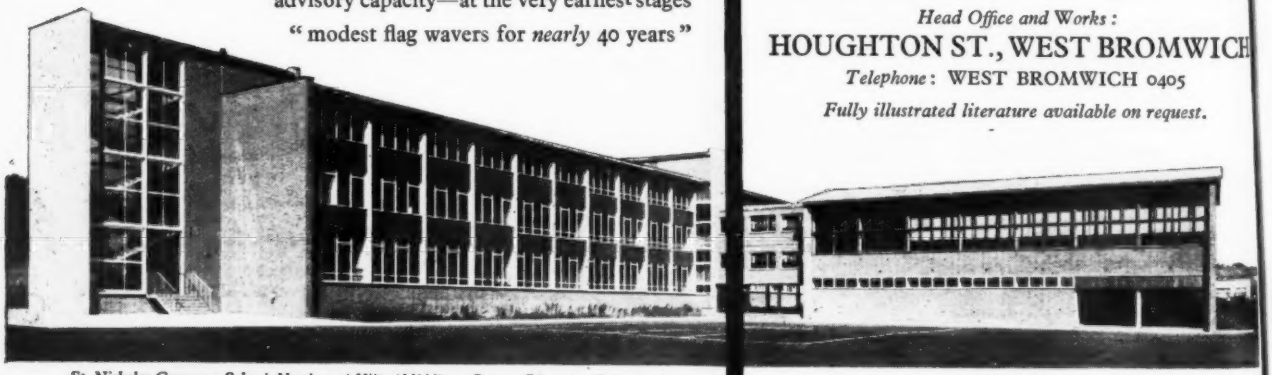

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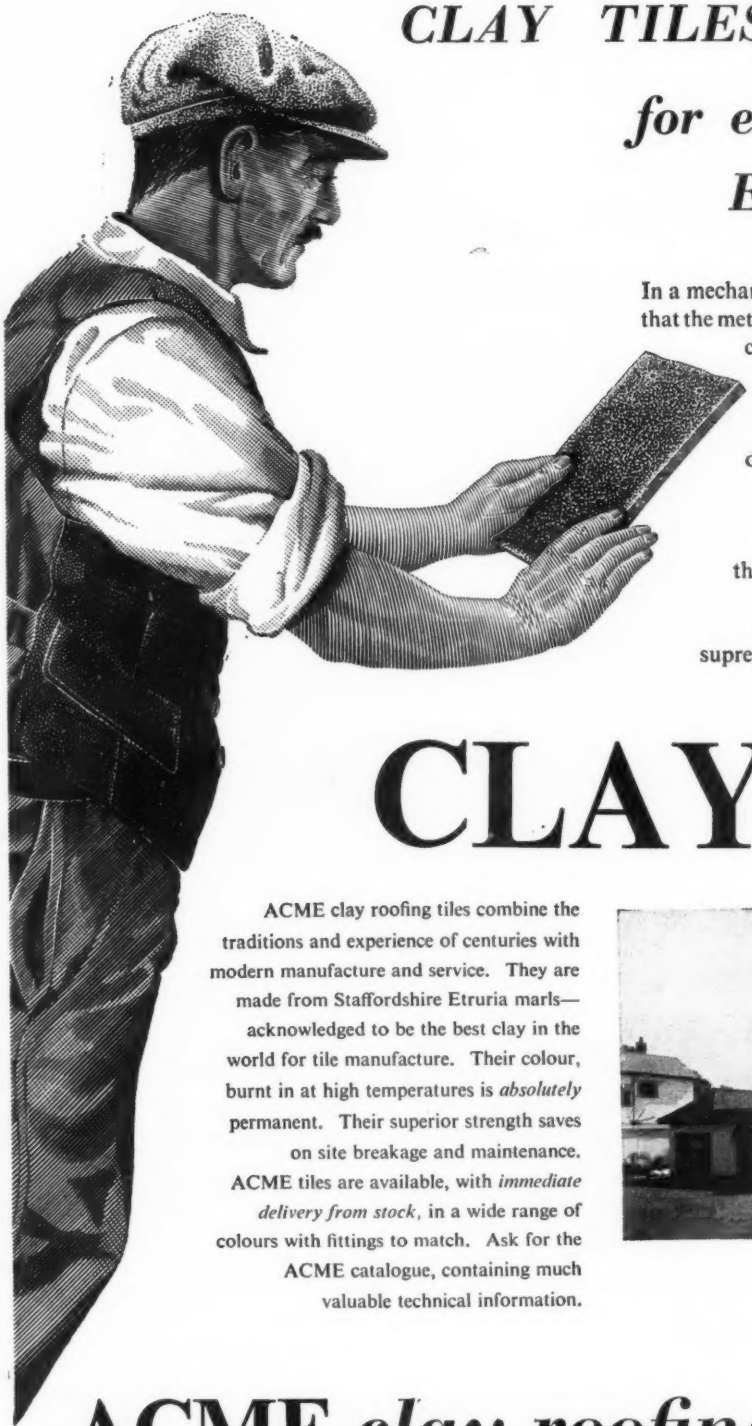

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for eight centuries England's roof . . .

In a mechanical world it is refreshing to realise that the method of manufacture of Hand-made clay tiles has changed little over the centuries, each tile being moulded individually and shaped by hand alone. Competition demands a more modest alternative and the machine-made tile provides the answer. Hand-made or machine-made, you can be sure that centuries hence the tiles will still be doing their job, handsomely, steadfastly. There's nothing more supremely *reliable* than a clay tiled roof.

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ACME *clay roofing tiles*

DOWNING'S *range of roofing tiles includes* :—

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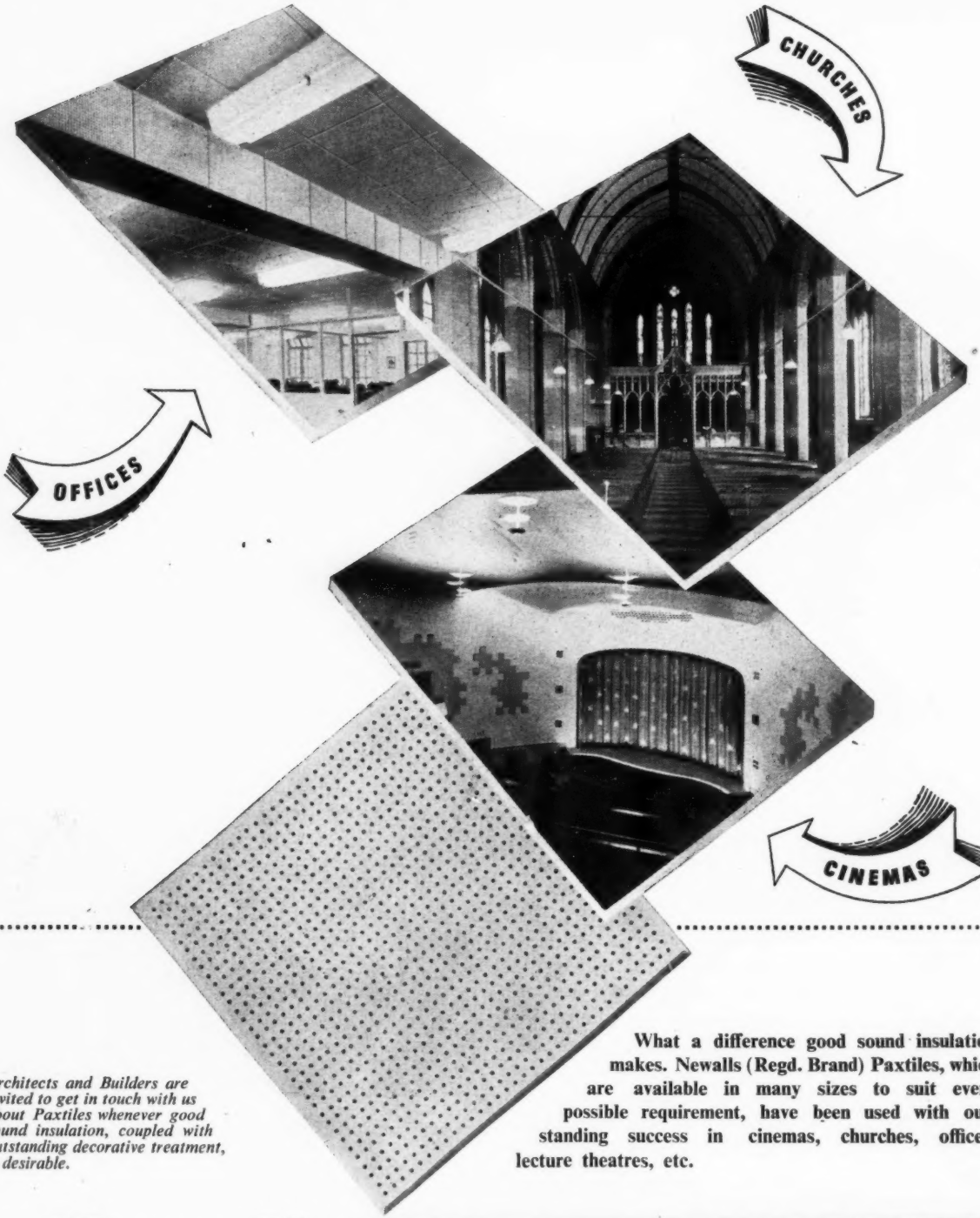

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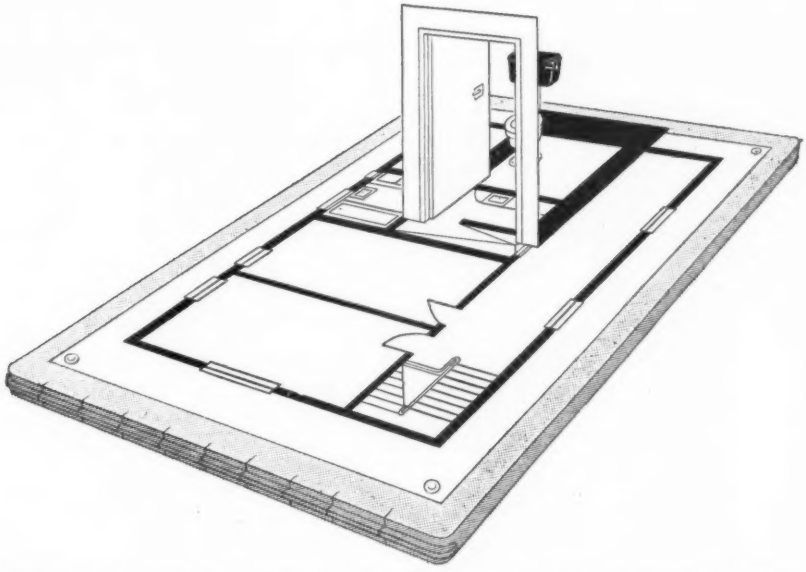

The toilet is one of the most important rooms in the house—its fittings are entitled to the same careful specification which is applied to the rest of the building. The smoothly-streamlined Lawley 'Britannia' plastic cistern lends itself admirably to today's demand for contemporary design and functional efficiency. Pleasing in appearance, easy-to-clean, ultra-hygienic, Lawley plastic flushing cisterns can be relied on for smooth, silent action and trouble-free service at all times. They are made in a range of four models, the 'streamlined' model in three patterns—front and side action low level, and high level. These are in 2, 2½ and 3 gallon capacities to BSS 1125, to meet all water regulations. The well-bottom pattern, 2 gallon capacity only, is designed primarily as a replacement for existing installations.

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(c) cost of labour required
(d) cost of service and maintenance.

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∴ *Since* $a+b+c+d =$ *the cost of Heating Service it may be seen that the Potterton Oil-Fired Boiler is the most economical means of supplying hot water for central heating and domestic purposes if oil is the fuel to be used.*

Note: *The output of any DOA Series Boiler is given by B.Th.U./Hr.* $= 36000x$, *where* x *= number of sections and can have integral values from 3 to 8.*

We will be very pleased to put our mathematicians to work to show just how economical such an installation would be in your particular case, if you will write to Thomas De La Rue & Co. Ltd., 20/30 Buckhold Rd., Wandsworth, London, S.W.18.

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POTTERTON *Oil-Fired* **BOILERS**

DLR 516

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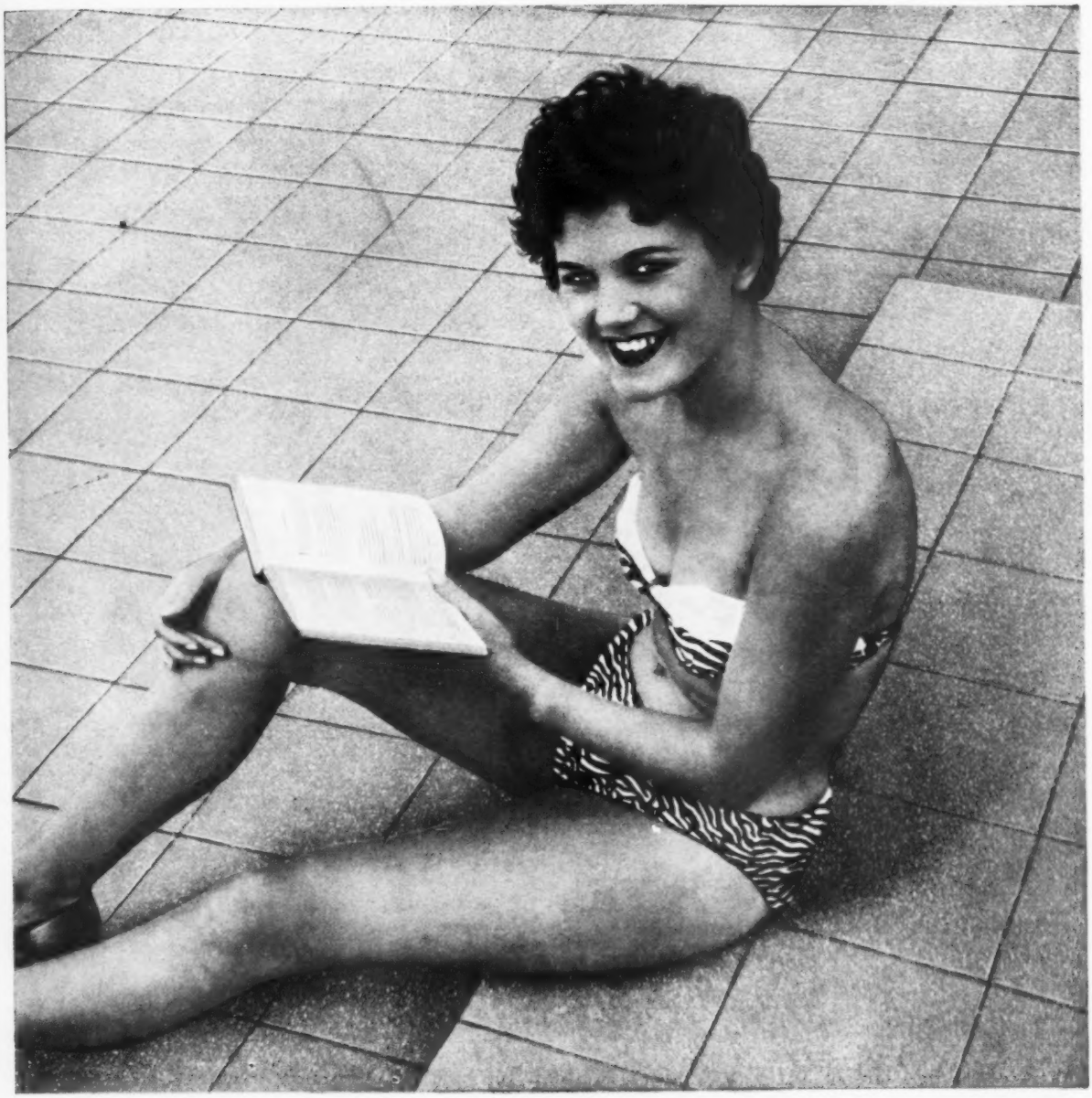

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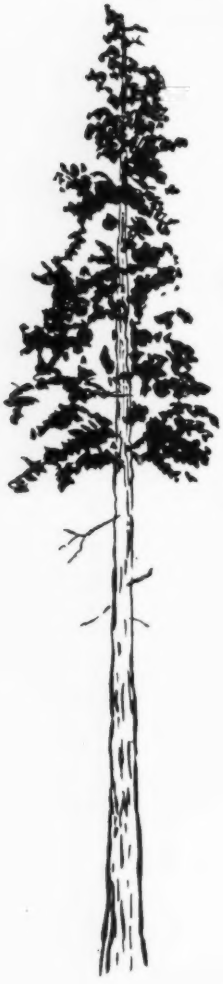

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T.I.M - 2

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The beautifully enriched and ornamented ceiling and walls of the Chapel of Trinity College, Oxford, are accentuated by the evenly distributed indirect lighting. Installations such as these require the utmost skill in planning and execution. When completed they are a testimony to the technique of all the craftsmen involved, and proof, if proof was needed, of the personal attention given to every installation by

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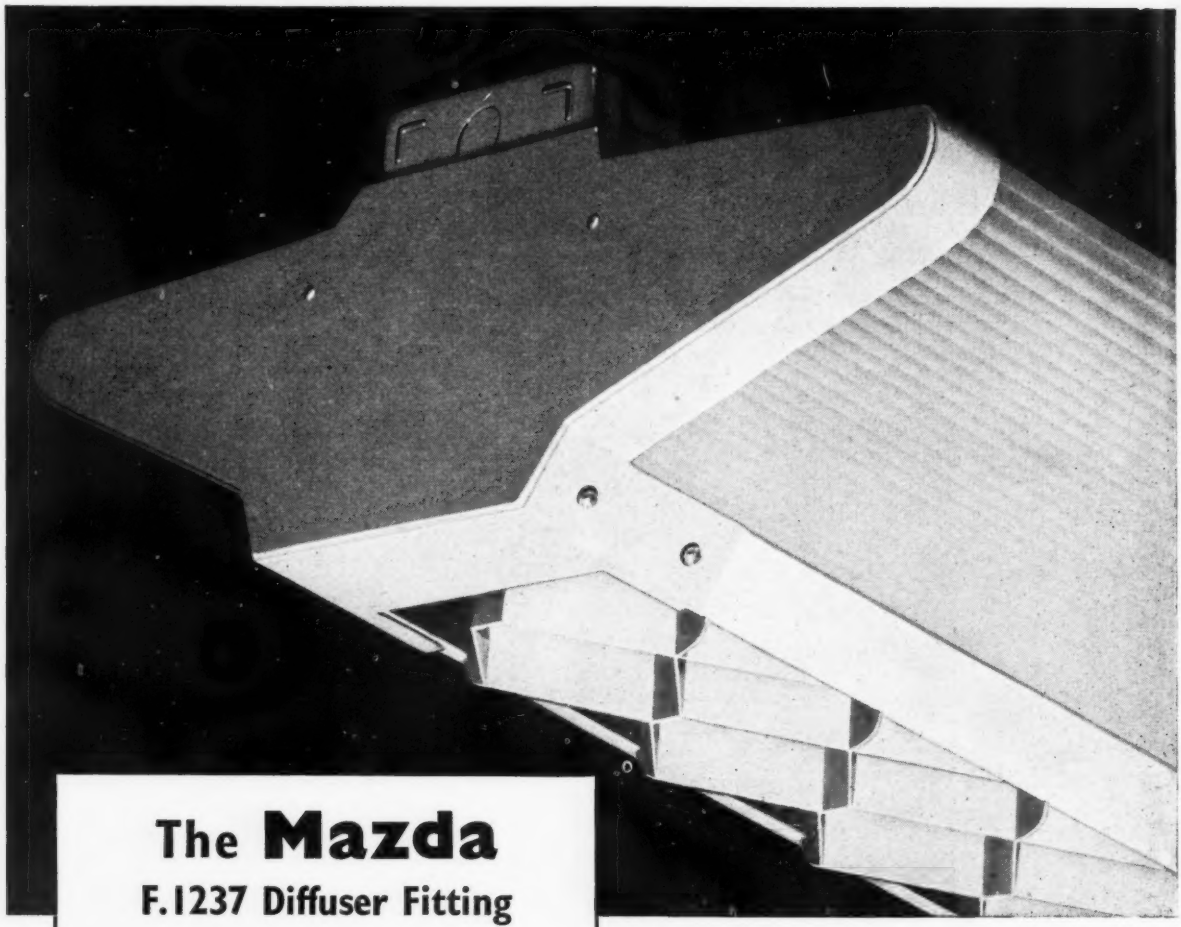
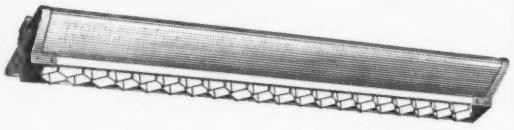


The Mazda
F.1237 Diffuser Fitting



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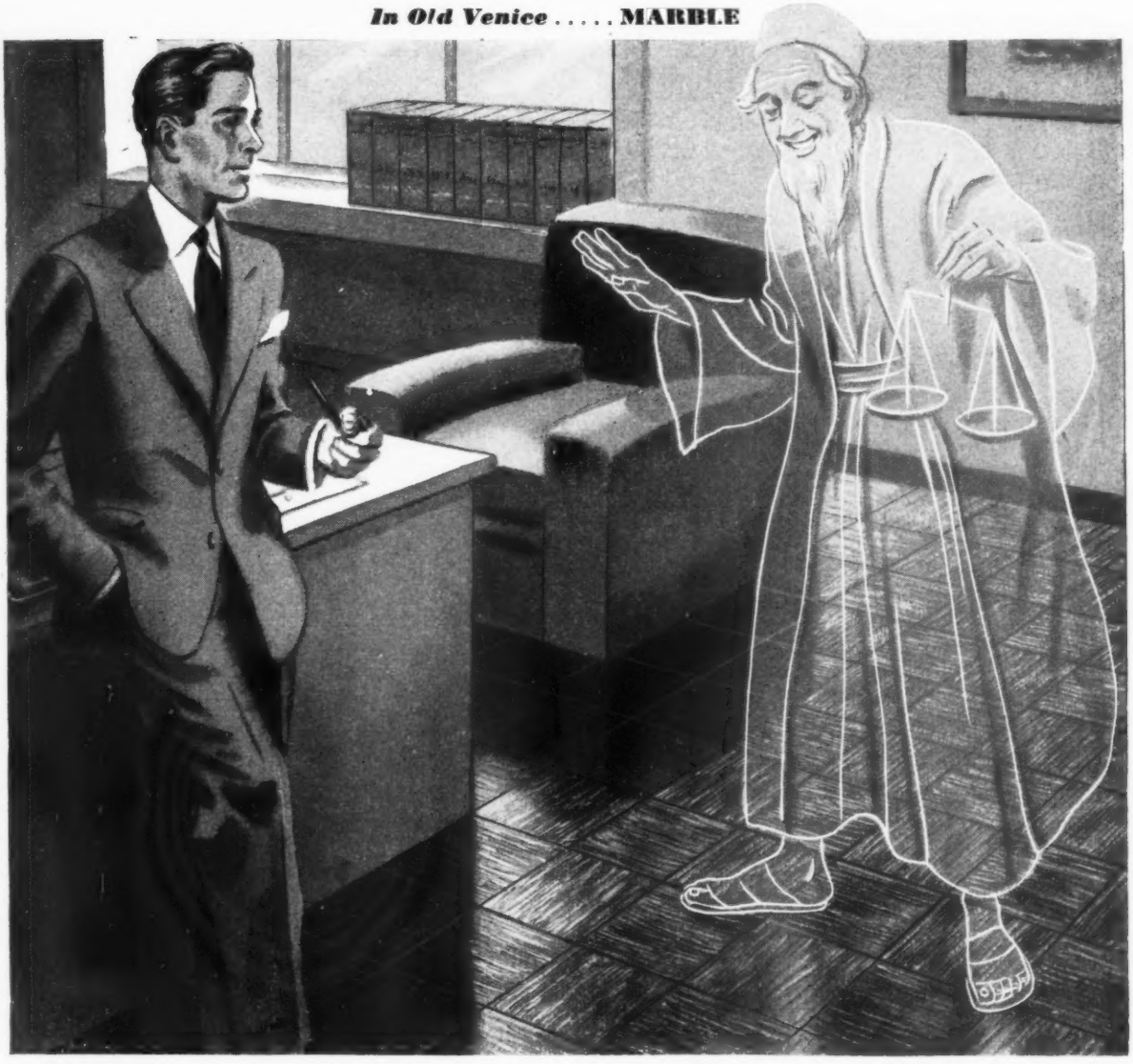

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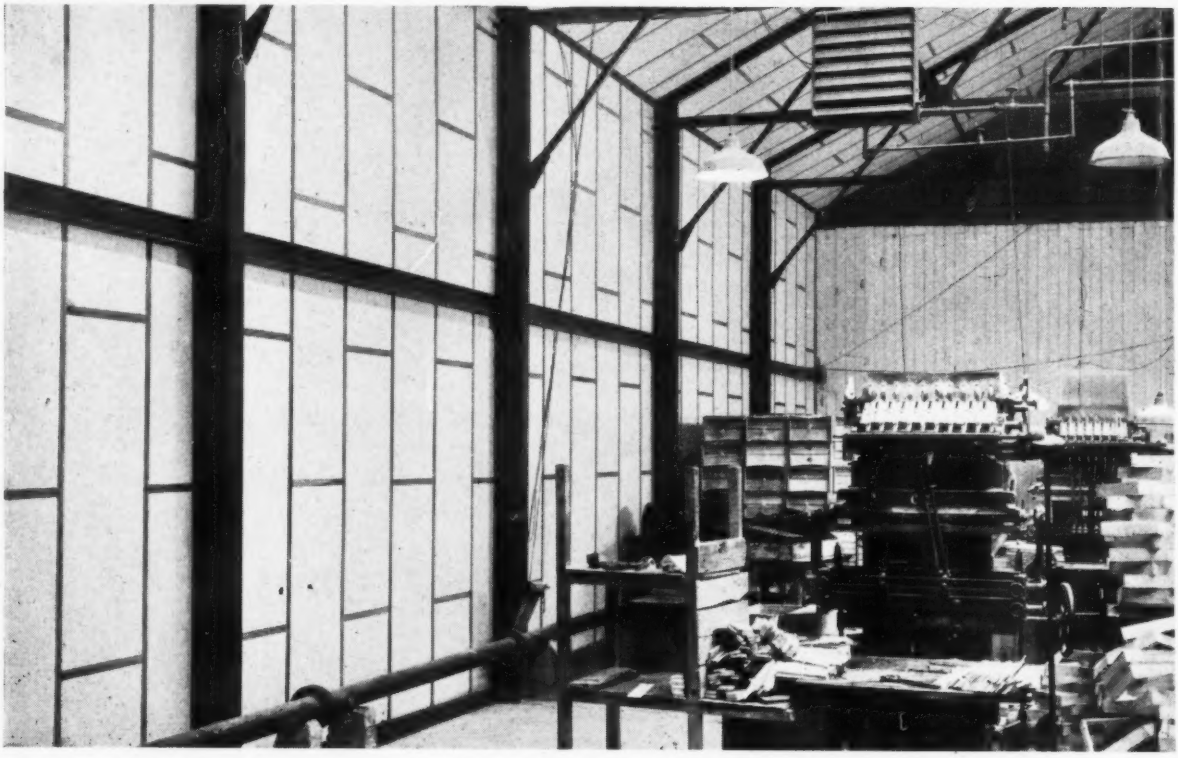

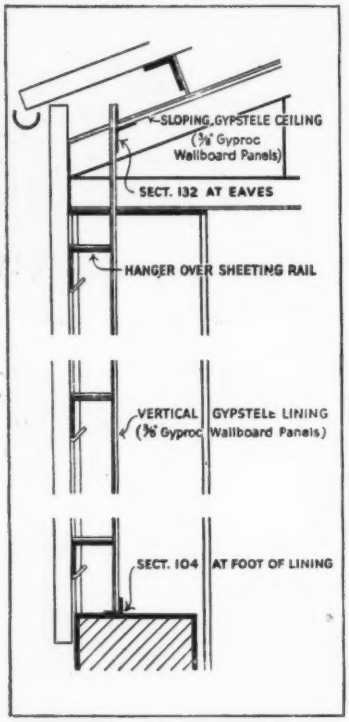

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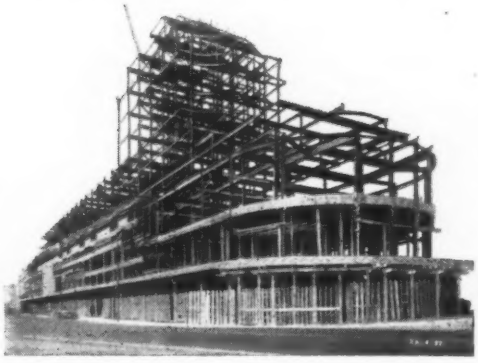

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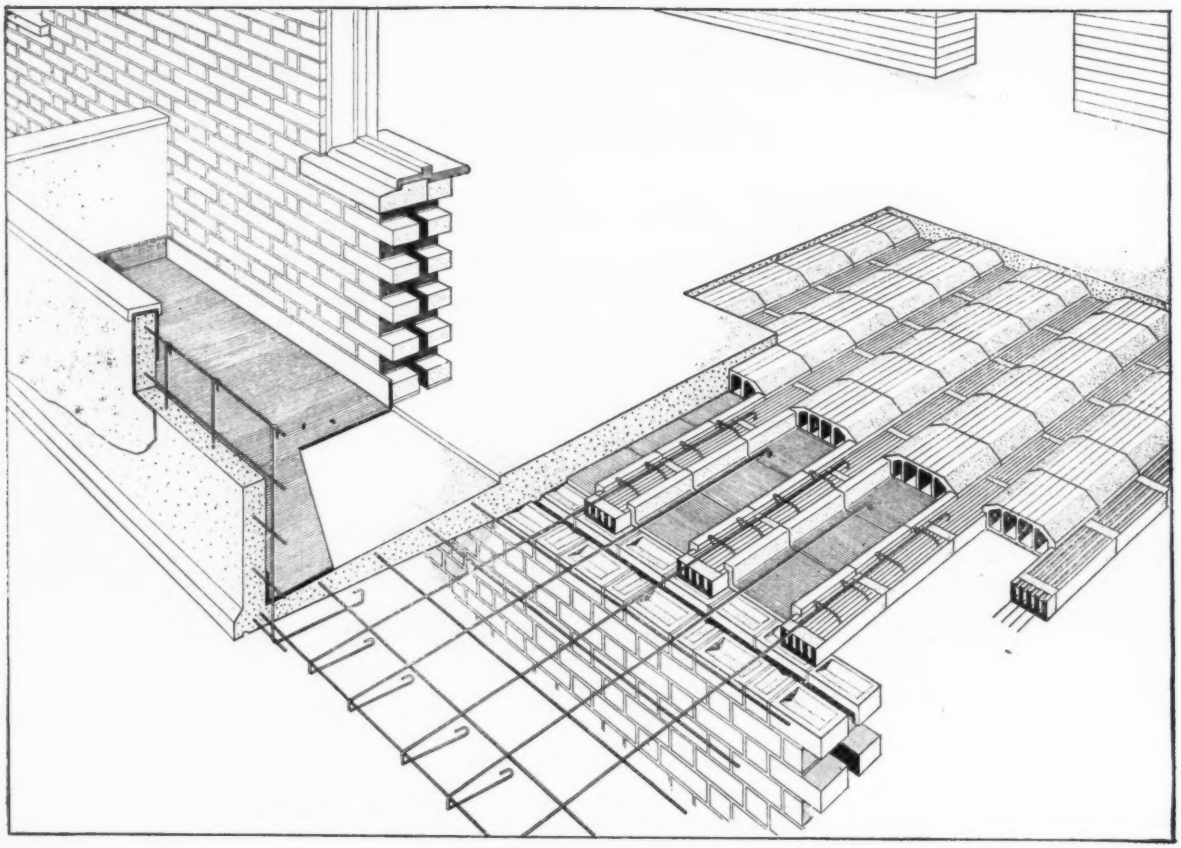

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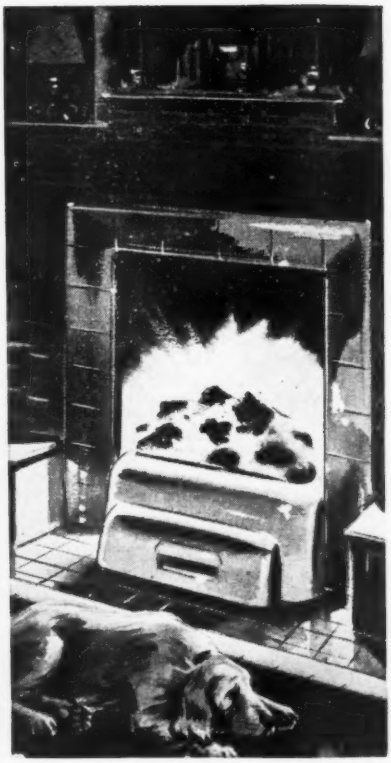

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****The 'NEWBOLD' and 'Flavel SEYMOUR' burn best on smokeless fuel but they can use* any *solid fuel.***

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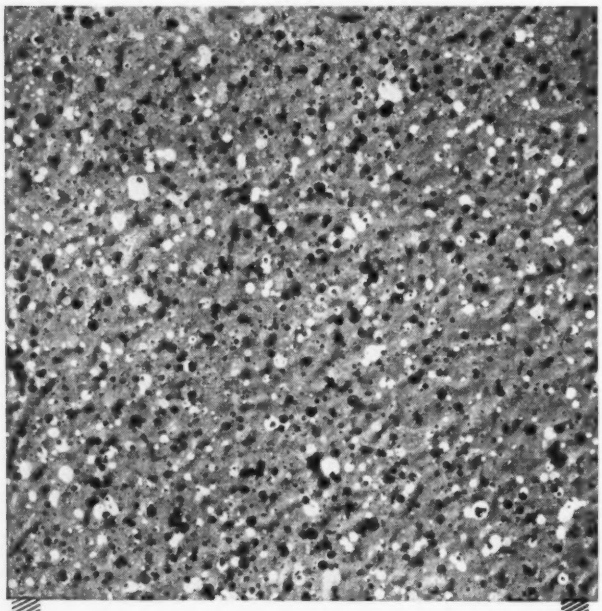

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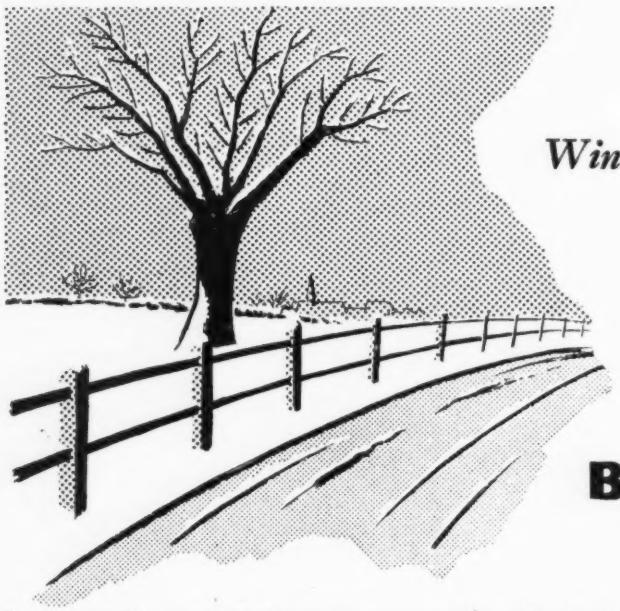

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WOOLAWAY

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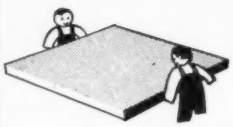

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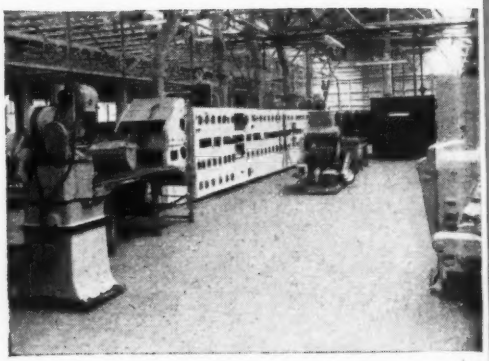

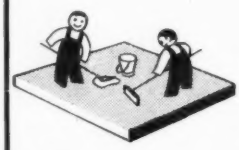

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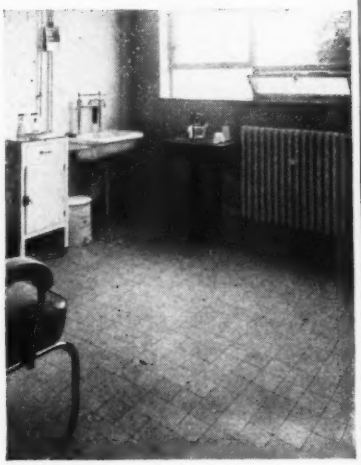

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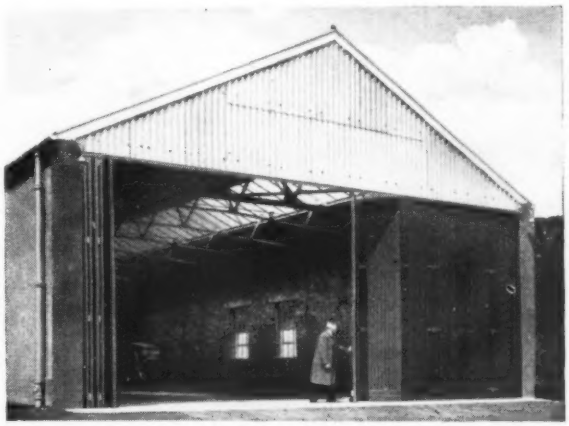

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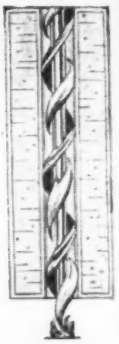

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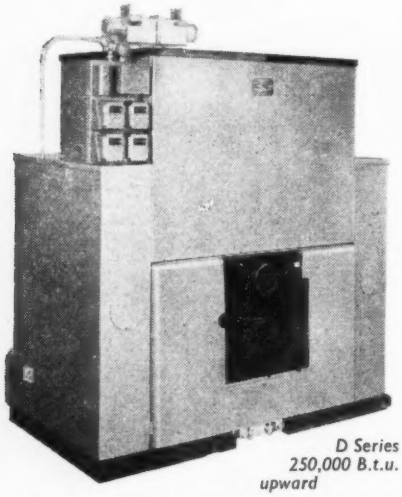

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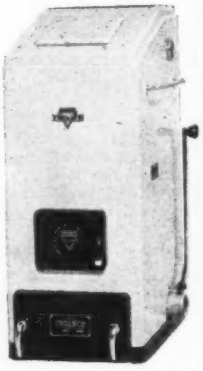

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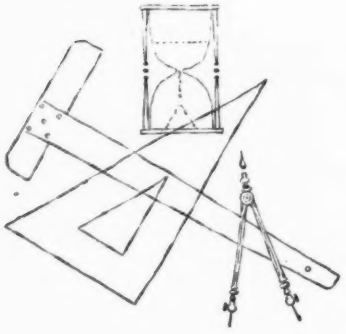

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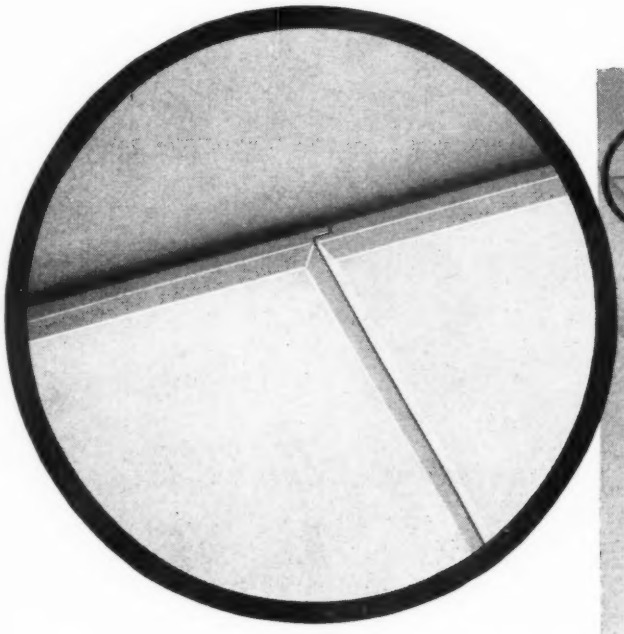

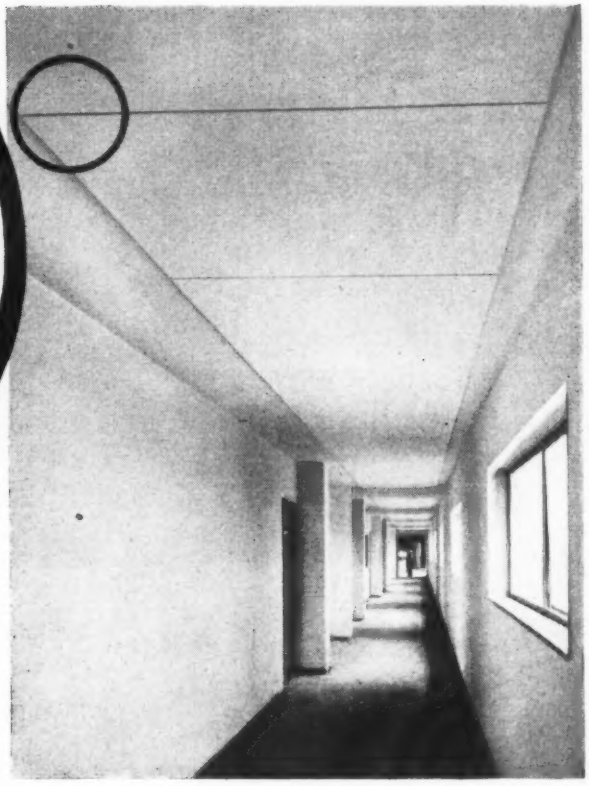

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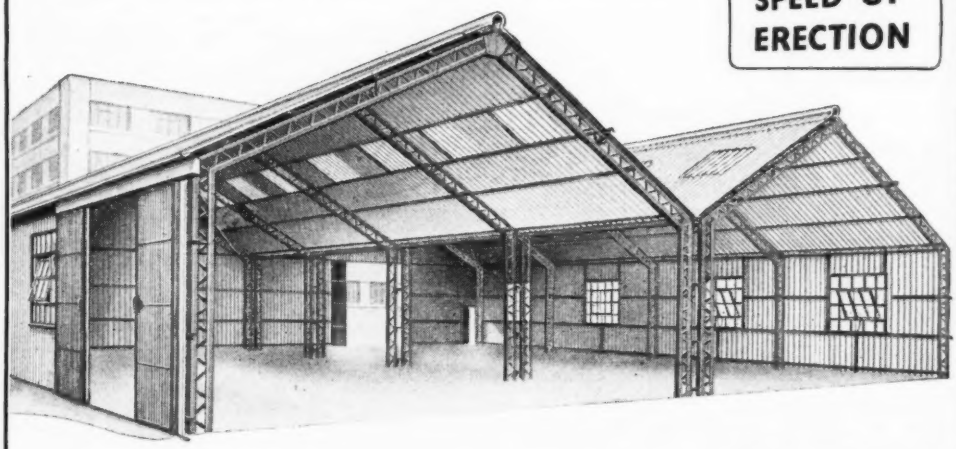

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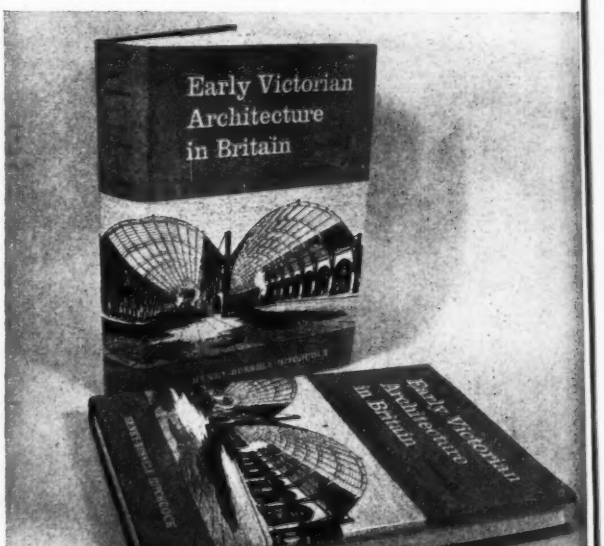

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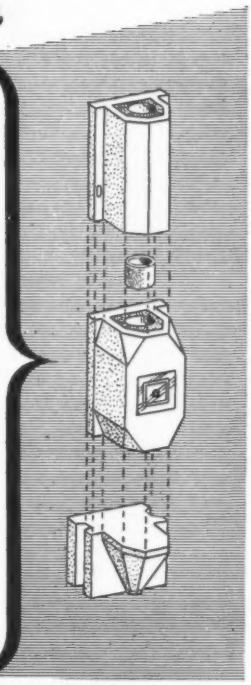

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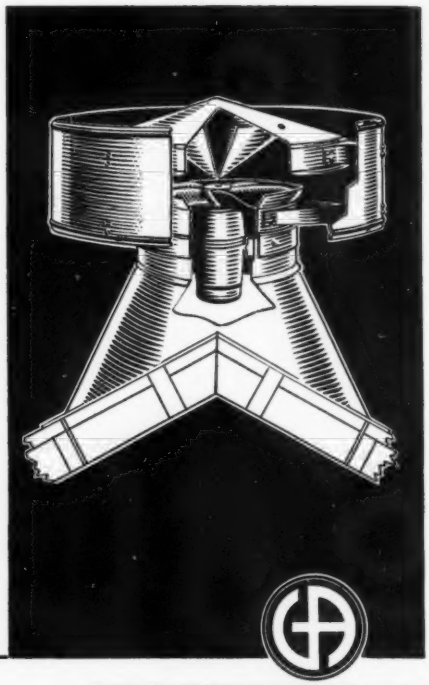

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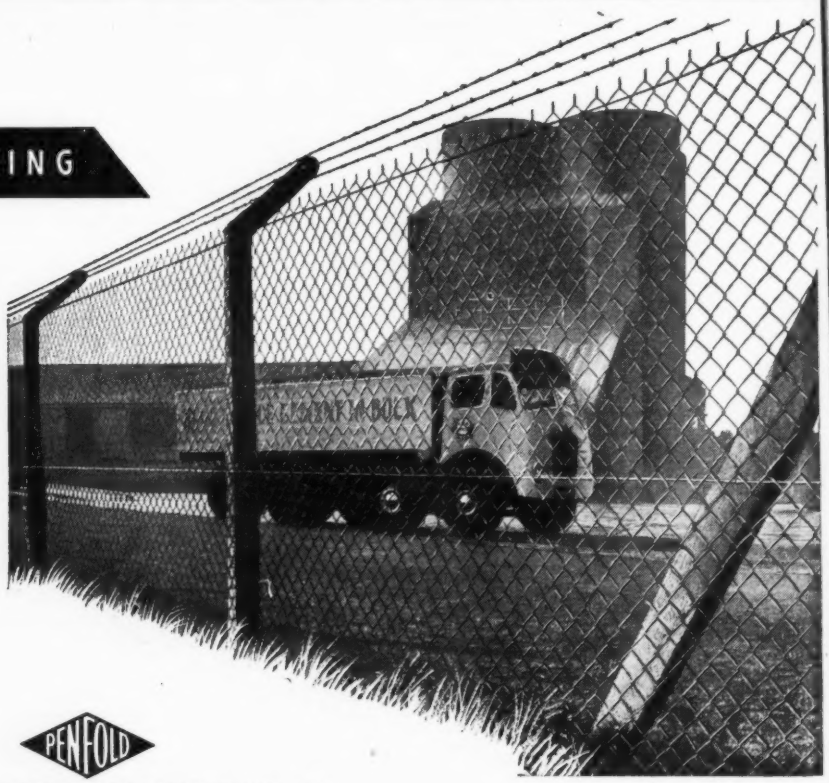

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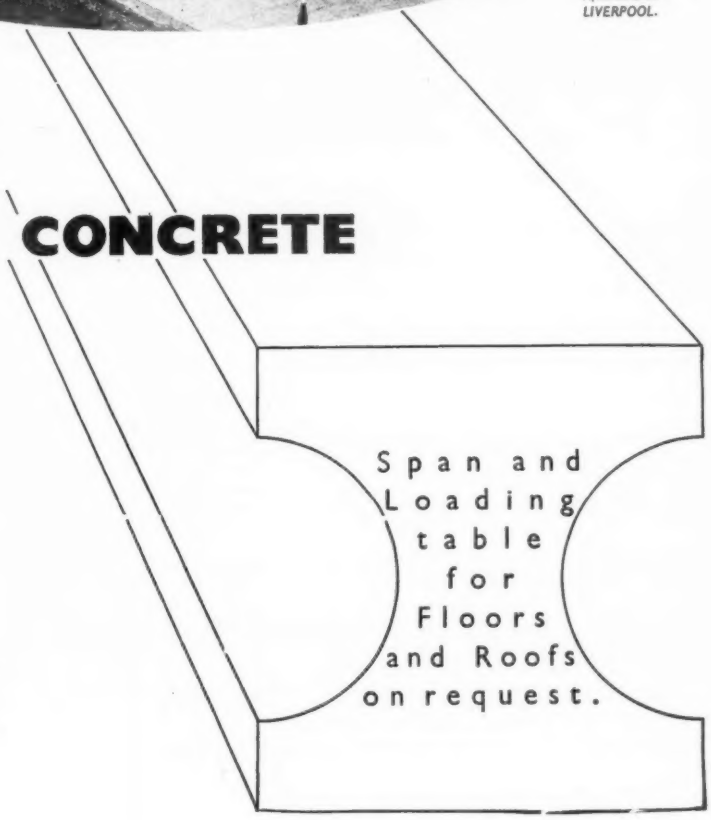

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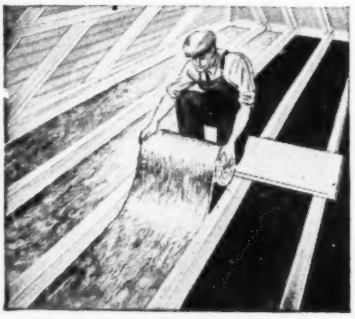

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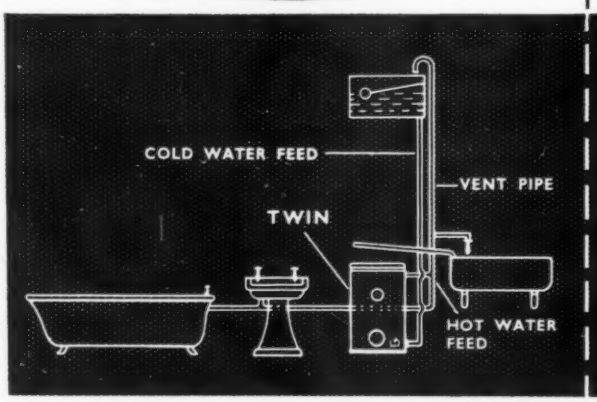

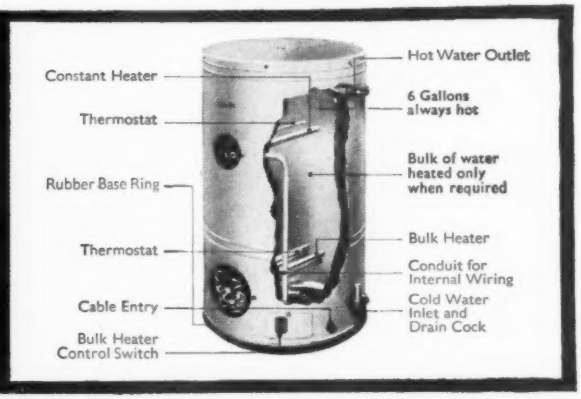

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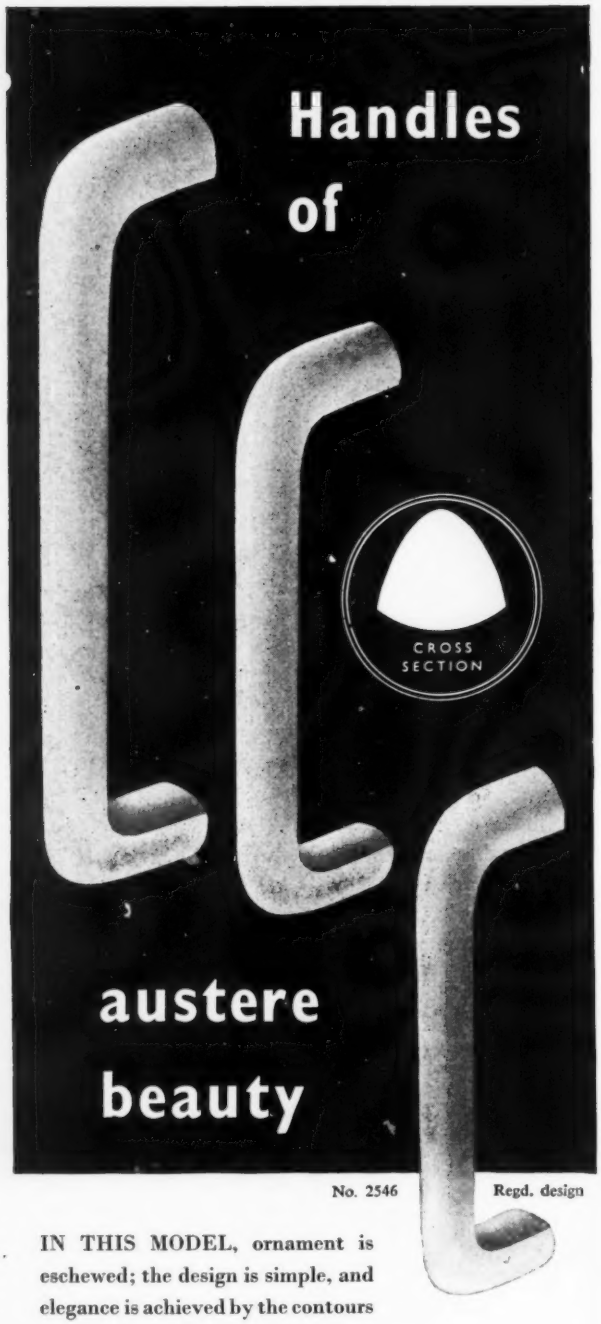

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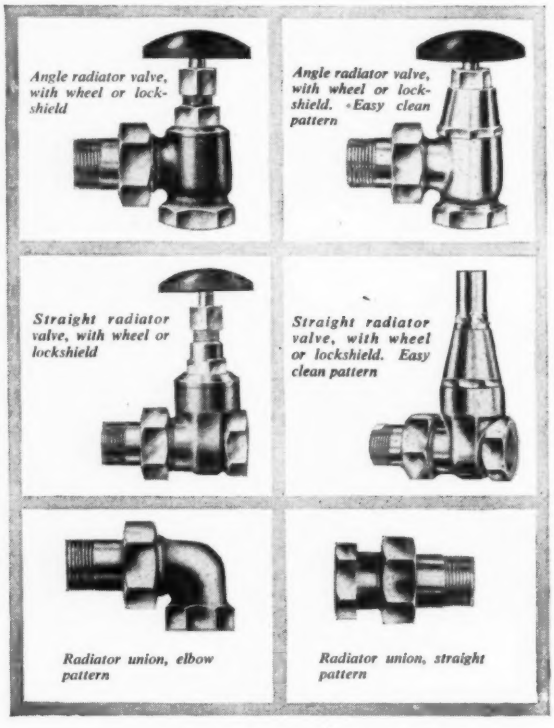

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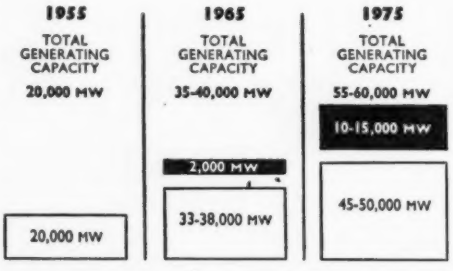

20 years' development programme

Britain's nuclear power station construction programme provides for twelve such stations to be built at a cost of some £300 million in the next ten years.

The First Ten Years

Work will start on the first two nuclear power stations in 1957. These will each have two gas-cooled reactors and the stations will be in operation by 1960/61. Two further gas-cooled reactor stations — each housing two reactors of improved type — to be begun in 1958/9 will come into service by 1963. The output of these four stations will be between 400,000 and 800,000 kilowatts.

The construction of two groups of four stations each will begin in 1960 and 1961/2 and they will be supplying electricity to the Grid by 1963/4 and 1965 respectively. The first group of stations will probably have one gas-cooled reactor each. The second group will probably utilise liquid-cooled reactors — one high rated reactor each. These stations will add well over 1,000,000 kilowatts to the nation's power resources.

The Second Ten Years

By 1975, it is anticipated that nuclear reactor power stations in Britain will have an aggregate installed capacity of between 10,000,000 and 15,000,000 kilowatts; and about half the national consumption of electricity will be derived from nuclear energy.

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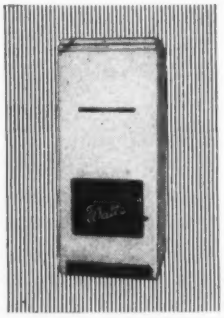

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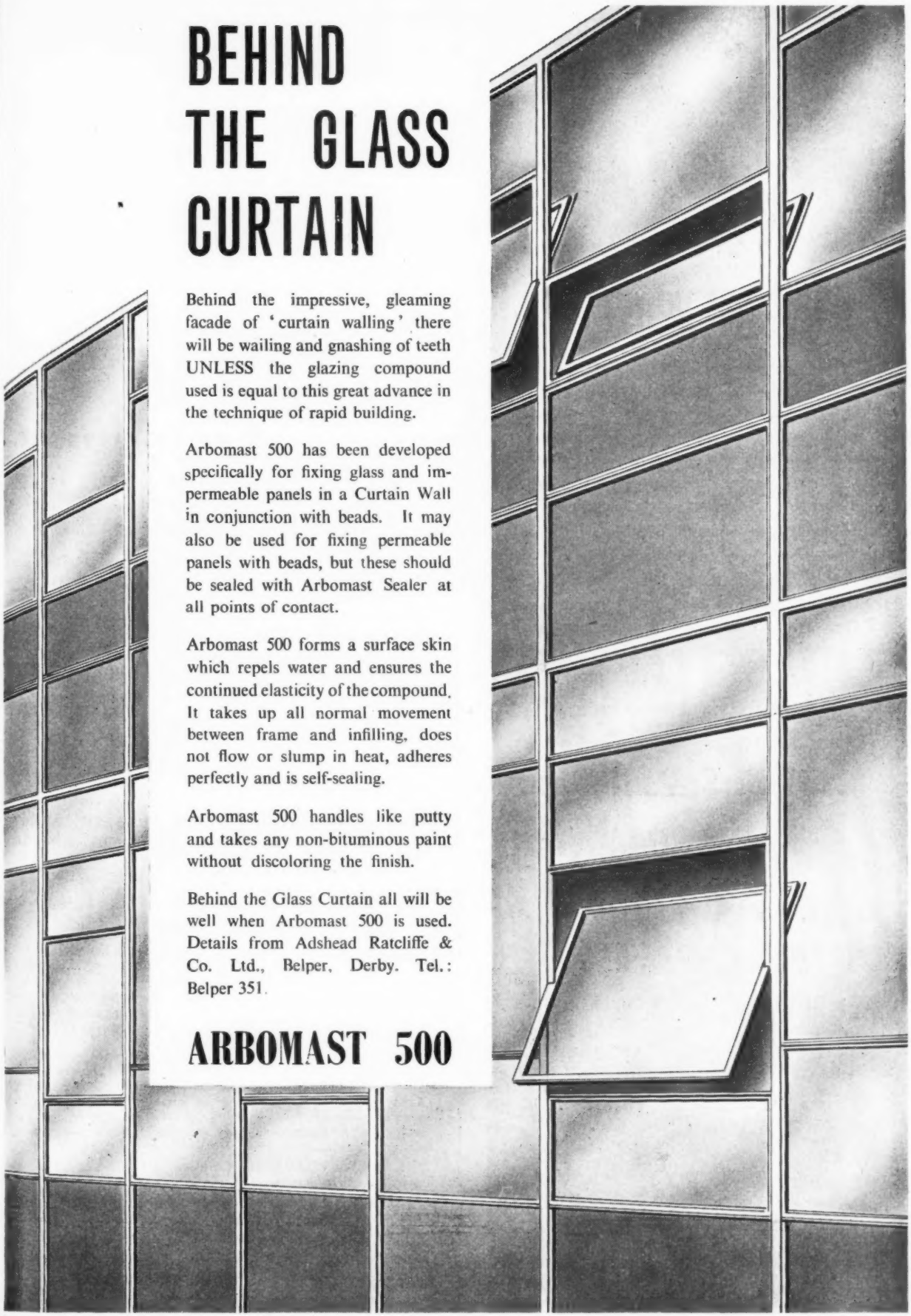

Behind the impressive, gleaming facade of 'curtain walling' there will be wailing and gnashing of teeth UNLESS the glazing compound used is equal to this great advance in the technique of rapid building.

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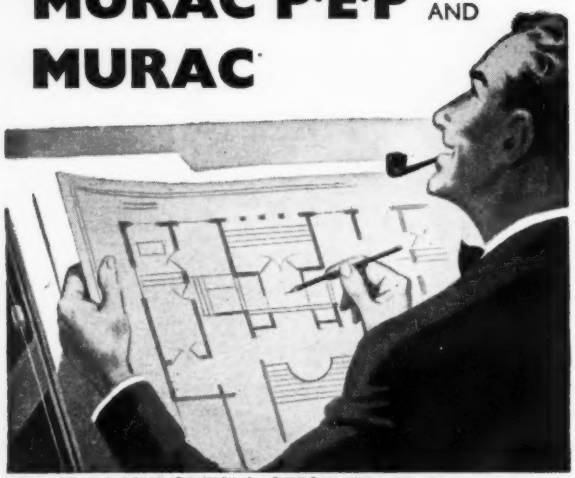

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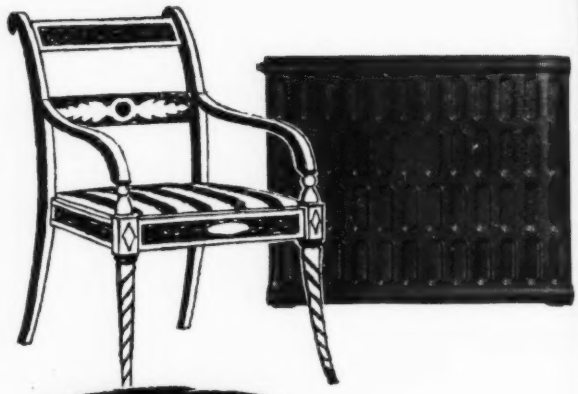

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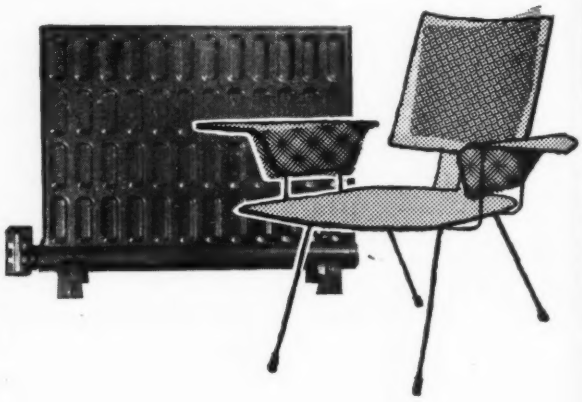

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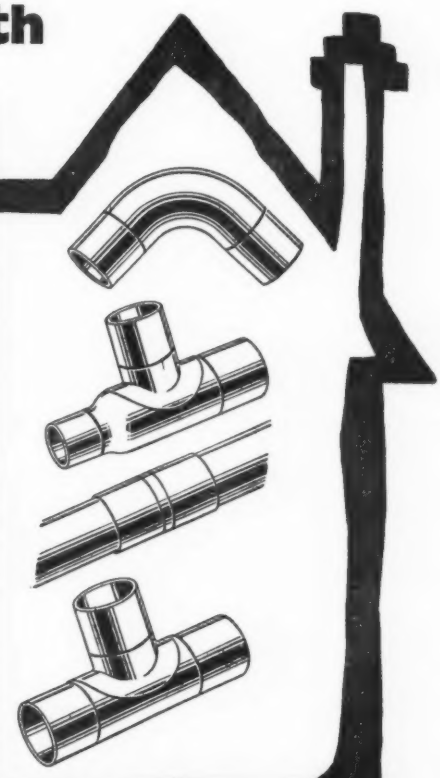

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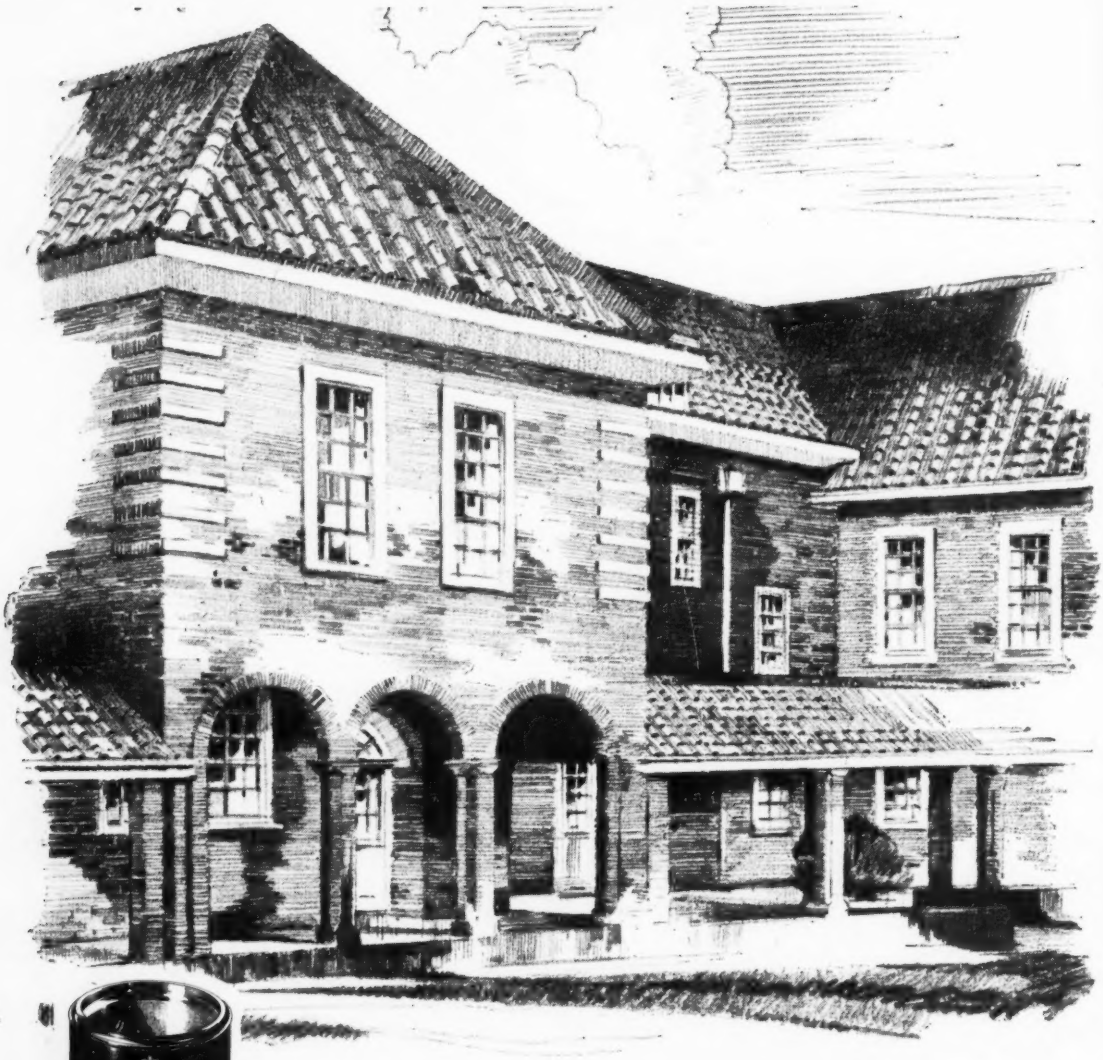

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The Simplicity Factor in Curtain Walling

It is generally agreed that simplicity, speed of construction, scope for functional design, and economy are the cardinal virtues of curtain walling systems. But simplicity is the keystone advantage. For simplicity is speed—simplicity is economy—simplicity facilitates design.

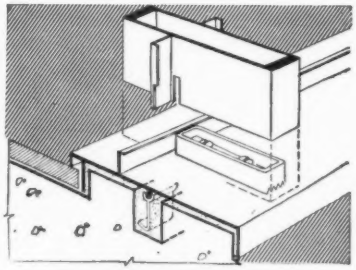
WALLSPAN curtain walling — ***Simple Design***

Wallspan is formed of one-piece components extruded from aluminium alloy HE9—which is light, strong and corrosion-resistant. The use of one-piece extrusions for the main members gives a clean and pleasing appearance to the completed installation and, more important, minimises the number of joints on the exposed surface.

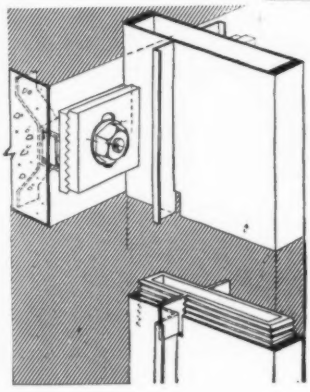
Wallspan mullions are made in three sizes for maximum spans of 11 feet, 15 feet and 20 feet. Four standard transom sections accommodate various weights and thicknesses of infilling. There is a head and a sill member. Auxiliary components—lugs, spigots, etc.—are kept to the minimum. It is true to say that Wallspan is undoubtedly the simplest curtain walling system yet devised.

WALLSPAN curtain walling — ***Simple Construction***

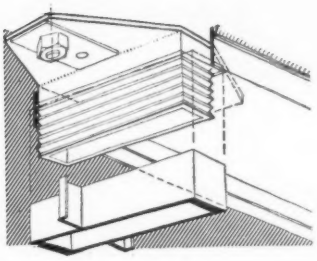
The mullions and transoms described above are fixed into a grid by simple spigot joints. Erection, in consequence, is exceptionally rapid. The grid fixing sequence is shown in the following diagrams.



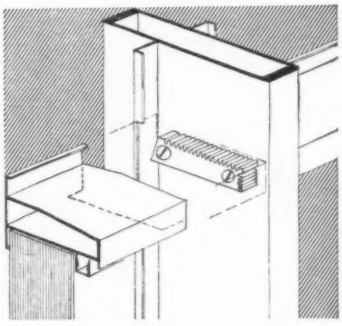
1 The lowest mullions fit over spigots screwed to the sill member.



2 Each mullion spans one floor. The spigot joint leaves the head of the lower mullion free (accommodating thermal movement). The foot of the upper mullion is fixed to a floor slab.



3 The head of the topmost mullion rides on a spigot bolted to the structural frame. The grid top is completed by head members fixed between the mullions.



4 The transoms rest on spigots fixed to the sides of the mullions.

The Wallspan Curtain Wall is completed by windows, fixed glazing and solid infilling panels fixed direct into the grid.

It is evident that Wallspan offers remarkable simplicity and speed of construction with a most unusual saving of time and trouble on the site.

Wallspan is going up all over the world! The recently completed Commonwealth Building in Ottawa (Architects: Abra and Balharrie) has Wallspan on all four elevations. An interesting feature is that the louvred spandrels are backed with removable insulating boards which in hot weather are replaced with panels incorporating extractor fans.

Further details from **Williams & Williams Ltd.** *Reliance Works, Chester*

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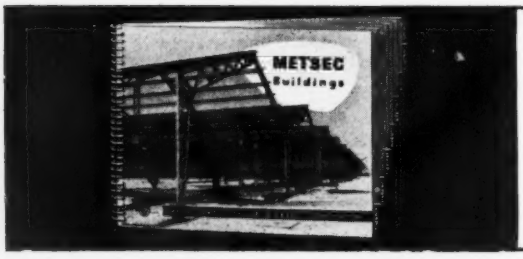

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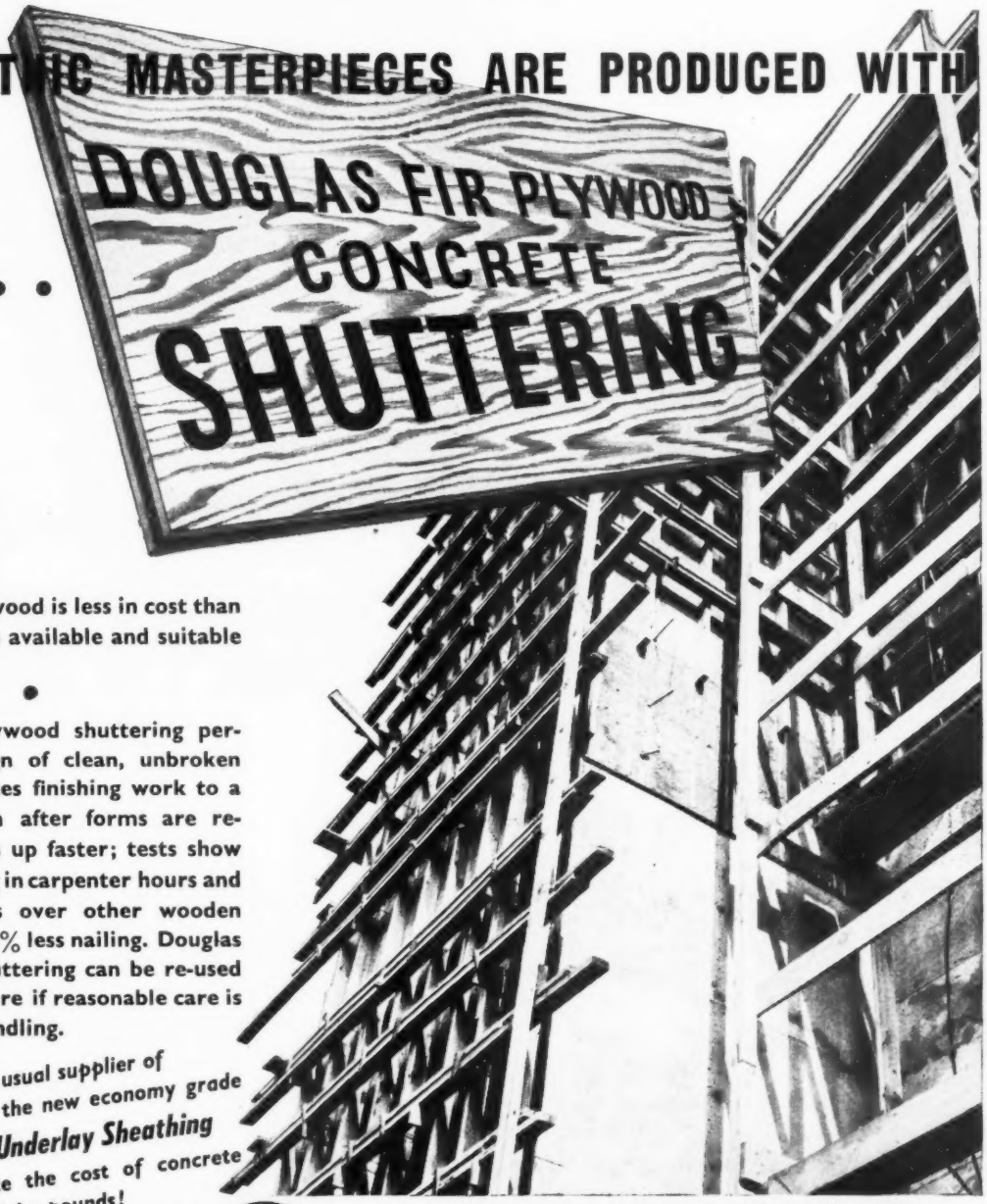

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THE POST-WAR DECADE

More information is now available about the architectural exhibition which, as reported in this column some weeks ago, is being organised by the Arts Council—their first excursion into the field of architecture.

*

It will open on February 3 at the Council's headquarters in St. James's Square, where it is being installed by Trevor Dannatt. It will be largely photographic, and its aim will be to summarize the best achievements of British architecture in the ten years since the war and to indicate at the same time the trends that are thought to be the most lasting and significant.

These will be underlined in the catalogue, which is being prepared by John Summerson. This will be more ambitious than the ordinary exhibition catalogue, the idea being that it will serve as a permanent record of the theme of the exhibition. What buildings have been chosen as the most significant of the post-war years remains to be seen; the only clue ASTRAGAL can give you is the names of the committee that has advised the Arts Council. Besides John Summerson, the committee consists of Lionel Brett, Furneaux Jordan, J. M. Richards and Peter Shepheard.

*

ASTRAGAL wrote last week of the shortage of gallery-space in London. This makes it all the more praiseworthy that the Arts Council should be giving up its own exhibition gallery to architecture for several weeks. It is to be hoped that the public response will justify it and encourage further enterprises of the same kind.

UNDESIRABLE PUBLICITY

During the last few years *The New Statesman* has gained a well-earned reputation for philistinism in the arts. Indeed it would appear to have taken up the cudgel where the popular press of the thirties put it down after the war. It has now added to its reputation by an anonymous attack on that Achilles heel of architecture—the small private house. This was in the article "This Always Happens" in the last number of the old year.

*

It is the usual story of the client who goes to a young architect for a house, finds the estimates too expensive, has to pay the architect's fees for the unbuilt house, and in the end goes to a builder. This is a hackneyed story that one hardly expects from *The New Statesman*. No doubt it is perfectly true and the reasons why, if one considers them, are very obvious. The profession is partly to blame, but by no means entirely, and *The New Statesman* could have done a service if it had attempted to look into these reasons instead of repeating an old story.

*

Let us look at this particular case. The client read the RIBA hand-out, then approached a "well-known architect whom he admired," who introduced him to a *protégé*. (ASTRAGAL notes that the well-known architect wasn't foolish enough to take on this sort of job himself.) The client's price was £2,500, the AP's (architect's *protégé*) estimate was £3,000. Needless to say the tenders for the "lovely little house" were well over. Client abandons the scheme, pays the AP's fees, which were bigger than expected, and goes to builder, who gives him a house "with nearly everything we wanted except the architecture" for an unspecified price, but we may assume around £2,500. The builder remarks: "We have to quote high prices to them to protect ourselves against them. Its the messing about that costs the money."

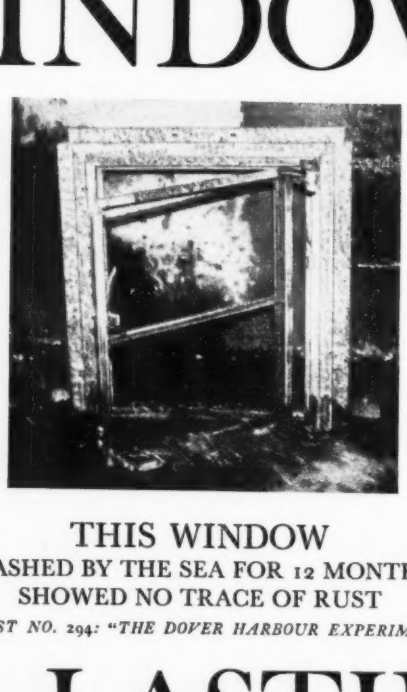
*

ASTRAGAL'S first reaction is simply that anybody who wishes to spend only £2,500 should not attempt to have a "tailor-made" house and should certainly not go to what appears to be a young architect who may not have built very much before. There are, in the provinces at least, plenty of architects

HOPE'S

HOT-DIP GALVANIZED

WINDOWS



THIS WINDOW
WASHED BY THE SEA FOR 12 MONTHS
SHOWED NO TRACE OF RUST
(SEE LIST NO. 294: "THE DOVER HARBOUR EXPERIMENTS")

OF LASTING QUALITY

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who can and will produce economic houses. It is doubtful if any of them could produce more than a variation on the stock plan for this amount. Soon we may hope that the RIBA will have a list of stock plans. It costs nearly £2,000 to produce a small semi-detached or terrace council house, with all the advantages of standardization, quantity production, no central heating and no special finishes.

*

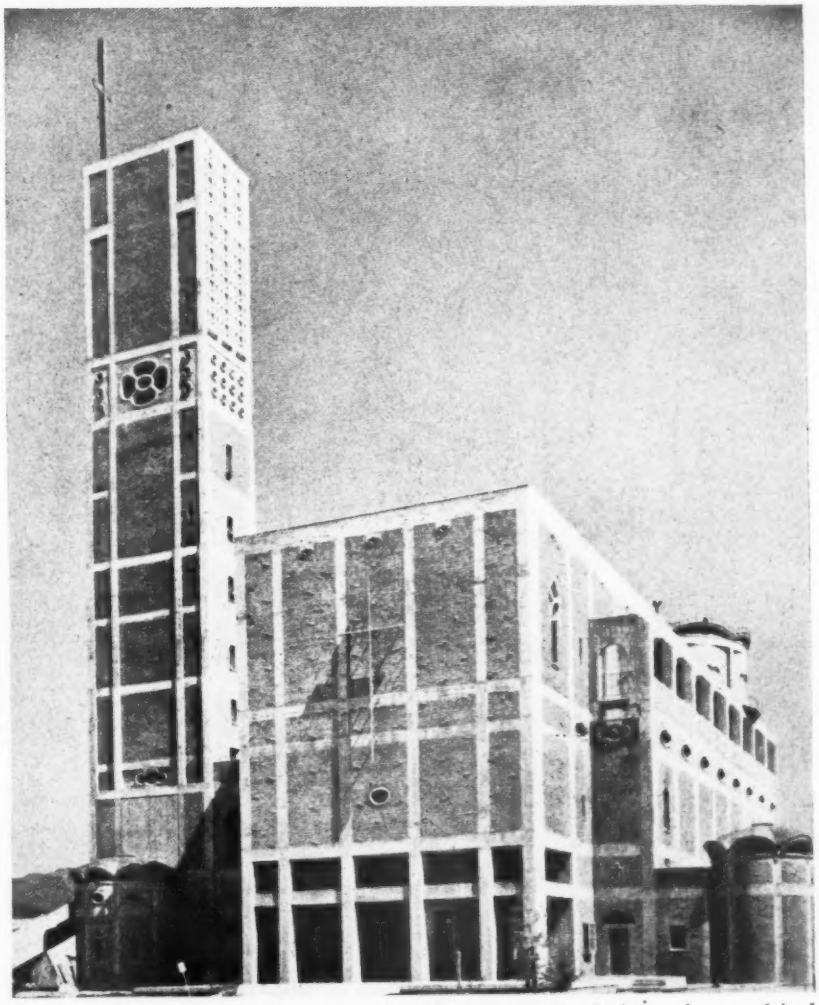
Apart from the naïve and unconstructive attitude of the *New Statesman* article, ASTRAGAL nevertheless does feel that the author's " well-known architect whom I admired " was a little at fault in not giving him a very much clearer picture of what he was in for, and was also glad to see that architects Paul Ritter and Towning Hill have written letters to *The New Statesman* answering the article far more clearly than ASTRAGAL feels he can possibly do.

PAPERWEIGHT

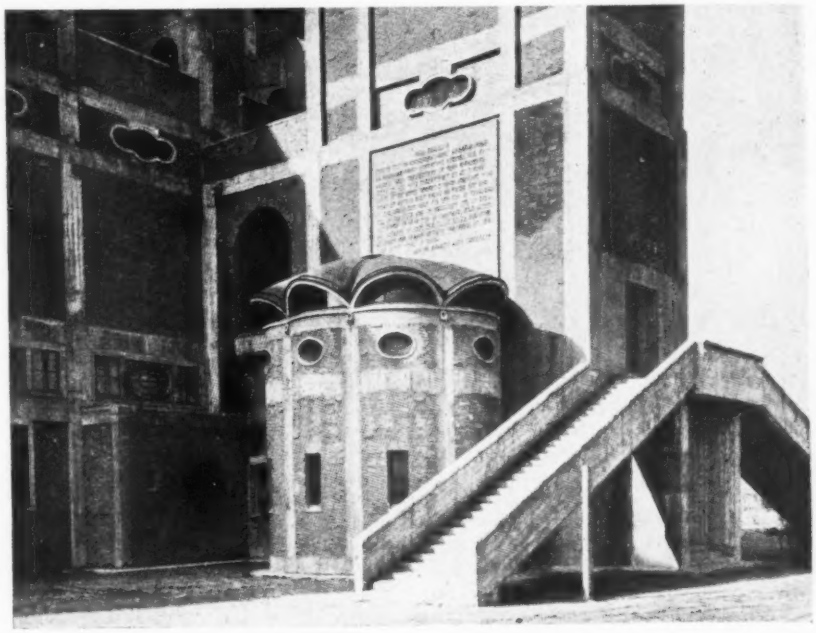
Among the glossy magazines there is nothing quite so fantastic as the massive annual *This is Japan*. Where others arrive on the desk with a thump *This is Japan* arrives with a resounding crash, for this year's issue—the third—runs to a solid three-hundred-and-fifty large-format pages, crammed from cover to cover with advertisements for everything from silicones to bathing beaches through fire-engines, bottled *saké* and lessons in *judo*. The articles cover everything from the reminiscences of elder statesmen to a short guide to the Kabuki theatre, and all this, and all that, and all the other—and architecture too!

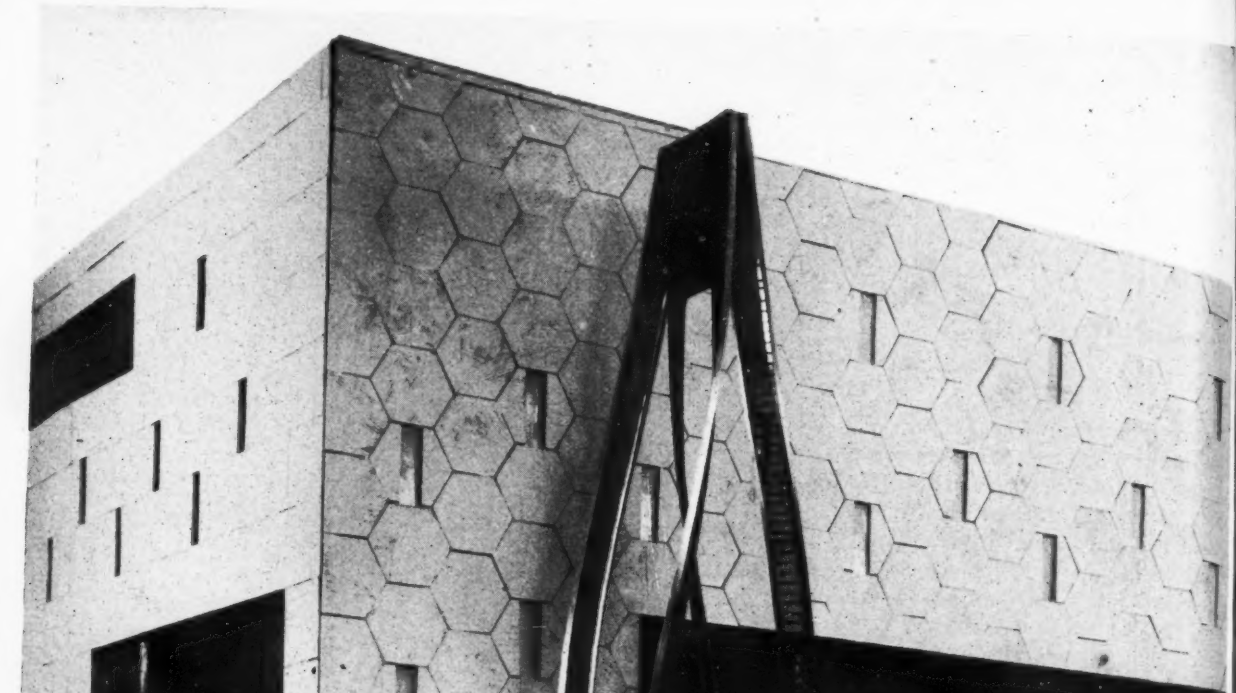
*

Seen against the background of such massive coverage of a nation's life, and a changing life at that, Japanese architecture proves a little easier to get hold of, rather less of a mysterious and apparently indiscriminate hodge-podge of traditional vernacular and imported modernism. Not that all the buildings seem altogether admirable even so, nor that they can be regarded as completely explained by a study of *This is Japan*, for one cannot help suspecting that Togo Murano's new Hiroshima Cathedral, with its extraordinary blend of



This remarkable mixture of styles expressed in this Japanese church shown above, and in the detail of the belfry below, is commented on by ASTRAGAL *on this page. Designed by Togo Murano, the building is the Memorial Cathedral for World Peace, at Hiroshima. The illustrations are taken from* This is Japan, *1956, published by the Asaki Shimban Newspaper Publishing Company, in a section of this annual titled " Towards a New Architecture "*





For Rebuilt Rotterdam

What will undoubtedly be the most dramatic piece of abstract sculpture on public view anywhere is shortly to be constructed at Rotterdam in front of the new Bijenkorf department store, which is replacing Dudok's pre-war Bijenkorf building in the main street, the Coolsingel. The sculptor is Naum Gabo, who was originally Russian, worked in England during the 1940's and is now resident in America. The idea for a piece of sculpture on this scale (its height is to be 82 ft. above the pavement) originated with the architects of the building, Marcel Breuer and A. Elzas. The relationship of building to sculpture is shown in the model illustrated above. According to Mr. Gabo's own description, the origin of the conception lies in the organic structures found in the vegetable world; especially in the structure of trees. The sculpture has a reinforced concrete foundation tied to the foundation piling of the building. It emerges above the pavement in the form of two pre-stressed concrete blocks, twelve feet high, faced with black marble. Out of these twin trunks spring eight branches, in the form of hollow quadrangular steel ribs, branching outwards and meeting again at the crown of the structure, in the meantime being twisted through ninety degrees and tapering gradually so that at the top they are half their original thickness. The inner sculptural core is built up as a web of bronze wire springs stretched over a stainless steel skeleton. The building is already under construction. Work on the sculpture is expected to begin in February and to be completed by September.

Modern, European Historical and Japanese traditional would defy explanation by any method.

UNWINDING THE SPIRAL

If prices can be fixed, even for six months or a year, it will obviously help to keep down wage claims and, so far as building is concerned, encourage the waverers to go ahead with existing schemes. General Spears's appeal for stability has been answered by the cement, plaster board and brick people, a metal window and a tile maker, and sundry others. The uncharitable may assume that this is made possible by existing high profits, but it is noticeable that most of the stabilizers who depend on steel control their own raw materials and can be caught only by increased fuel costs or wages. One can expect other firms in a similar position to follow suit, but (although Messrs. Crittalls have given a lead) those more dependent on other suppliers may find it more difficult to give the same guarantee. But at least the building industry has made a good beginning, though we may expect a lot of heavy orders towards the end of the guarantee period. This won't help much, but when so many producers can sell all their output without too much trouble prices tend to go a bit wild, and stability will help to avoid the everlasting complaints (see "Undesirable Publicity" on page 35) about tenders being nowhere near the architect's figure.

PLAIN SAILING

The fact that the Boat Show is twice the size this year is no doubt partly due to enthusiastic plugging by the Beaverbrook press, but it's an affair which really produces a lot of interest and highly knowledgeable visitors. The main things to see, apart from semi-standardized sailing cruisers, are the dinghies, racing and otherwise, hot-moulded in thin diagonal skins, and the fibre-glass plastic jobs, which seem to be the coming thing, at any rate for power craft. Finish is improving, though interiors are still a bit rough, and at least one firm is already thinking in terms of fibre-glass coasters carrying up to 2,000 tons.

*

Display and stand design? Non-existent, thank goodness: boats need nothing but themselves.

ASTRAGAL

POINTS FROM THIS ISSUE

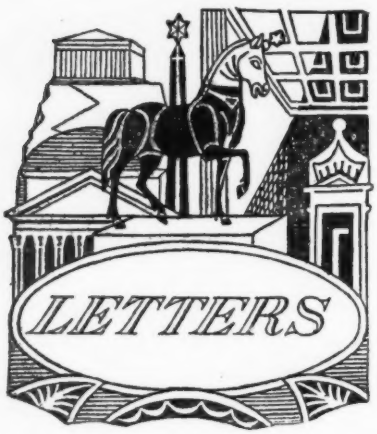
The Editors

THE END TO JUST TALKING

THE year 1956 may well prove to be a very fateful one for architects. The profession is still enjoying the experiences of a major building boom. There is no unemployment of architects. Yet, in the distance are clouds, as yet small, which, if they grow, may darken the whole architectural scene now being enjoyed, more or less, today. These small dark, far-away clouds are: the familiar pre-war spectacle, the slump: the absorption of the architect into the building team as the stylist advisor to the engineer-contractors; the solidification of the present "pyramid" in large offices, local authority or private, so that the qualification ARIBA becomes meaningless save for those who are content to act as juniors for fifteen or twenty years before rising to the top or save for those with capital to start up their own practice.

Why start a new year with so depressing a forecast? Because now architects are still largely independent, and still fully employed. Now with full employment, the profession is in a position to shape its destiny. It will be much harder to fight for principles when work, and therefore money, is in short supply.

For nearly four years the RIBA has been struggling, in sub-committee, committee, and in the Council itself, to forge a policy to cater for the interests of the salaried architect, the relatively new figure who forms the majority of the profession. Last year, at the AGM the Council had first-hand evidence of the temper of a portion of the profession. Whether or not a trade union type of organization was the best, or was feasible, the profession, as represented at that meeting, wanted a professional body to speak for it, and fight for it, in private, in commercial, or in public offices, and to speak with the authority born of knowledge of the profession, and of the responsibilities which the profession is equipped to discharge. Since that AGM an *ad hoc* committee, under the able chairmanship of Richard Sheppard, has studied the problem yet further and, it is rumoured, has put forward a simple clear-cut policy. We hope that the findings of this committee will be made known to the profession very shortly.



Gordon Tomalin, A.M.I.Struct.E.

Charles Weiss, D.Arch., A.M.I.Struct.E.

Specialists In Building

SIR,—"The architect no longer possesses all the technical knowledge necessary for the detailed working out of most buildings" is an expression which I observed in your issue of December 22, 1955, under this caption. If this is to be accepted, I am prompted to ask a few questions upon which I am hopeful your Guest Editors may provide guidance.

For the purpose of enquiry I am selecting any building to be constructed within the London area.

I have so far in these excellent articles seen no guidance as to the architect's responsibilities in the matter of informing the builder (*a*) of the exact size and shape of the building, and (*b*) of the dimensional data to be furnished regarding the positioning of the work. It is possible, of course, that precise dimensional information is deemed to be so small a matter as to be unworthy of a place in the vast scheme of things. Nevertheless, answers to the questions here might be of interest to many architects who may be concerned with their responsibility "as to the setting out of the work."

1. Is a precise survey of a London building site necessary?
2. If so, then when should such a survey be executed?
3. Whose task would this be and what would be the architect's procedure?
4. From whom is it possible to obtain an idea as to cost of this precise form of surveying?

Compared with the wide range of problems confronting the architect this matter of dimensions of the site and the controls for the position of the structure may well appear to be quite minor. There is, however, no doubt whatever that our District Surveyors are alive to their responsibilities in the matter of the positions of New General Lines of Building, as indeed are the other Authorities concerned. With land as expensive as in the London area few investing clients will readily give up portions to which they are fully entitled.

I look forward to your Guest Editors' helpful observations.

GORDON TOMALIN.

London.

[The Guest Editors make the following comments: "A precise survey of the site is necessary for all building projects, and it should be prepared as a part of the information that the architect must collect before he begins to work out the design. This was discussed in our article in the JOURNAL of June 30, 1955, p.885. The survey should obviously be prepared by a competent person—in relatively simple cases by the architect's own staff. For larger or more complicated sites, by a professional surveyor or engineer. The cost clearly depends upon the nature of the survey. We should be interested to hear readers' opinions on Mr. Tomalin's letter."]

Steel Mis-used

SIR,—I would like to comment on the fallacies and half-truths contained in Mr. Waterman's letter printed in the JOURNAL for December 29, 1955, concerning your timely and courageous leader on the mis-use of steel.

In normal building frames the grid spacing is hardly ever the determining factor for the choice of the structural material. Steel building frames are generally designed as simple beams supported on stanchions, while concrete frames are invariably designed as a monolithic structure with continuous beams. Thus, the efficiency of the concrete frame may be said to exceed that of the steel frame by at least 25 per cent. Whilst under present design standard increased material often has to be incorporated in steel frames to provide lateral stability, it is normally found that monolithic concrete structures have this stability as an inherent characteristic.

Furthermore, the sizes of steel beams are often governed by deflection limitations, whereas the deflection of concrete beams in monolithic frames would normally be about one tenth of an equivalent simply supported steel beam.

Your correspondent's statement that the restrictions in the use of steel have resulted in many ingenious but shockingly uneconomical structures is the sort of generality which may pass without comment in the alcoholic haze of an after dinner speech, but would hardly bear honest factual investigation. The truth is probably just the opposite. Steel shortages have provided an incentive to the architects and engineers to use their available resources to the best advantage, and in many cases, with the co-operation of the builder, they have produced new forms of structures which have proved cheaper than the traditional ones. No rules can, of course, be laid down regarding the choice of structural material. Every case must be examined on its merits, and the final choice made after all relevant factors, including cost, have been taken into account.

By coincidence, in the same issue of the JOURNAL, the Osnaburgh Street Development is described and analysed. Nothing could be a better answer to your correspondent than the cost analysis of this structure. According to the published figures the cost of foundations, cased steel frame, stairs and floor and roof slabs is about £69,640, excluding preliminaries, and £73,470 including the appropriate proportion of preliminaries. The respective percentages of the total cost of construction are therefore 57¼ per cent. and 60¾ per cent. Even after the suggested 7 per cent. for difficult foundations is allowed, the cost of the structure is about £69,000, or 57 per cent. of the total cost of the building. The percentage one would expect with a well designed concrete frame would be between 25 per cent. and 35 per cent. of the total cost. Thus the cost of the structure, deducting the heavy foundation expenditure, appears to be roughly 3s. 2d. a cubic foot, whereas the appropriate figure for a concrete structure would have been between 1s. 6d. and 2s. a cubic foot. It would appear, therefore, that the use of a cased steel frame probably cost an additional £31,000, or £704 per dwelling unit.

Is it not a paradox that a steel frame had to be used because of the shortage of rod reinforcement? In effect, one could say that the present steel shortage has necessitated the use of far more steel than was actually necessary. One feels that there must be a moral to be drawn from this.

I find it difficult to conclude this letter without asking whether all other alternatives were examined prior to the decisions to use a cased steel frame. A glance at the plans reveals compact well-designed units forming a series of rigid stable boxes. Could not these be accepted as the frame in load bearing brick walls? If the ensuing wall thicknesses would be too great at the lower floors at least the end walls and party walls could have been constructed in mass concrete, or, further to reduce the thickness, in reinforced concrete with the standard minimum percentage of reinforcement. There would have been no difficulty in spanning 28 ft. between the cross walls with composite floor slabs using precast prestressed elements. It is likely that the rod reinforcement thus saved in the 5½-in. hollow tile floors would have been almost sufficient for the continuity reinforcement required in the large span slabs and for the nominal reinforcement necessary in the concrete cross walls. If this is so, it is possible that the building could have been constructed omitting the whole of the structural steel frame and with no more reinforcement than that actually used. It is very likely that the cost of the building could have been reduced by almost the total amount spent on the structural steel frame.

Need one say more in this steel versus reinforced concrete controversy?

CHARLES WEISS.

London.

RIBA

Prizes and Studentships

At a general meeting of the RIBA on January 10, the Council's Deed of Award, giving the results of the Annual Prizes and Studentships, was read. The results are as follow:

The Tite Prize: a Certificate and £100. 127 candidates took part in the preliminary competition, and of these 11 were allowed to proceed with their final drawings. The Council have awarded the prize, a certificate and £100, to the author of the design submitted under the motto "Topaz." The Council also awarded a certificate of Honourable Mention to the author of the design submitted under the motto "Luigi."

The Soane Medallion and £120. 125 candidates took part in the preliminary competition and of these 13 were allowed to proceed with their final drawings. The Council have not awarded the Medallion and £120.

The Pugin Studentship: a Silver Medal and £80. Two applications were received and the Council have awarded the studentship, medal and £80 to J. M. Warnock (Student).

The Owen Jones Studentship: a Certificate and £250. Three applications were received

and the Council have awarded the studentship, a certificate and £250 to the author of the drawings submitted under the motto "Pelican."

The RIBA Silver Medal for an Essay and £50. Five essays were submitted. The Council have not awarded the medal and £150, but have awarded certificates of Honourable Mention to the authors of the essays submitted under the mottoes "Nicholas" and "Tamerlane."

The RIBA Alfred Bossom Research Fellowships for Post-Graduate Research. Four applications were received and the Council have awarded a Research Fellowship of £250 to E. S. Benson (F).

The RIBA Rose Shipman Studentship Trust. Seven applications were received and the Council have awarded a studentship of £400 to W. A. Gibbon (A).

The Godwin and Wimperis Bursary: a Silver Medal and £300. No applications were received.

The Grissell Gold Medal and £35. Three applications were received and the Council have awarded the medal and £35 to the author of the drawings submitted under the motto "Quantum."

The Henry Saxon Snell Prize and Theakston Bequest: a Certificate and £150. Four applications were received and the Council have awarded the Prize and Bequest of £150 to Raymond Moss (A).

The Hunt Bursary: a Certificate and £95. Two applications were received and the Council have awarded the Bursary and £95 to T. K. McCann (A).

The Arthur Cates Prize: a Certificate and £115. Two essays were received and the Council have awarded the prize of £115 to R. I. Savidge (A).

The RIBA Athens and Delissa Joseph Bursaries: a Certificate and £175. The President in consultation with the Officers of the Board of Architectural Education has awarded the bursaries and £175 to Evelyn Freeth (A).

The Henry L. Florence Bursary: a Certificate and £400. The President in consultation with the Officers of the Board of Architectural Education has awarded the bursary and £400 to R. E. McCaughan (A).

The Andrew N. Prentice Bequest: a Certificate and £230. The President in consultation with the Officers of the Board of Architectural Education has awarded the bequest of £230 to J. A. Wells-Thorpe (A).

AMERICA

Fellowships Available

Several graduate fellowships, graduate assistantships, research assistantships and scholarships are available for graduate study in Landscape Architecture at the University of Pennsylvania during 1956-57. These range in value from $3,000 per annum to $500, plus free tuition. To be eligible applicants must have a bachelor degree or the equivalent in architecture or landscape architecture. Closing dates for applications range between December 31, 1955, and March 1, 1956. Enquiries should be addressed to G. Holmes Perkins, Dean, The School of Fine Arts, University of Pennsylvania, Philadelphia, USA.

DIARY

High Flats. Illustrated lecture by M. J. Whitfield Lewis, Principal Housing Architect to the LCC. SE Society of Architects meeting at the Studio, 1, Edridge Road, Croydon. 8 p.m. (This takes place instead of the talk on Chandigarh incorrectly given in the JOURNAL for December 29.)

JANUARY 16

Symposium on Drawing Office Technique. RIBA Science Committee. At the RIBA, 66, Portland Place, W.1. 6 p.m.

JANUARY 17

Few architect planners are better qualified to review the progress of town and country planning as a national necessity than Professor Sir Patrick Abercrombie. Last month he read a paper to the TPI in which he appealed for that logical essential "a master plan for the whole country", an appeal which was commented on with approval in a leading article of the JOURNAL *of December 29.*

WHERE DOES PLANNING STAND TODAY?

By Sir Patrick Abercrombie

In turning our gaze towards the future of planning, we naturally take our stand on the massive peak of the 1947 Act, flanked on one side by the New Towns Act, on the other by the National Parks Act. This great trinitarian group still stands, though the financial core of its centrepiece has been metamorphosed by the 1954 Act, the New Towns supplemented by the Town Development Act, and the National Parks Act possibly to be modified (in a manner yet unexplored). Nevertheless the Silkinian Formation, like a geological period, dominates the scene. If we criticize it, we do but scratch its surface or again we may note some small human change—a road here over the pass, a tunnel there, an impounded reservoir, a mining village, a youth hostel, a camping site, a conifer plantation: this paper should therefore be regarded as the observations of a pottering rambler, and not the review of a Scientific Surveyor, or a physical Geographer.

The first and principal object of the 1947 Act has been defined by an eminent writer on Planning Law as "to replace the former system of planning control through the medium of rigid planning schemes by a new system of control through the medium of flexible development plans prepared by a greatly reduced number of planning authorities, and subjected to constant review." If I might venture to do so, I would suggest substituting the word "patchwork" for the first "system."

Planning was to become ubiquitous: most of the big towns and many urban and rural districts, in spite of inadequate powers, had already cautious schemes in hand which could be enlarged and strengthened. Over the rest of the land a veneer was now laid down: if somewhat thin, it was on the solid backing of universally prepared Surveys.

If the breadth of object, warm humanity and artistic interest displayed by the preamble and first section of the 1932 Act have been replaced by the declared cold, business-like purposes of the 1947 Act, this contrast was largely compensated for by the first words of Part II:—"As soon as may be after the appointed day, every local planning authority shall carry out a survey of their area . . ." This was a triumph for one—and the fundamental—aspect of Geddes's teaching. And the country owes a great debt to the Authorities and their Planning Staffs for the way in which they have compiled this new Domesday Book, which might more suitably be called a Dayspring Record.

The Development Plans, whose preparation soon followed, introduced a method of planning by periods, phases or stages (variously so called) which had been long advocated by Planners, partly, it must be confessed, to mitigate the shock of their more ambitious proposals.

If the first stage of these Development Plans appears bare in the recently veneered areas, it would be only fair to consider it as a new form of interim control, but based on a survey and on the rudiments of a plan. Unwin tried something of the sort with his Preliminary Statement. It was, I think, better to have somewhat bare plans instead of long-lived interim control, floating on nothing visible outside the planner's office. Rapidity of preparation, however, has its dangers: the limitation to "reasonably firm proposals likely to be carried out within about 20 years" has now, I think, been exploded. For purposes of obtaining some sort of estimate of growth and cost within a foreseeable period it was perhaps useful: but it was fatal for any long-term policy of central redevelopment or regional dispersal. Possibly some of the early reconstruction plans produced under Lord Reith's policy of boldness had frightened the Treasury.

The Flexibility of Development Plans

Flexibility was welcomed after the labour of preparing a Planning Scheme, under the 1932 Act, which had the marmoreal quality of an Act of Parliament. But the phrase "subject to constant review" is a little disconcerting, although we know, of course, that the changes are subject to the Minister's approval. An eminent authority has recently made the pronouncement that "flexibility does not mean jellybility" and it is a question of how soon and to what extent a plan of development based upon a careful survey should lose the firmness of its mould and turn into one of those shapes that wobble before they run.

One City, after its Development Plan had been submitted, changed its mind, and not only proposed building itself on Green Belt land within the City boundary (to avoid exporting population) but offered land in it to private enterprise. This looked more like infirmity of purpose than flexibility, adjusted to changing circumstances.

The "White" areas in the Development Plans were examples of Flexibility and the Twenty-year Fallacy; they were also aids to the rapid production of the plan. At first, being uncoloured, they attracted little attention and indeed in what are at present remote rural areas, they form a simple background for occasional interim development, which might be expected to endure as "interim perpetual." A completely unfore-

seen change such as a new town could be inserted into the tranquil scene.

These White areas still have their defenders, even where they march upon existing and restless communities. Says one authority, "the fact is that in these areas no change is expected. If it occurs it is wholly within the control of the Planning Authority." In my view such areas of virtually "undetermined" zoning are a direct incitement to marauding developers, whether public authorities (not necessarily neighbourly) or private enterprise. Against these determined piecemeal attacks it is most difficult to safeguard Farmland and to preserve Green Belts. Not long ago I wrote a somewhat pessimistic article on the disappearance of the Green Belt, in which I traced the history of a hypothetical case under the Town Development Act. There was indeed a real danger that except in the case of Greater London and one or two other places, the Green Belt, as an instrument of positive planning, would drop out of the planners' repertory.

Now all is changed! Exactly three years after my pessimistic article the Minister has issued his "Green Belt" Circular, *post hoc, non propter hoc*. Here is a clear example of the right sort of flexibility giving greater definition to the vacant parts of Development Plans.

It is, of course, inevitable that the limit to the inner edge of the Urban Fence and the outer boundary of the Green Belt will affect the Regional location of overspill and at the same time "prevent the further unrestricted sprawl of the Great Cities." This was the all-pervading Green background that Unwin postulated to "red" islands of building.

The Absence of Regional Planning

But the fault—a general absence of Regional Planning—lies really in the Act itself. Nothing gave greater satisfaction at the time of its passing than the reduction in the number of Planning Authorities. How simple, the two-fold group of Counties and County Boroughs and yet how utterly wrong, with the Interim Report of a brilliant Boundary Commission before the Minister! What a paradox that he should have fallen for the Lord Lieutenants and so perpetuated the rivalries of the Lord Mayors of the Cities and Chairmen of the County Councils. How many counties make a satisfactory unit of planning when deprived of their County Boroughs and what overlapping with neighbouring counties?

Previous to this Act a real attempt had been made to divide the country, especially in the more urbanized parts, into geographical regions with joint committees, at first advisory, later to be subdivided into executive boards. The Regional Reports on the shelves of our Library are a testimony to this attempt to realize the Geddes ideal of geographical planning. Although a few fragments of joint Committees remain, there has been a real retrogression: perhaps the clearest example was the South Lancashire and North Cheshire Advisory Planning Committee. The Manchester executive board comprised the County Borough and twelve neighbouring authorities: the Committee had fifteen further Regional Planning Boards. Upon the coming into force of the 1947 Act these Committees lost their planning powers and were automatically dissolved. The Lancashire County Plan now looks like a moth-eaten blanket holed by 17 County Boroughs which are independent units, distinct from the County and distinct from each other. I believe I am right in saying that no Advisory area Committees have been set up and no New Town agreed upon. There has indeed been consultation but not co-operation: I refer you to Dr. Johnson's definition of these two actions:

Co-operation: to labour jointly with another to the same end.

Consultation: the act of consulting, secret deliberation.

"Many things," he quotes from Clarendon, "were there consulted for the future, yet nothing was positively resolved."

In place of continuous co-operation, we have periodic dog-fights: these encounters are admirably staged, with forceful Town and County Clerks supported by pugnacious Counsel, plausible witnesses, and a gentle Inspector holding the ring. But you hardly get a calm and constructive result, with, for example, two such fundamentally opposed propositions as a North Cheshire Green Belt versus a couple of Towns of 40 to 60 thousand inhabitants. The Ministry, it is true, is there to decide on points, after the fight. Where there is a recently prepared and generally adopted report—as in the case of Northumberland, Clyde Valley, West Midlands or Greater London, there is something to go upon; though a Regional report needs continual review by a joint Committee, e.g. does the Midlands Region now require New Towns? It is clearly more than dovetailing that is required, with 154 Development Plans. Once again, however, the Minister has intervened in person and the Chairman of the Basildon Corporation has been appointed to assist him in solving, as a combined operation, the overriding problem of decongestion and overspill, which can only be achieved by a return to Regional Planning.

The Barlow Report

The Minority report of Barlow indeed proposed something of a more permanent and even independent character. But as this was signed by a Conservative, a Labour and a Liberal Commissioner, it was inevitably too reasonable to be accepted. It recommended a Commission of Research which should produce proposals for National Development and should present Annual Reports direct to Parliament. The Commission was to conduct research into various natural resources, land, agriculture, mineral amenities, etc., that might be affected by national development: to co-ordinate information on location of industry and the distribution of the industrial population in the possession of various Government Departments and to give advice to Government, Local Authorities, Industrialists and others as to problems of planning with special reference to industrial location: and to prepare a general scheme of Development, subject to constant revision.

I am, of course, fully aware of the immense amount of research which Ministries have carried out, but I nevertheless think that this Commission could have focused and publicized a stable Governmental policy and have harmonized Ministerial actions.

Barlow itself should not be forgotten. Though the Board of Trade was written into the 1947 Act, it has pursued an independent policy; instead of steering regional migration of industry to the New Towns of Greater London, it used its position to encourage far distant rehabilitation areas. Whereas Luton has been stimulated out of all agreed London regional size, in spite of the drawback of impossible drainage; but locally compensated by the lure of County Borough status. Every increase in population means more sewage effluent for London's water-drinkers. But much more serious is the increase of Factory space allotted to the London Region as a whole. What has neatly been called "Barlow orthodoxy" is being dropped: in 1954 London took 29 per cent of new space of the national total, the rate of increase of the ratio in the last ten years from 2.2 per cent being practically continuous.

There is also the loophole for the smaller schemes which not only escape the Board's approval, but whose vacated sites can be reused for industry. This is a considerable proportion of the total.

Land Use

Equally important nationally with the location of industry is the use of open land for development other than agriculture, commonly described as the Loss of Agricultural Land, for producing home-grown food. The reverse of the medal is the extent to which Building Development should be concentrated, in accordance with a just standard of urban densities.

No aspect of planning is more complicated or controversial; as a result of a resolution passed by the British Association at Exeter an attempt is at last being made to ascertain the present use of all land and to calculate the annual changes of user that are actually taking place. Next, and of course much more important, we must determine how much land we can afford for Food production and how much for Urban living conditions, mineral workings, Service Departments, etc. This has been loosely called the production of Land Budget.

In the meanwhile, a recent decision in the County of London by the Minister has rejected a density of over 300 persons per acre and upheld the density (proposed by Forshaw and myself) of 136 persons: this again has been abused as too high even for Urban London. It is, of course, comforting that all sides agree in abusing sprawl; but it still goes on and indeed has shown a recent resurgence, to be curbed, it is hoped, by the Minister's drive for Green Belts, supported by the stiffened-up control of the Planning Authorities. There is not only sprawl but the extravagance of layout, wasteful of land without benefiting living conditions. "Wasteful layouts mean smaller gardens and costly road works and public services—apart altogether from producing poor design." There is room for further research into economic

group design. The return of private enterprise introduces another danger of extravagance—the plot, larger than the densities of the planning map, may sell the house but squander the land. We may have to enforce the minimum densities. There is, however much some people dislike it, a distinction between Urban, New Town and Rural conditions.

Like every town and country planner I can be accused of being Mr. Facing-both-ways. But I believe that when we get the real facts in true perspective we can meet the needs of good urban living and rural production with intrepidity, provided we exercise planning; firm, economic and balanced. I see no reason to reduce urban space standards.

The Act of 1954

For all these purposes, great and small, whether this blessed Plot be that of all England or of a single Englishman's house, the instrument with which we are to face the future of planning is the Act of 1954. It was introduced by the late Minister with warm expressions of Good Neighbourliness, in the description of what positive good it could do, without incurring compensation (the exclusion of which, on just grounds, is the acid test of planning powers).

And yet, although detestation of the Development Charge under the former Act was universal, it is still permissible to regret the Development rights purchased for the Nation at fifty million pounds below their estimated market value. It is not necessary to remind you that whereas the Development Value purchase was Uthwatt, the Development Charge was not. In the public mind they seemed to have got lumped together.

There remains, from the scrapheap, the change by which compensation (where it is payable) is to be found from National in place of Local funds. (Incidentally, the phantom Portmanteau has disappeared from the left-luggage property office.) But there is a difference between the payment of, say, 100 million pounds to secure proper planning (*e.g.*, circum- and inter-Urban Green Belts) into aggrieved owners' pockets and the purchase for three times that sum of an asset, namely, the development value of the whole country. The overspill additions to innumerable small towns which are shortly expected to begin (under the Town Development Act) would have produced, as a result of public action, a rapid enhancement of value of the National estate (however it might have been realized). This is not a nostalgic or even a historic paper: but I cannot refrain from paying my tribute to Justice Uthwatt and Gerald Eve for so brilliantly reporting at Barlow's request.

Anyhow compensation is pegged and centrally paid. But local authorities have always been a little suspicious of Government relieving them of the financial burdens which fall on them as a result of what they themselves consider necessary actions; and perhaps they were not altogether surprised at the subtly worded second paragraph of the July Circular 40/55. This looks like the shadow of Treasury control over planning, cast on this sunny prospect.

"In considering some applications for permission to develop, authorities will wish to know what will be the cost to public funds of a refusal of permission. In some cases this information will have a bearing on the question whether development ought to be allowed or not, though it is not suggested that it will be the controlling factor."

This is followed by a description how to obtain "a rough indication of the compensation which would be payable under the Act if the permission sought were refused." If their consciences are clear, that they are not doing anything extravagant, I would have thought that the local authorities would not be particularly anxious to know the cost. It would be a pity of the bugbear of compensation were to dominate the scene, as under the 1932 Act; and we have definite assurance from the late Minister that proper planning will not be subjected to financial expediency.

I would say then that provided the actual claims for compensation are courageously faced, provided the exclusions of compensation are persisted in (including prematurity of Development on new land, change of User on built-up land and prevention of Building on bad land) together with the normal legal ancillaries, this twin Silkin-Macmillan Act should give us an instrument capable of responding to the music played by the orchestra of Planning authorities under the baton of the Minister.

The Town Development Act

Auxiliary to this major instrument, there has been passed the Town Development Act, which, in military terms, might be called a Commando policy of direct action. I suppose no Bill ever received more general assent on a Second Reading; it showed the unanimity in favour of rapid decentralization; and it retains its favour with Parliament and public today. And yet no planning machinery was ever devised of a less methodical character. The dispersal programme of the Greater London Plan (the begetter of the Bill) contemplated three times as many people to be accommodated in expanding existing towns as in the New Towns. Many of these were, of course, to be included within the regional pattern; but others were left for dispersal further afield. These required some machinery less top-heavy than that of the New Towns. The new Act was intended primarily to arrange a mutual exchange, financial, operational and technical.

But it has been expanded into a means of national distribution of overspill, organized first from London and then from other cities, suffering from fatty degeneration of the heart. An energetic member of the LCC visited, I believe, sixty welcoming intakers; the most distant, the small hunting country town of Nantwich, beckoned him across the one hundred and fifty miles of the English industrial coffin, while Manchester, less adventurous, thought Congleton too far off. The danger of an increasing criss-cross of negotiations, of competing inducements to intakers and a possible putting-up of their terms, is apparent; and London has consequently been limited to an area south-east of a line from the Wash to the Solent. It may be that this policy suits the English genius for extemporization and uncoordinated action, under the watchful eye of a Minister to ensure that things do not go too far wrong. But again, some concerted regional action might save a wastage of effort in trial and error. On the other hand, the friendly atmosphere of the negotiations between exporter and intaker is admirable and should lead to a permanent basis of co-operation, in place of the periodic dog-fight.

Towns Selected for Expansion

The Town Development Act inevitably leads one to think of those small existing towns, about to be invaded (at invitation, it is true) by outsiders, residential and industrial. This is not a simple affair of building houses and factories on well-selected sites. There is much more to a small town than that. I have in mind a Midland County, part intensively industrialized, part containing some of the most beautiful "wild" scenery in the country and part ancient, agricultural England, encompassing a cathedral city: there are forty or so towns in this county; each worthy of a study by Patrick Geddes or Thomas Sharp. It is no disparagement to say that the County Planning Officer, excellent technician and administrator though he be, cannot get down to these forty cases for quiet study. Probably the day of the printed and illustrated report —so valuable yesterday—is past; but the need for the abilities that produced those volumes is equally acute—I hope a courageous county will commission some of our consultant planners, who are ready and available for this work. Otherwise there is danger that the smaller towns may lose their identity in a series of Town Maps, the community spirit superseded by a legal diagram.

The Development Plans, also, of the larger populations appear to have played down the community concept. It is true that lists of Neighbourhoods are given in the Analysis, boundaries faintly indicated on the Plan, population, acreage and density shown, all reduced to a bare formula included in a so called "Box": no focal point, no organic planning. It is perhaps intended, at a later stage, to build this concept into the structure more integrally. Lansbury was the first example of what neighbourhood planning in a reconstruction area means: it is equally prominent in the New Towns, probably as a reaction to pre-war Becontree. Professor Simey's report on Dudley shows upon what delicate and often intangible factors the success of planning depends.

Not much has been said of the Development Plans themselves; they have, however, been clearly described from time to time in the Institute's and other Journals. This vast extent of work is now being examined by the Minister for approval and for the authoritative statement on the existing and proposed use of land, already mentioned. The Minister has also to harmonize and dovetail the two groups of schemes. It is evident that much alteration will be re-

quired as a result of the destination of overspill programme, which has yet to be worked out regionally in the most highly urbanized areas and for far-flung dispersal. There is also the more detailed and positive treatment of the White areas, or at any rate those in the neighbourhood of industrial communities and conurbations. And here I must ask that no offence be taken at the use of the word veneering applied to much of this open land—there is no reference intended to the two characters in *Our Mutual Friend:* Dickens was encompassed by Victorian mahogany furniture, more solid and comfortable than beautiful. He did not realize the beauty and possibilities of veneer.

Civic Design

It is not indeed sufficient for planning to take care of the comfort, health, convenience and economics of our environment. The essential element of design must inform the whole, from its inception to its realization in three dimensions: Architecture, Landscape Design, layout of Village and Residential area and Rural preservation must be forthcoming; this is something much more exacting than the preparation of a Development Plan, for we are here concerned with the creation of visual works of art.

And the planner, as such, whether of County or County Borough, has usually only indirect influence over the result. But I believe it to be his duty to attempt some forecast, if only to assure himself that his planning is capable of producing good building and landscape. He is certain of abuse, whatever he shows; it will either be branded as old-fashioned junk, as were the Royal Academy proposals for the City of London: or as ultra-modern fantasy, as were the Polish designs for the later scheme: or too ambitious as was the Barbican. It is not enough to put up some formula for heights or floor space; the formula may be unassailable, but its realization by an indifferent architect may be universally condemned.

But I doubt if it is the duty of the planner to press for his own design. That has the look of wanting to be an artistic dictator. It is not easy to decide how far he should go. Coventry, with more dictator than Plymouth, was better architecture. Is it a feeble attitude to take that the planner will get the quality of treatment which the architectural talent of the day warrants—a sort of average?

I do not propose to discuss the various degrees between complete freedom for all and an autocratic design; but there is much to be said for a "selected panel" whose common aims are expected to produce a harmonious result without interference. This method has been practised at Lansbury and to a less extent in the New Towns. In the City of London there is no selection and the average does not appear to have satisfied the nation: we await the touch of the master hand around St. Pauls.

I have, of course, been speaking chiefly of the concentrated problems of civic design at the Centre where we have not attained the instinctive harmony cum variety of the Mediæval or Georgian City or the piquancy of an occasional discordant shout interpolated into an urban conversation which Mr. Brett welcomed some time ago; but the shouts are apt to drown the talk.

When it comes to building in the country or village I am still in favour of the elected panel, provided there is real landscape as well as architectural advice. This is really the opposite of the selected panel—the latter is operative, the former critical and democratic.

The Ministry, recognizing the crudeness of a Manual of Instruction, invited three distinguished planners to contribute to a volume of "essays on the subject of design in relation to the building and rebuilding of towns, of suburbs and of villages." Thus while the approval of the Development Plan establishes the broad legal powers, the subtle sense of design can be at work. To quote from the final paragraph of this volume: "the designer's task is to seek out the local or regional or metropolitan character of a place, and show how it can be extended and intensified by means of new buildings and landscape, street furniture and pavings, town planning and civic decoration" (Holford).

Outside the operation of the Acts and the work of technical Planners, there are what might be described as the Wardens of Town and Country—Civic Societies and the C.P.R.E. They have built up a code of practice and behaviour during the past 30 years which is an essential guardian of our environment, supplementing and re-inforcing legal powers, in the interests of what is comprehensively called "Amenity." What can happen under planning when this Wardenship is relaxed can be seen in the recent publication "Outrage" which continues the exposure made by Mr. Clough Williams-Ellis in "England and the Octopus."

This movement for "Preservation" in its broadest sense is in full activity; much more highly organized in the country than in the town.

In this rambling survey I have intentionally confined myself to the main mountain mass; the two outlier peaks, National Parks and New Towns, require a separate visitation, as they work under powers distinct from, but closely connected to, the principal twin Acts. In many ways they represent the most interesting contribution to current planning practice (for even National Parks are quite demonstrably our own) which this country has made. It can confidently be said that in spite of difficulties, misunderstanding and some legal and administrative shortcomings, they are flourishing, as may be seen from their last published reports. In their technique they are not only sufficient for themselves but are influencing general planning elsewhere, and not only in this country!

The Prospect for the Future

The object of asking where planning stands to-day is surely to attempt some forecast of the future. A prophecy is always more difficult than a historic backlook. The one can hardly escape being, in some sort, propagandist; a history may have at most a subjective bias. So Professor Myles Wright, in his admirably documented article "The First Ten Years," can be much more definite and even objective in a description of what has been accomplished than I can of the future.

I believe, however, we should agree in the more hazardous task of estimating from the present position of planning what is the prospect for the future. It might be described as one of cautious and conditional optimism.

There is much to be done in addition to the preparation and approval of the Development Plans and the achievement of the first stage, indicating in a very general way the manner in which the Planning Authorities propose that the land of this country should be used. Statutory Planning, as I have said, is a continuing process; it is no longer the control necessary to obtain conformity to a fixed Plan. And it is now conceded that this process will be a long one, coinciding in the case of London with the 50 years proposed by the 1943 County Plan.

I also believe that a Master Plan, for the whole country, its Regions, Cities, Towns, Villages and Rural areas, is necessary for the satisfactory continuance of statutory Development Planning.

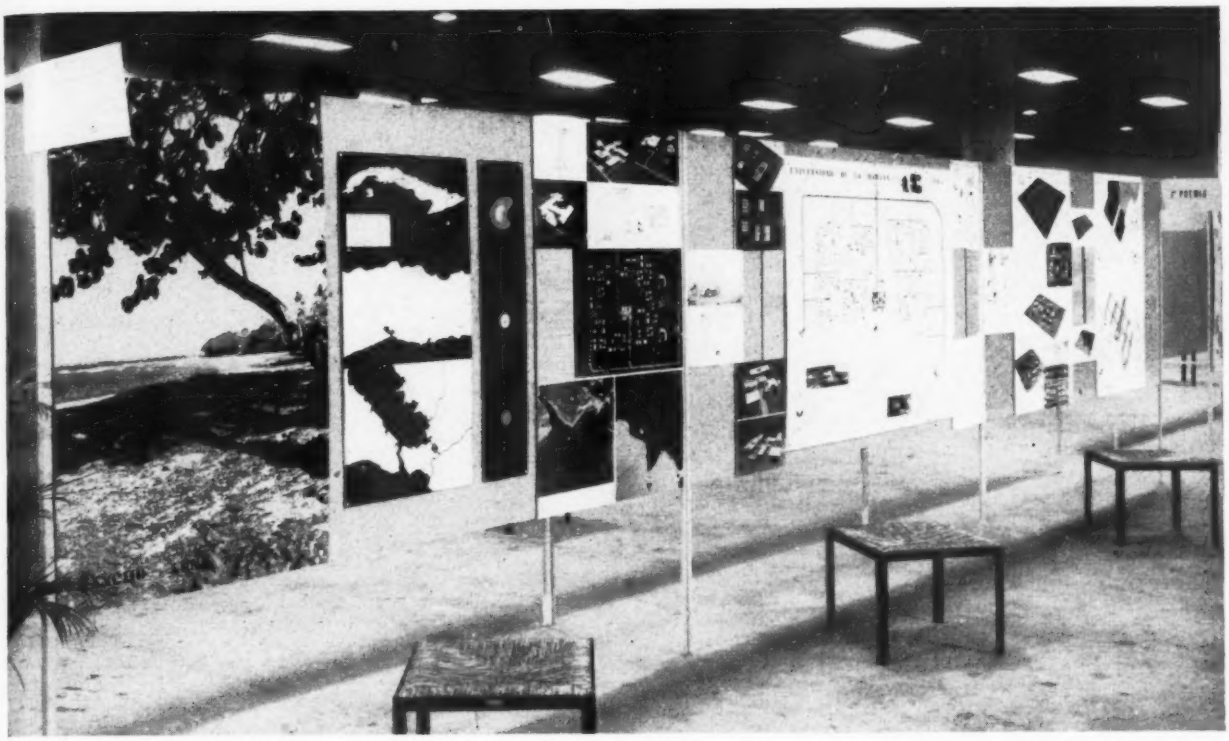
May I conclude with an extract from the Report of the Chairman of the LCC Town Planning Committee on the Minister's approval of the Development Plan, received on March 7th, 1955? After a reference to the County of London Plan of 1943 and the adoption by the Council two years later of "certain fundamental principles and proposals arising out of the consideration of that Plan as a basis of planning policy," the Report continues, these principles "were borne in mind in preparing the Council's Development Plan, which was regarded as being a stage towards the realisation of the Council's long-term planning objectives. With the Minister's decision there is therefore for the first time a Plan having statutory authority and applicable to the whole of the county." In the Minister's words, "It will, I am sure, provide a sound and wisely conceived framework, within which the life of London can continue to advance and develop in the years ahead."

The LCC plan, with which that of the City is combined, is embedded in Greater London, with its co-ordinated pattern of New Towns, Green Belt, Transport, etc., forming a group of Development Plans now before the Minister. There is no longer a joint Committee of Greater London Planning Authorities or a defined Regional boundary. There is, however, direct administration by the Ministry.

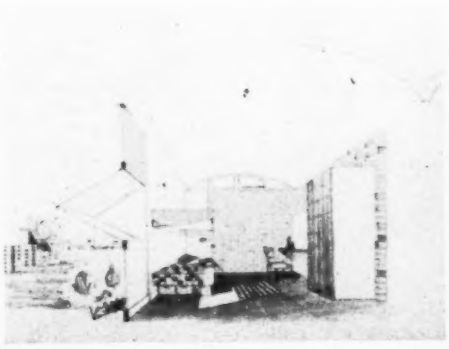
Two major aspects, moreover, remain to be dealt with, before the future of London can be regarded with some degree of equanimity—the still incoming invasion of industry—and the long-distance destination of overspill.

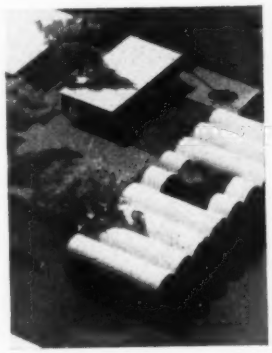
I make no apology for ending on this London note. It has taken twelve years to translate a visionary Master Plan into a working Development Plan, and I consider that this is the coherent example of planning preparation which this country has to show. It may be said, in fine, that the position to-day, in the world of Planning, though reasonably favourable, is by no means absolutely secure.

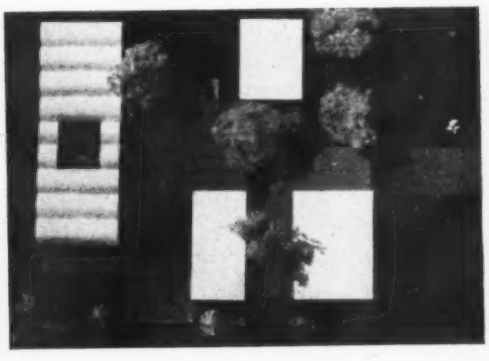
SECOND INTERNATIONAL STUDENT COMPETITION AT SÃO PAULO, BRAZIL



After the success of the student competition organized two years ago by the Museum of Modern Art, São Paulo, Brazil, the Museum authorities decided to include a second student competition as part of its 1955 Biennial celebrations. This was open to Schools of Architecture throughout the world and the distinguished jury—Oscar Niemeyer, Sergio Bernades, Oswaldo Arthur Bratke, Eduardo Kneese de Mello, Francisco Beck, Salvador Candia and Professor Lourival Gomes Machado—met under the chairmanship of Jorge Machado Moreira. In considering the entries the jury found two designs to be outstanding and awarded two equal prizes to the University of Waseda (Japan) and the University of Havana (Cuba) which "though different by their characteristics, with conditions particular to the country they belong to are conspicuous by their high technical and functional qualities and a very harmonious plastic sense." The prizes of Cr.$100,000.00 each are worth about £2,000 at the official exchange rate. A general view of one of the prize-winning entries—that of the Havana School, Cuba—is shown above. Below are some details from the scheme, a workers' holiday village. Right is an aerial view of a club and restaurant, the vaulted roof on the left covering the kitchen and restaurant, flat roofs covering the laundry, lounge and games rooms. Centre is another view of the club with its drying yard and patios, and on the left is the interior of a holiday cabin. Altogether 38 entries were submitted, but none came from the British Isles. The jury's criticism of the designs submitted is best summed up in Jorge Machado Moreira's remarks at the prize giving. "We wish to refer to the crying need to consider architectural problems from a serious and lofty point of view, and for architects not to be constantly worried about inventive originality







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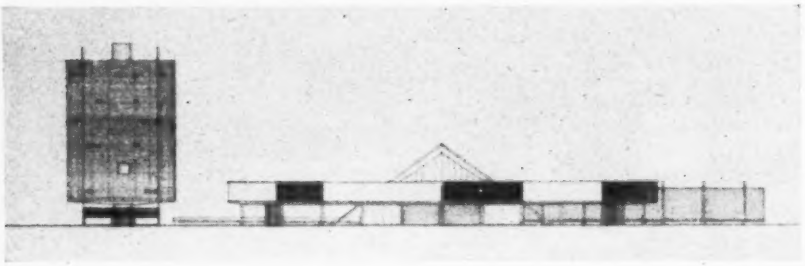
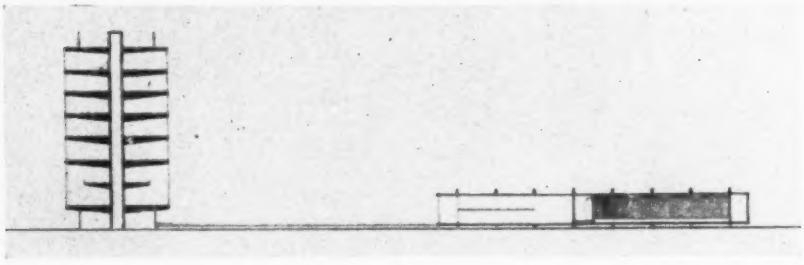
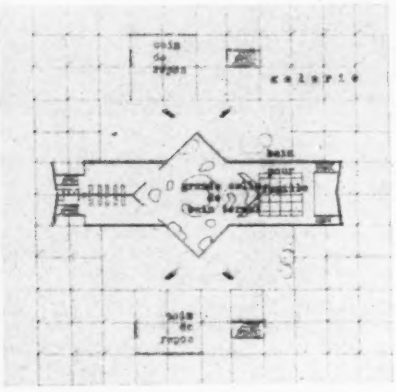
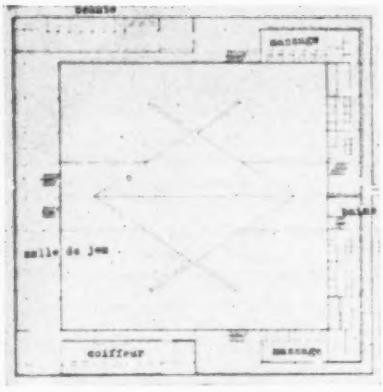


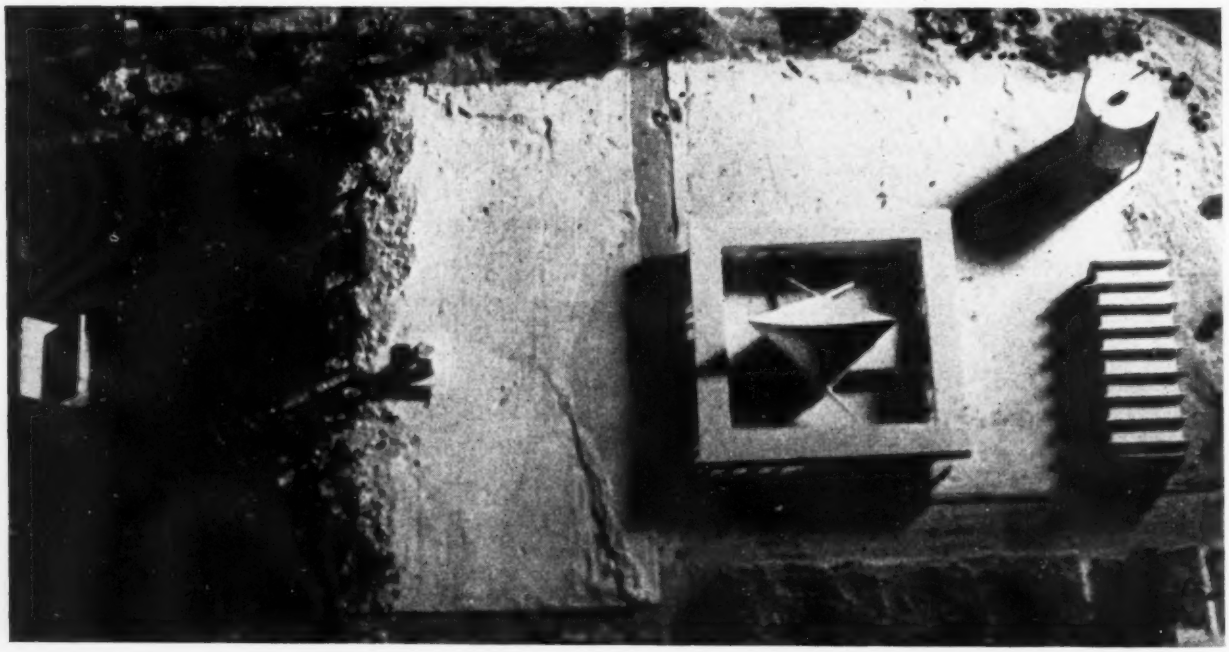






as are the great majority. This preoccupation has already become a real obsession or is even felt as a duty. This brings as a result the frequent use of forms lacking in spontaneity, objectivity and 'raison d'etre' and conforming neither to functional nor aesthetic standards. . . . It must, however, in all fairness, be pointed out that the blame for these deficiencies does not lie so much with students as with their schools and professors. The latter have not been successful in instilling in the students the real mentality of an architect."

The other prize-winning design by Waseda University, Japan, is shown below and left. Waseda were prize winners in the 1953 competition referred to earlier and are to be complimented on their continued success. The centre to the Japanese holiday village is an Onsen (steam) Baths which can be seen in the bottom photograph, dominated to the north-east by a round tower. This seven-storey tower houses tea rooms, games rooms and card rooms, etc., and has a dancing and meeting hall to the south. The west elevation of this ensemble is shown top left, below it is a north-south



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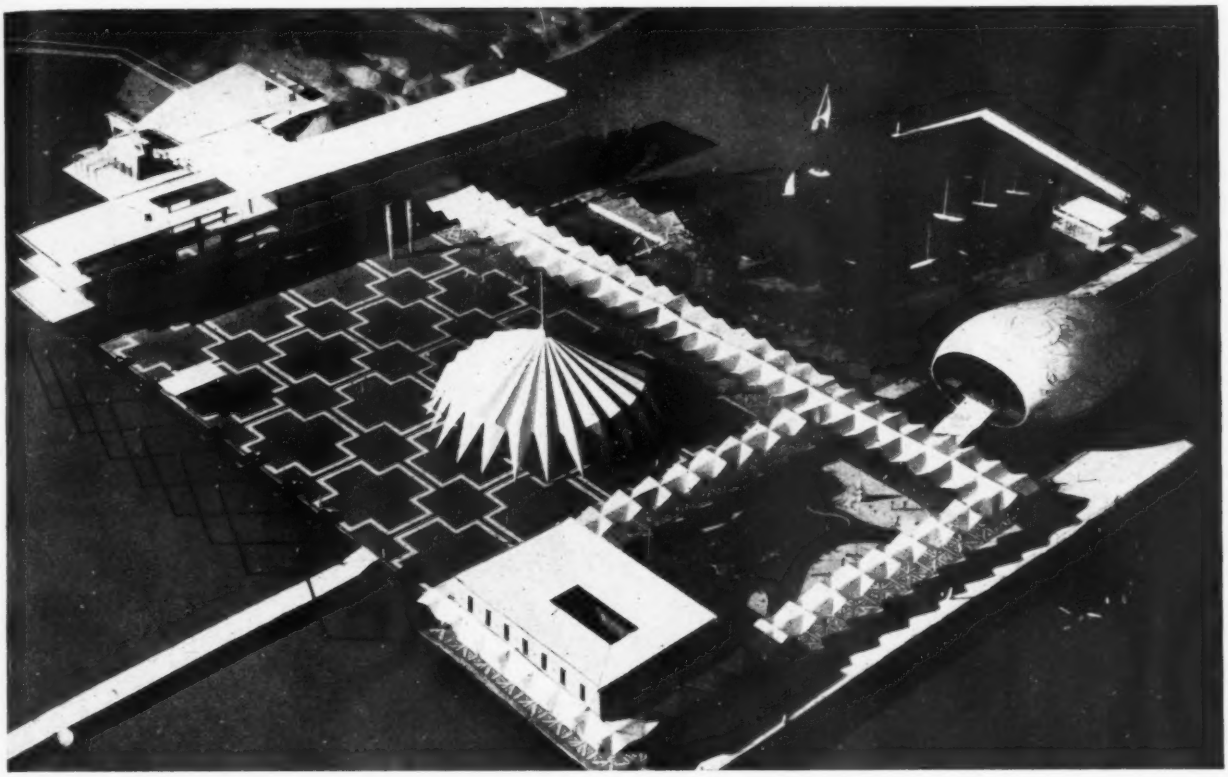
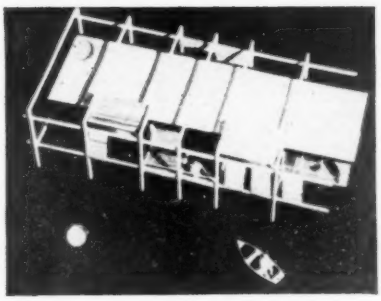
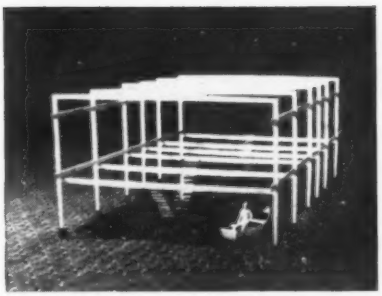
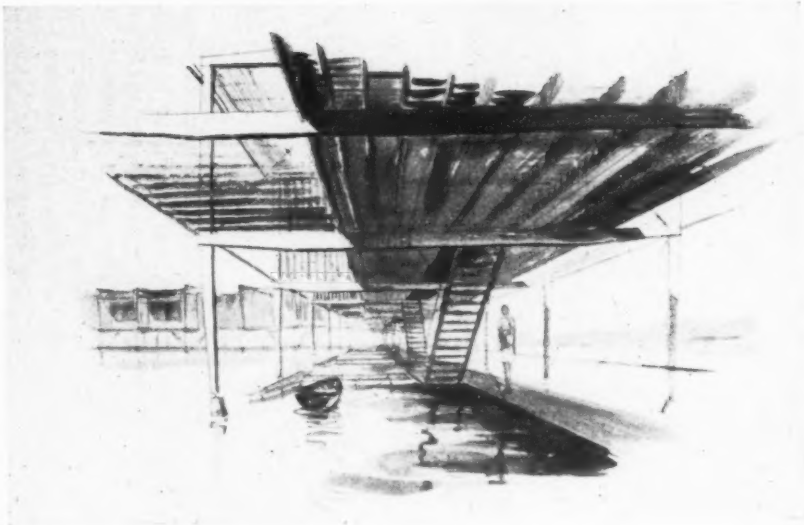
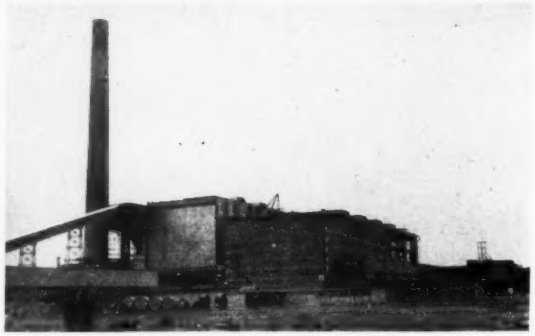


section through the seven storey tower and meeting hall and in the centre of the opposite page are the ground and first floor plans of the Baths. The first floor takes the form of a gallery round the main hall and houses massage, hairdressing and beauty parlours. The entry from Cape Town School of Architecture shown above and right was unfortunately held up by customs difficulties, but in recognition of the work submitted the jury did a criticism of it. The holiday village is envisaged on a shallow lagoon with houses set in a concrete framework (centre), being connected by a causeway near water level (bottom). The cultural centre (top) is described as a second Piazza San Marco with a Dancing Marquee and a remarkable "jet engine" theatre. To the right of the Piazza is a Palazzo Ducale with pleasure gardens, covered walks, etc. All this the jury found pretentious for a workers' holiday village, but the design does show considerable élan.









The brick-cathedral tradition of major British power stations has at last been broken by the Marchwood generating station for the BEA, Southampton Division. The architects, Farmer & Dark, are responsible for the competent exploitation of new techniques for cladding the generating machinery, with Sir William Halcrow & Partners, consulting engineers. This power station, now nearing completion, has already aroused considerable interest, and was visited recently by the Modular Society, a member of which, Guy Oddie, writes and illustrates the following report.

MARCHWOOD POWER STATION, SOUTHAMPTON

The decision to build a power station brings the architect into a field where national planning overlaps with electrical, mechanical and civil engineering in their most awe-inspiring forms and on a scale which can only be described as geographical. When, in addition, one realizes that plant, machinery and foundations may easily cost fifteen times as much as the superstructure itself, it is understandable that architects should often be regarded as the boys who put the sugar on the pill and make the Royal Fine Art Commission swallow it. It is, therefore, encouraging to be able to report that the architect is now gaining increasing respect as an expert who can make a contribution in the utilitarian field as well as in "artistic" matters; and there are instances where he has joined the design team early enough to be able to offer suggestions of sufficient logistic importance to bear radically on the major technical concept. Nevertheless, the principal problem for the architect, remains one of designing a suitable envelope for plant and machinery, and in arranging the most satisfactory relationship between the various elements of the station. A remarkably wide aesthetic choice inevitably remains, even in meeting the most exacting technical requirements.

The bird's-eye perspective shows the lay-out of the new Marchwood generating station on the right bank of Southampton Water, where Farmer & Dark are the architects and Sir William Halcrow & Partners the civil engineers in a team co-ordinated by the Central Electricity Authority.

Coal is brought to the site by water and conveyed up the conveyor ramp up to the hoppers. From there it drops into the pulverizing plant and is then blown in the form of a fine dust into the boilers. There are eight of these supplying steam to eight turbine alternators—indicated by the eight monitor rooflights ranged along the roof of the turbine hall. The electricity comes out by way of the switch gear house (the low appendage on the river side of the turbine hall) and thence out to the grid. The grid feed is carefully controlled (by reference to instruments inside the control room) to ensure that the output is phased in with companion stations on the grid. If stations get out of phase with each other, a substation fuses and the situation ensues which is described as "a breakdown in power supply."

Coal delivery, hoppers, boilers and turbo-alternators are the core of a complex which the design team must manipulate and it will be seen that around this core must be grouped a number of ancillaries such as maintenance workshops, cooling-water pump house, welfare buildings and so on.

The boilers themselves are a complex of tubes surrounding a combustion chamber. Each is about 30 ft. square, 100 ft. high and weighs about 1,600 tons. Owing to expansion under heat, this weight cannot be self-supporting and consequently the boilers are suspended from girders 110 ft. above ground level. The load is then transmitted down four stanchions, one at each corner of a boiler bay, with a resultant axial load of 400 tons on each stanchion. In the turbine hall itself further gigantic columns are needed to support a 160-ton gantry of 109 ft. span. It is this massive skeleton which forms the starting point for the cladding problem.

The architects found that the dimensions of boilers, etc., led to a planning grid of 13 ft., with stanchion spacings at 26 ft. and 39 ft.; and in certain instances cladding had to be capable of covering such spans up to a height of 120 ft. or so.

The principal functions of the cladding, apart from the need to be weather-tight, were: speed of erection; durability, with a minimum of maintenance; and the

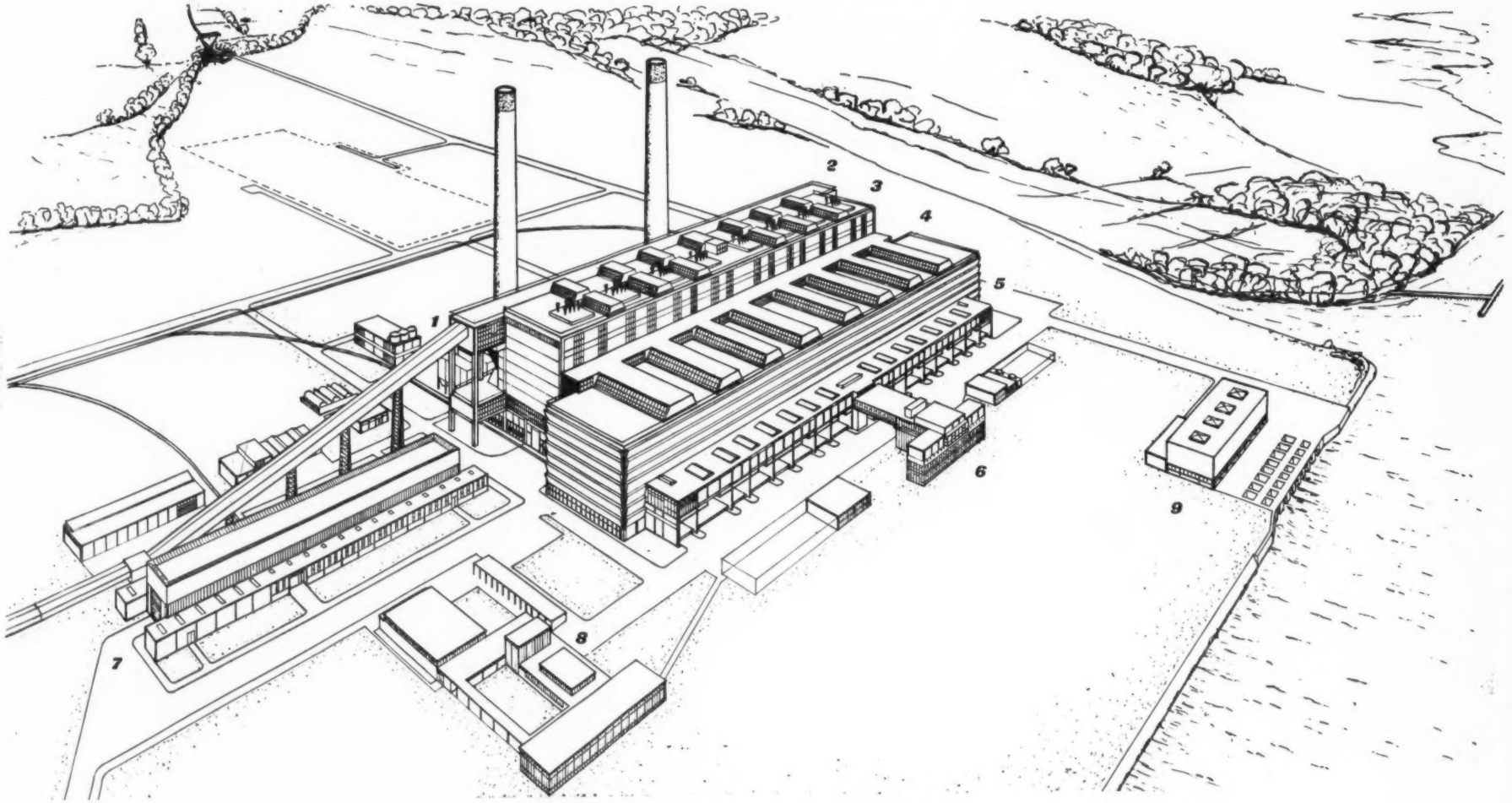
Bird's-eye perspective of the completed power-station, from the same direction as the photograph on the opposite page.

exacting technical requirements.

manipulate and it will be seen that around this core

durability, with a minimum of maintenance; and the

Bird's-eye perspective of the completed power-station, from the same direction as the photograph on the opposite page.



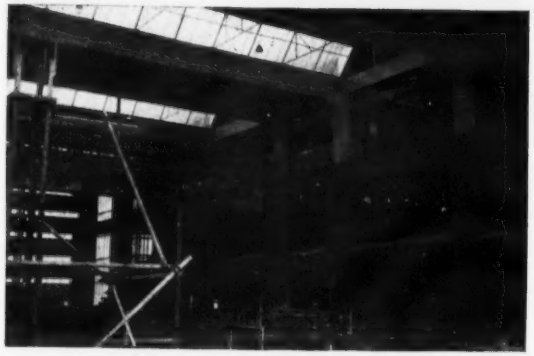
KEY TO PERSPECTIVE : 1 • coal conveyor ramp 2 • hoppers 3 • boiler hall 4 • turbine hall 5 • switch annexe
6 • control room 7 • maintenance workshops 8 • welfare and canteen 9 • cooling water pump-house

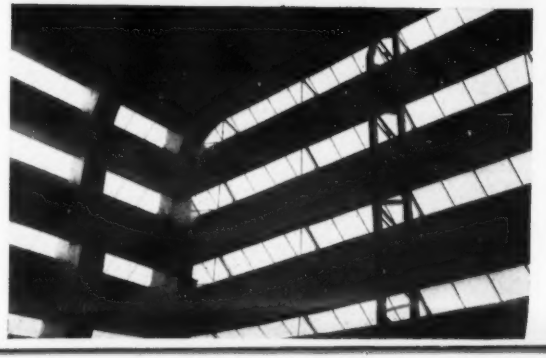
The concrete block wall round the base of the turbine hall, showing the effect of the 9¾-in. module and 13-ft. steelwork grid. The concrete blocks are 9¾ in. high by 1 ft. 7½ in. long by 10 in. thick and were pre-cast on site.

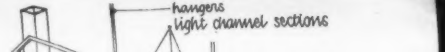
incorporation of fenestration and opening lights. In order to permit full control over the combustion air for the boilers, ventilation must be capable of careful regulation. In addition, civil defence precautions demanded that only 18 per cent of the wall area be glazed. Cladding takes three forms. A type of patent glazing has been developed by the architects for areas of walling where support could be achieved at fairly close centres. The infilling panels are in the form of a built-up sandwich of vitreous enamelled steel sheet, glass fibre and asbestos/silica board. Around the turbine hall the cladding had to span up to 39 ft. In this case, therefore, it was fixed to light channel sections and hangers strong enough to take both the weight of the cladding and to withstand the deflection due to wind loads—see sketch below. The solid face was clad in a specially developed aluminium sheeting of trough section, while glazing occupies the upper face. This results in a vast venetian blind surrounding the turbine hall which, in conjunction with monitors, gives an excellent distribution of light over all working areas without the least suspicion of glare. At night artificial light is reflected "in reverse" from the inside of the building, with an exciting effect of flood-lit luminosity. The third form of cladding also derives from a civil defence requirement: a blast wall of 10 in. solid concrete around the whole of the ground floor. This wall has been built of specially pre-cast dense concrete blocks 9¾ in. by 1 ft. 7½ in. on face and 10 in. thick. The dimension of 9¾ in. was chosen as being a useful fraction of the 13-ft. plan grid, and in fact forms a module in the dimensional co-ordination of the whole building (see photograph, left), and glazing bars are spaced at four module centres, *i.e.*, 3 ft. 3 in.

Apart from the merits of such co-ordination in the standardization of component dimensions, it makes an evident contribution to the commendable control of scale the architects have achieved. Despite the vastness of the project and the disparity in size between large elements like the turbine hall and small ones like the control room, each element is in scale with the whole and with the human being. Indeed, great attention has been paid to ensuring that workpeople are considered as much as plant, and wherever platforms or

Below: the switch annexe, with the turbine hall beyond. Below centre: a general view of the turbine hall showing the monitor roofing. Bottom: a corner of the same hall, with one rail of the 160-ton gantry.

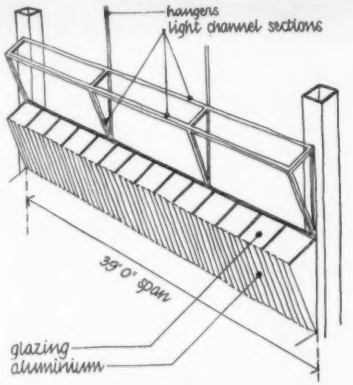






by 10 in. thick and were pre-cast on site.

sidered as much as plant, and wherever platforms or



Left: a detail of the venetian blind type of cladding, above concrete block walls, used on the turbine hall. Above: sketch detail of cladding (diagrammatic only).

staging bring them near an external wall, windows are provided at eye-level with a view of the outside world. The scale is also humanized by the use of three different colours in the patent glazing panels, each colour being used to denote a function—one colour for welfare, another for circulation, and a third for administration.

The result can be foreseen. Even when it is less than half-finished, it is clear that the architects have succeeded in striking a note of controlled grandeur which makes the building a worthy match to the ocean liners that keep it company.

N.B.—Members of the Modular Society visited Marchwood recently and an account of their visit will, we understand, be recorded in the Society's *Transactions*.

The Swedish architect, Lennart Bergvall, recently gave an illustrated talk to the Modular Society on a system for prefabricating timber houses which he has designed. Above is a typical neat product of the system.

MODULAR SOCIETY

Modular Co-ordination—An Industrial Tool

A correspondent writes:

In the impeccable English we have come to expect from our Scandinavian colleagues, Lennart Bergvall, of Stockholm, recently gave at a meeting of the Modular Society at the RIBA a paper entitled "Modular Co-ordination—an Industrial Tool." What he said was of particular interest as it represents the view of the use of modular co-ordination in building now held generally both in Europe and—with allowances for our Englishness—in this country.

The title indicates the emphasis Mr. Bergvall was to put upon the main purpose of modular co-ordination, which he saw to be *the promotion of industrial mass production.* This would concentrate demand upon a limited number of types and sizes. These standard building products must be made so that they may be put together on the site "in a number of different combinations *which cannot be determined in advance,* if any freedom is to be left for creative architecture." This, he went on, is where modular co-ordination comes in.

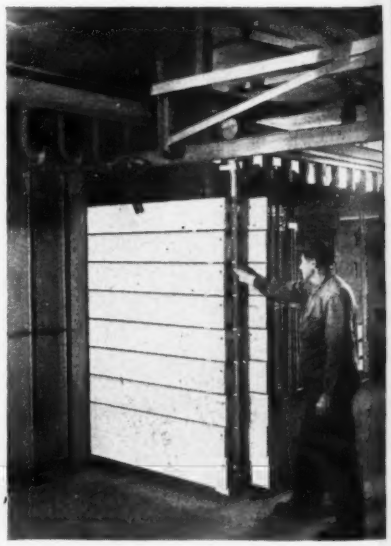
In Sweden, this is done by making the "linkage" dimensions of building products in multiples of one basic unit, the module, which should be the largest acceptable increment for the planning of any building. However, Mr. Bergvall qualified this concept of the sovereignty of the basic module by saying that in certain circumstances the module might be sub-divided, and that some multiples of it would probably be preferred for the dimensions of larger products, as well as for the grids which may be used in planning larger buildings. At the same time he warned that "the size of the planning grid should be determined by the functional requirements and not by the unit size of any prefab system." Similarly, the series which can be used for the selection of preferred dimensions should be based primarily on functional studies. In particular, such series should take into account the additive, arithmetic character of building.

The size of the module in Sweden was decided "years ago" as 10 cm., and recent international meetings have recommended, with certain qualifications, a 10 cm. or 4 in. module. Mr. Bergvall said that he appreciated the difficulties that would arise in Britain in endeavouring to apply this decision, as 10 cm. was slightly smaller than 4 in. He went on to suggest a solution which for, say, kitchen cupboards would involve making them to metric sizes for export, with a cover strip to make them up to foot/inch dimensions at home. Thus we could wake up one morning to find Britain, via the export drive, a metric country!

As for the results of modular co-ordination in Sweden, Mr. Bergvall said that the effort, wholly financed by the National Association of Manufacturers, had been concentrated upon making standard building products in modular sizes. This had not yet led to modular buildings, but it was proposed to erect two experimental buildings as a firm foundation for detailed instructions to architects and builders.

Mr. Bergvall concluded his lecture with a description of the only 100% modular building in Sweden, a prefabricated house which he and a fellow architect, Mr. Dahlberg, had developed, for A.B. Bostadsforskning of Stockholm. The basic wall unit of the "Element-hus" is a vertical storey-height box faced with laminated wood, and insulated with shavings and sawdust "screwed" into the cavity. The standard unit is 20 cm. (two modules) wide, with a 10 cm. filler piece to give the flexibility needed for housing. All components are modular, and are made in a highly mechanised factory. So far about 1,500 houses have been produced to more than 300 different plans.

The discussion which followed revolved chiefly round the house, although Mr. Balmain complimented the speaker on his English and William Allen spoke warmly of his work in the EPA project on Modular Co-ordination. And there was the speaker from the back who asked if there would be any future for an amorphous material which would by itself meet every functional need and fit any space—but that was the only part of the evening in tune with the diffuse twilight of the Conference Hall, at the RIBA.



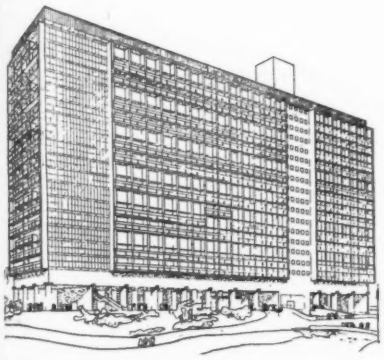
The 20-cm. wide timber units of the "Element-hus" during manufacture.

FLATS

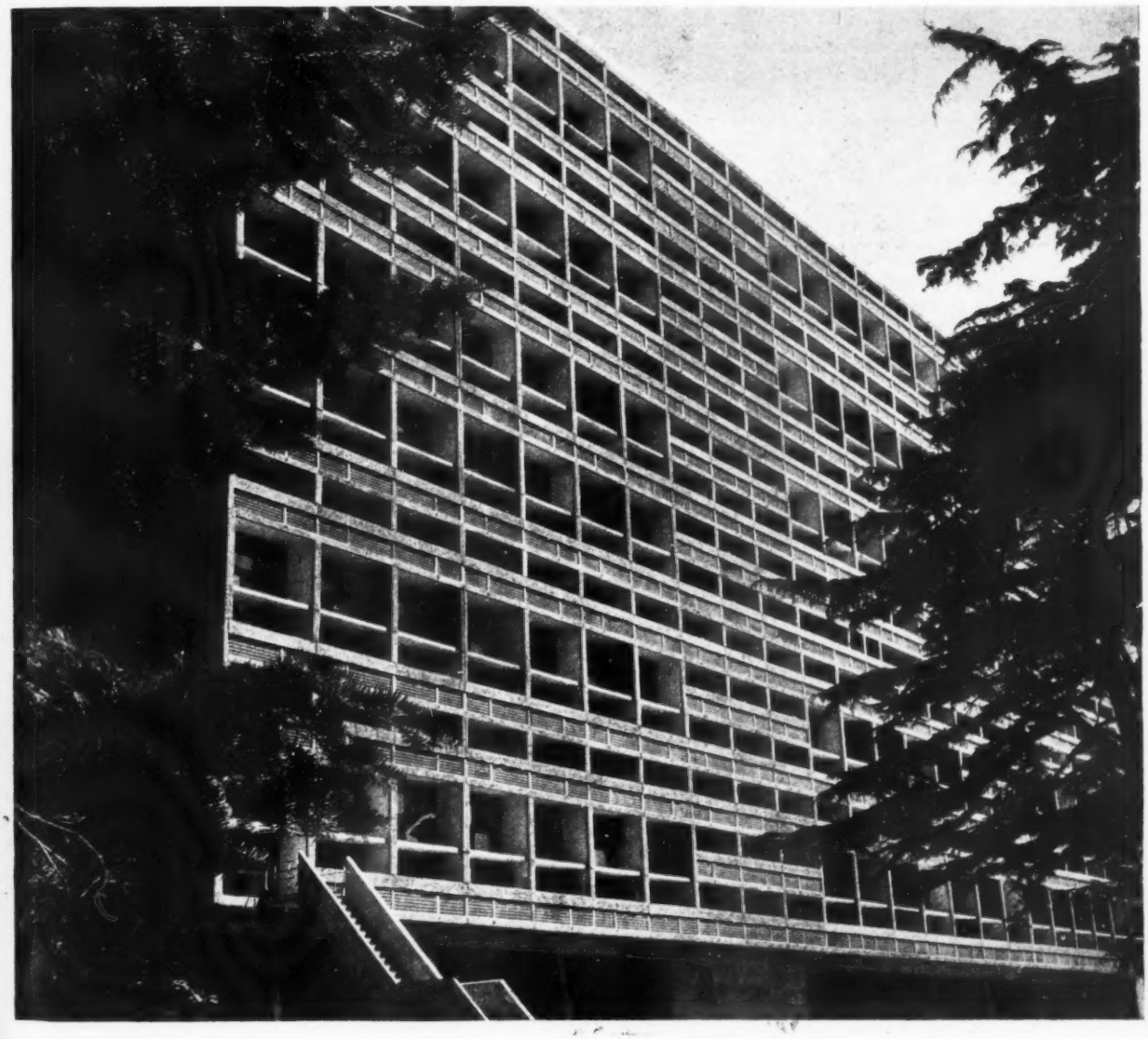
at NANTES-REZÉ, FRANCE

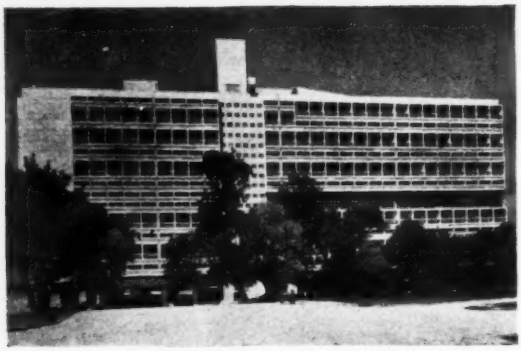
designed by LE CORBUSIER

Le Corbusier took 20 years looking for a client with vision enough to commission one of the living units of La Ville Radieuse; but only after a world upheaval, and even then in the teeth of opposition and intrigue, was the first Unité realized at Marseilles. Since then, although private enterprise evidently wished to emulate the joint achievement of Corbusier and State, financial stringency has resulted in a cut-price programme. Whereas Marseilles was a social unit in itself, with shops and other communal services contained within it, this second "unité" at Nantes is little more than a large block of flats with a nursery school on top. However consummate the architectural handling, it is to be feared that as a social idealist Corbusier has suffered a reverse. On December 2 and 23, 1954, we published a progress report describing the technical background of the building which we here show in its finished state.



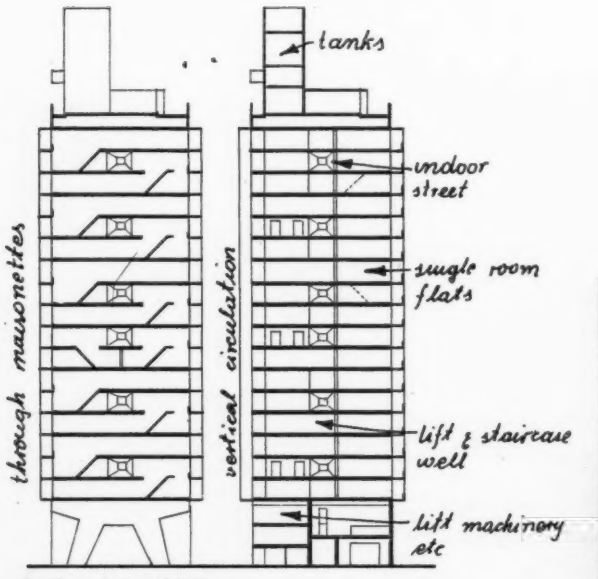
The west facade.



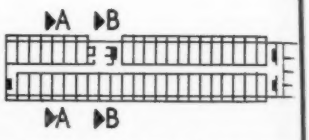


A comparison with the Marseilles Unité, above, shows how the emaciated programme of Nantes is reflected both in the elevations and in the rather meagre cross-walls, brought down to ground level and replacing the monumental *pilotis* of Marseilles.

FLATS AT NANTES-REZÉ, FRANCE

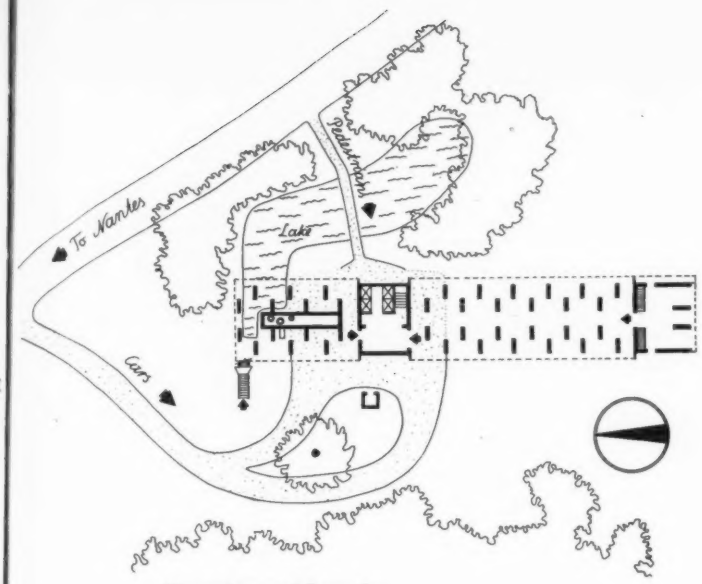


Sections A-A and B-B

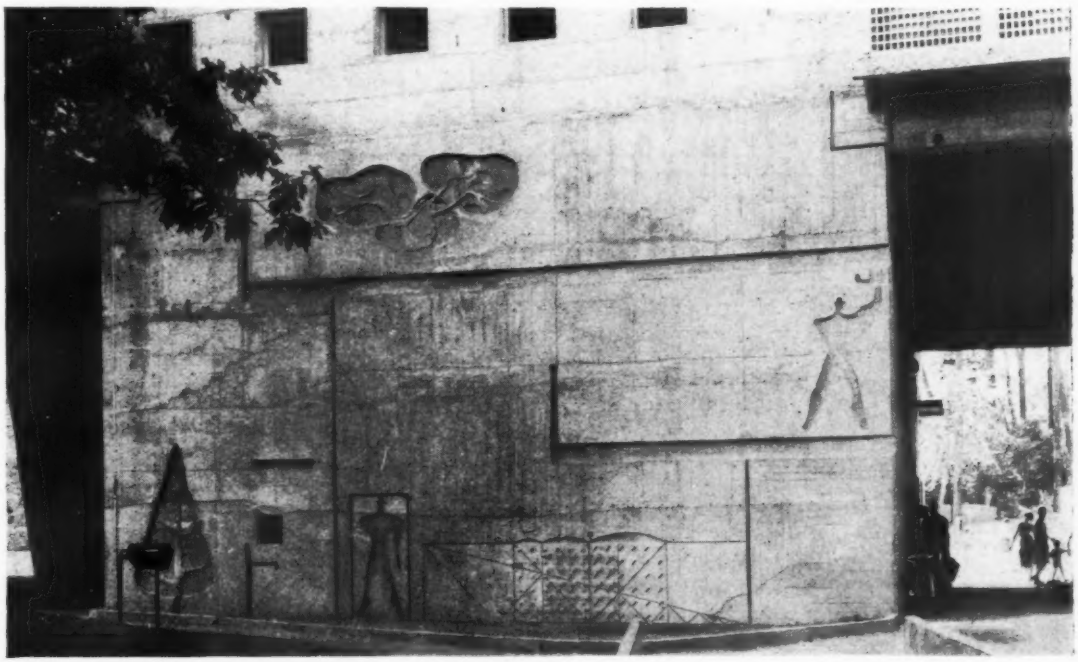


Plan of upper floor at indoor street level

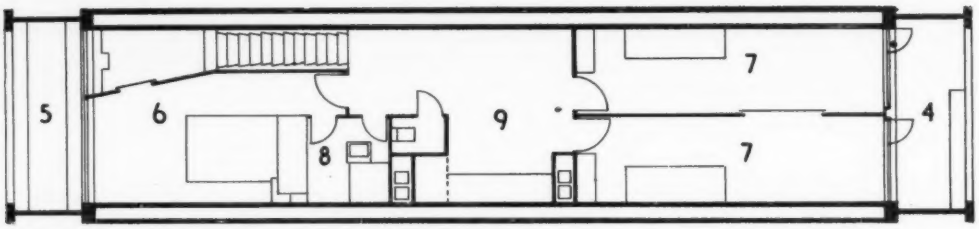
Above, the indoor street: this, the core of the whole planning, achieves three things: (*a*) it allows all but the smallest flats or maisonettes to run right across the building; (*b*) it economises in circulation space and in 17 floors of maisonettes reduces the lift stops to as few as six; (*c*) it allows the cross walls to play their full structural part in a way similar to the web of a castellated beam. A study of the typical sections and plan above shows how the basic concept of the indoor street combines with the vertical circulation to encourage the rich play of counterpoint in the elevation, left. Notice the frank acceptance of the expansion joint.



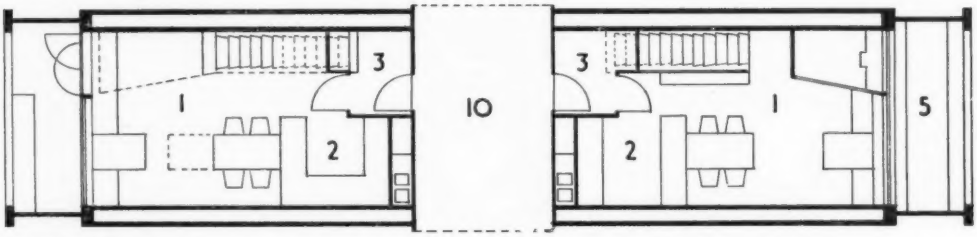
Site and ground floor plan



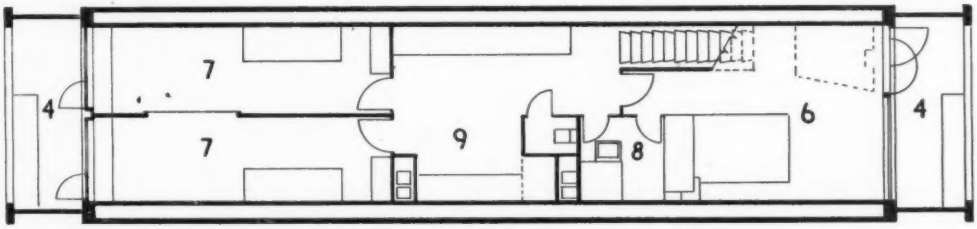
Readers who are familiar with the *Oeuvre Complète*, 1946-52, should realise that the project as executed differs from the preliminary designs shown there. The entrance hall has been pared down—presumably in the interests of cost reduction—to the point of understatement. But the sketch ground floor plan above indicates the excellent separation of motor access from pedestrians and cycles, which this new arrangement has permitted. Above, three views of pedestrian and cycle approach from the east, to the main entrance hall. Below, left and centre, road access from the north leading to the west side of the building. Below right, the south stairwell contains no lifts and is mainly for emergency escape.



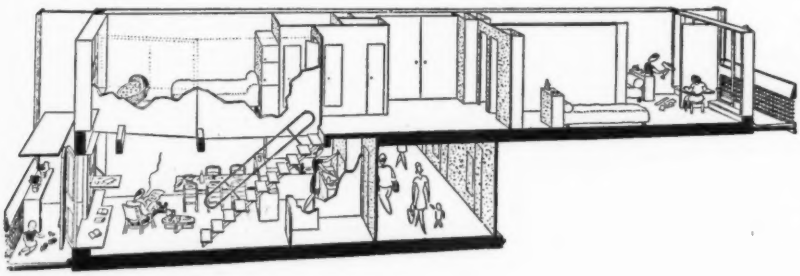
At level above indoor street



At indoor street level



Plan of pair of apartments at level below indoor street [Scale: $\frac{1}{16}$" = 1' 0"]



KEY

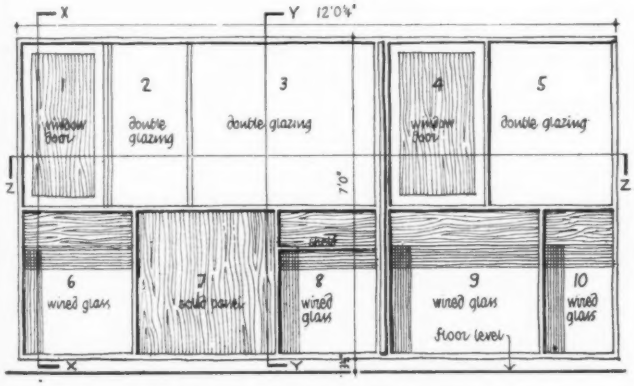
1. Living Room
2. Kitchen
3. Hall
4. Balcony
5. Brise Soleil
6. Main bedroom
7. Children's bedroom
8. Bathroom
9. Landing
10. Indoor street

Exploded section of one apartment

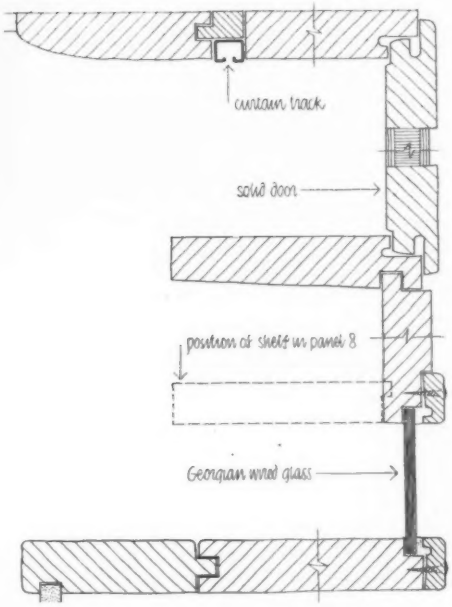
Below left: typical living room with stair up to sleeping quarters on right. Floors, thermoplastic tiles; walls and ceilings plastered. All woodwork left natural finish but lightly oiled. Below right: the "kitchenette" is divided from the living room by a sideboard rather like an upright piano. The entrance door lies over to the left.

Left: view through open doors into the children's bedrooms. The long narrow plan of these rooms precludes adequate photographic representation, but in actuality the narrowness is in no way oppressive and half the length of the dividing partition slides back to throw the two rooms into one.

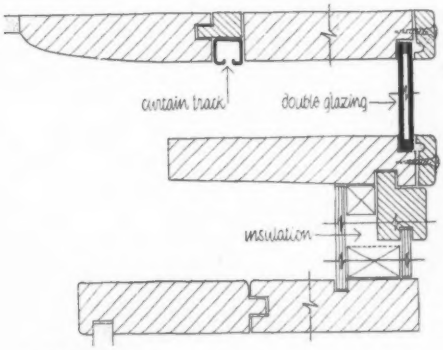
FLATS AT NANTES-REZÉ, FRANCE



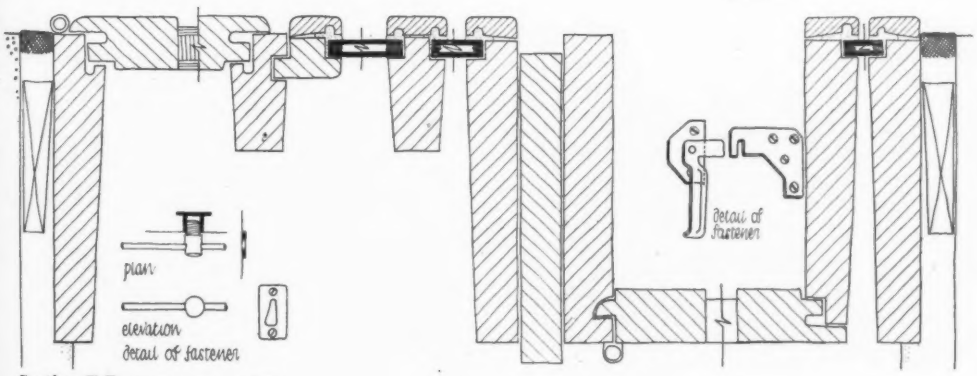
Elevation of typical fenestration panel running from floor to floor between cross-walls. These fenestration panels vary with different types of flat



Section X-X



Section Y-Y

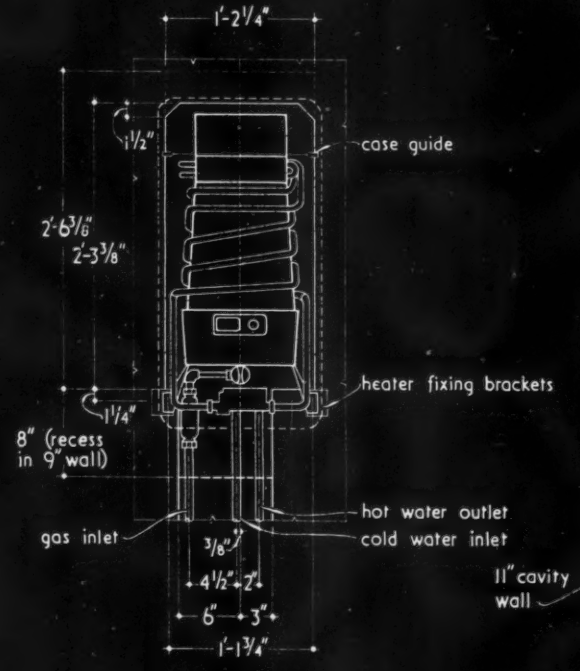


Section Z-Z [Scale: 3" = 1' 0"]

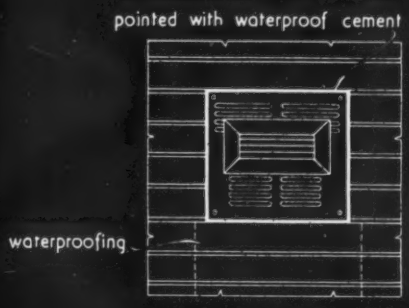
FLATS AT NANTES-REZÉ, FRANCE

Le Corbusier's long-standing admiration for all things shipshape is reflected in the roof-scape above left. The sculptured form owes much to the chalky boulders of the Norman foreshore and the look-out point seen to the left of the tall water tower, above, has an unmistakable derivation. The magnificent broadness of Le Corbusier's conception leaves him, even after a generation, without a peer. But in matters of detail reservations might be needed. In the fenestration of the crêche, left, one wonders if his artist's urge to form a contrast with the main block has fallen short of the fusion of form and purpose he commands elsewhere. Has a chance to open up the roof-top view (otherwise denied to children by the high parapet) been sacrified to an obsession, or does the kaleidoscopic peep-hole wall (and the rather sanitary interior, below) combine a sense of security with opportunities for play—both perhaps of greater value to children at the nursery stage? A desciption of the construction and financial background of the Nantes Unité was given in the JOURNALS for December 2 and 23, 1954. For an indication of the popular reception it received on "opening day" see the JOURNAL for August 11, 1955.

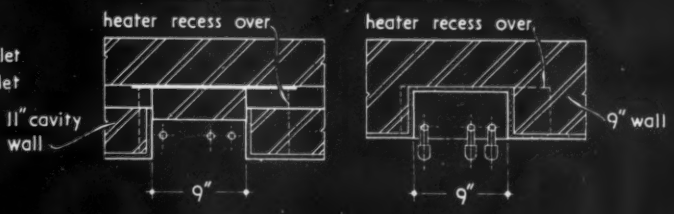
32.C32



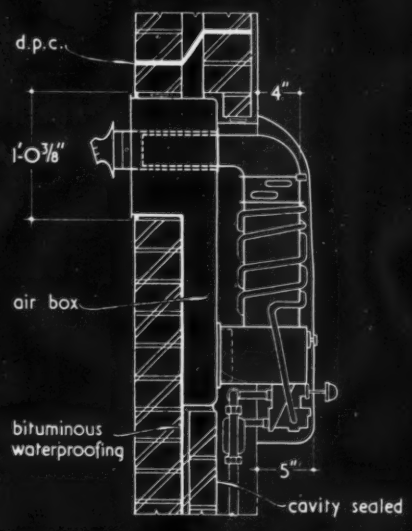
INTERNAL ELEVATION.



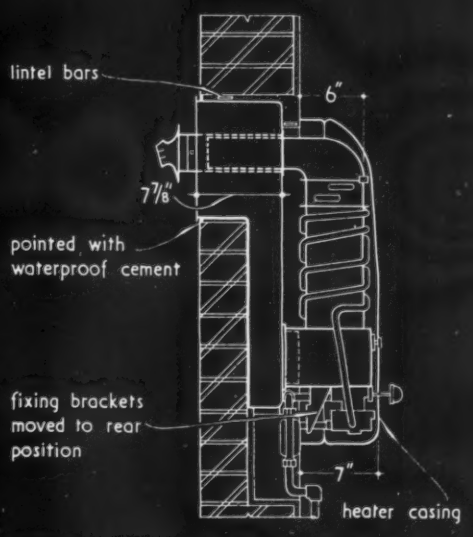
EXTERNAL ELEVATION.



TYPICAL PLANS BELOW HEATER.



SECTION THROUGH TYPICAL INSTALLATION IN 11" CAVITY WALL.



SECTION THROUGH TYPICAL INSTALLATION IN 9" WALL.

·ASCOT· BALANCED FLUE GAS WATER HEATER. TYPE NO. 715 : FIXING DETAILS.

Manufacturer : Ascot Gas Water Heaters Ltd.

32.C32 ·ASCOT· BALANCED FLUE GAS WATER HEATER TYPE NO. 715 : FIXING DETAILS

This Sheet gives details of fixing the Ascot balanced flue type of gas water heater Type 715 into a 9-in. solid or 11-in. cavity brick wall. For thicker walls the details for the 11-in. cavity wall apply. A full description of the heater is given on Sheet 32.C31.

Openings in Brickwork

The drawings on the face of the Sheet show the provisions that must be made in a wall where the Type 715 heater is to be fixed. The internal elevations and sections of the wall show the sizes of the openings and the minimum dimensions of the pipe chase for gas and water connections beneath the heater: this chase may be extended as desired. Where the heater is being installed in new brickwork the asbestos air box, which is a part of the heater assembly, should be built in during the erection of the wall. The extended open end of the air box, to which the terminal plate is fitted, should project ¼ in. beyond the external brick face. In the case of an external rendering, this should be bevelled to meet the air box from a distance of approximately 6 in. all round.

Lintels

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

Waterproofing

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

Walls Over 11 in. in Thickness

As previously stated the details given for fixing the heater in an 11-in. cavity wall are also applicable to walls of greater thickness but these should not exceed 2 ft. 0 in. The telescoped flue fitting is extended according to wall thickness.

Further Information

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

Compiled from information supplied by:

Ascot Gas Water Heaters Ltd.
Head Office and Works: 255, North Circular Road, Neasden, London, N.W.10.
Telephone: Willesden 1234.
Telegrams: Gascot, Phone, London.
Branch Offices and Service Depots: Belfast, Birmingham, Bournemouth and Glasgow.
Service Depots: Bristol, Cambridge, Manchester, Oxford, Southampton, Stoke-on-Trent and Jersey.

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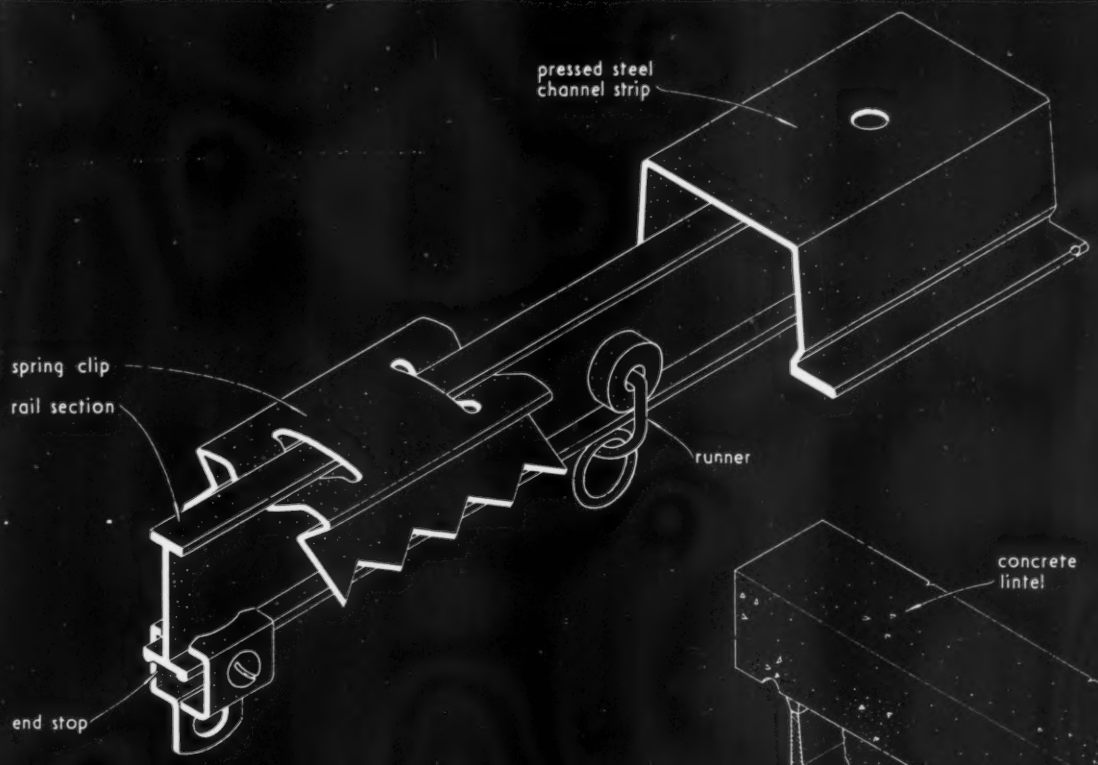
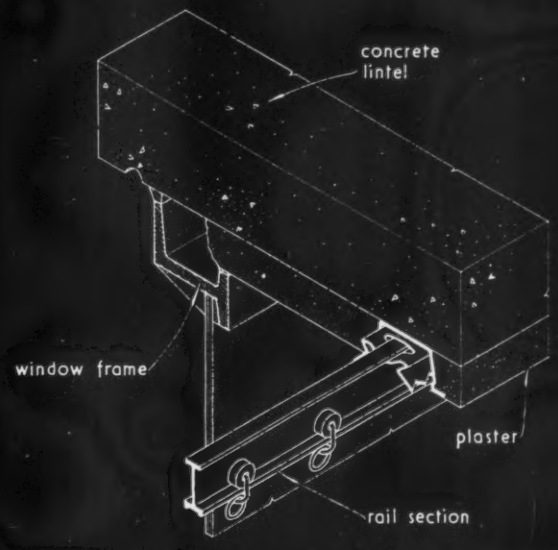
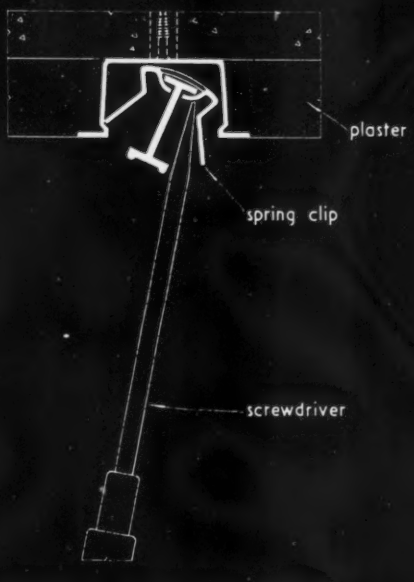


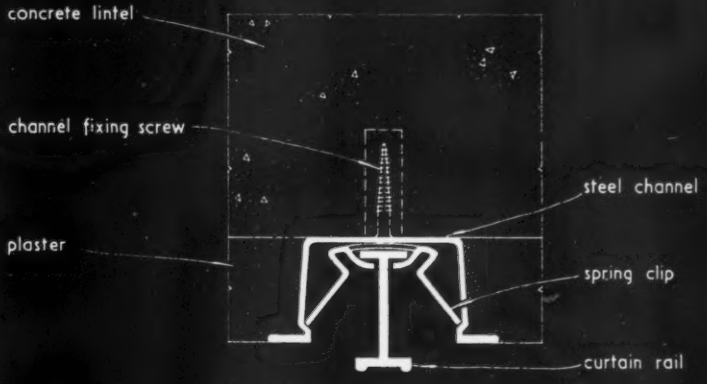
RAIL SECTION SHOWING STEEL CHANNEL STRIP AND SPRING CLIP.



ISOMETRIC VIEW OF RAIL IN POSITION.



METHOD OF PLACING CURTAIN RAIL IN FINAL POSITION.



F.S. SECTION OF APPLICATION TO PLASTER.

·RUFFLETTE· RECESSED CURTAIN TRACK. Manufacturer: Thomas French and Sons Limited.

44.D1 ·RUFFLETTE· RECESSED CURTAIN TRACK

General

This Sheet describes the ·Rufflette· Brand recessed curtain track. The isometric drawing at the top of the face of the Sheet illustrates the various components and the other isometric view shows the application of the system to a plastered concrete lintel.

Applications

Plaster: Where a plaster facing is specified to the lintel, a pressed steel channel strip is screwed to wood plugs let into the lintel to provide the recess for the track. The channel strip is $\frac{5}{8}$ in. by $\frac{7}{8}$ in. wide and is perforated every 3 in. to take $\frac{3}{16}$-in. countersunk screws. Plastering is done after the steel channel has been screwed to the lintel and allowed to dry thoroughly before the track is fitted. The spring clips should be evenly spaced along the track, the first and last being 3 in. from the ends. One edge of each clip is then placed into one side of the channel: a screwdriver inserted in the clip on the opposite side and pressed firmly upward will cause the clip to snap into place.

For applications to timber and concrete the manufacturer should be consulted.

Runners and End Stops

The number of curtain runners should be three to every foot and end stops should be fitted to each track length.

Specification: Material and Finishes

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TECHNICAL SECTION

It would be interesting to know how many architects find worries associated with the new Valuation lists impinging on their professional lives. Hitherto rating has been one of the many subjects which architects have been only too pleased to leave to others; and with good reason, for they can never aspire to anything approaching an expert knowledge. At the same time it is evident that a rating valuation can play a decisive part in the economic prospects of any building project and that therefore the architect should at least know more about it than the man in the street. His duties become more evident when he is the adviser to a small client who is unwilling or unable to seek further professional advice, particularly since it is rumoured that valuations are more arbitrary than the law-abiding citizen would like to think, and that well-supported protest can make a big difference to an assessment. In order to assist architects in this we are hoping shortly to publish an article on the new valuation lists and on what building owners and/or their architects should do about them.

This week's special article

27 FURNITURE AND FITTINGS
British standard specification for school furniture 2

The number preceding the week's special article or survey indicates the appropriate subject heading of the Information Centre to which the article or survey belongs. The complete list of these headings is printed from time-to-time. To each survey is appended a list of recently-published and relevant Information Centre items. Further and earlier information can be found by referring to the index published free each year.

British Standard Specifications, as readers will know only too well, vary considerably in their value. Some are a mere codifying of trade practice; others are the fruit of careful and original investigation and mark an important advance in the field they cover. Of this second kind is the new BS for School Dining Tables and Chairs BS 2639 : 1955 which is to be the forerunner of a new series covering the full range of school furniture. On November 3, 1955, David Medd, of the Architects and Building Branch of MOE and a member of the Committee which is drafting these new standards, described their intention and scope. This week the same author concludes by giving an account of the studies on which the standard for dining tables and chairs was based.

An earlier article published in the JOURNAL (November 3, 1955) discussed the general principles guiding the work of the Committee on the new British Standard Specification for School Furniture. This article is prompted by the recent publication of the British Standard* for School Dining Tables and Chairs which has been published in advance of other standards on school furniture, because of the recent transfer from central to local authority of the responsibility for providing furniture and equipment for the school meals service. This transfer should encourage the welcome departure from Standard designs and because of the several individuals who will now be concerned with the design and specification of the furniture, it was felt that the sooner that any useful data could be published in the form of a British Standard, the more widespread would be its effect. The new Standard is not yet a complete document in itself, for the development of performance tests for the strength of chairs and tables is not yet complete. It is likely that the anthropometric data contained in the new Standard, however, will have a far-reaching effect as not only do the dimensions recommended make a marked departure from

* BS 2639 : 1955—School Dining Tables and Chairs 4s.

Fig. 1. One of the elevational photographs taken of every child during the fitting trials, with the scaled grid background which enables further dimensions to be scaled. Apart from properly sized furniture immediately "looking right," note the following characteristics of a good "fit": (a) Feet flat on the floor with no pressure between the chair seat and the underside of the thigh; (b) clearance between front edge of the seat and the back of the calf while the backrest is in use; (c) ability to rest the fore-arm on the table top without raising the elbow and turning the shoulder round.

current practice, but they will apply to tables and chairs in other parts of schools. The previous Standard (BS/MOE 11:1950) specified a range of seven chair and six table heights which were not related and with no guide on what sizes should be used with what size or age of child. The anthropometric work involved in the preparation of the new Standard is of interest beyond the scope of its current application and it is hoped that arrangements will be made for its separate publication in full. This article sets out to summarize the work of the Committee and some of the implications of it for the furniture designer.

RESEARCH AND PRELIMINARY TRIALS

It was first of all decided that only those dimensions should be specified that are essential for reasonable comfort and posture, in order to leave as much freedom to the designer as possible. Having surveyed the existing dimensional data on school furniture, it was clear that the Birmingham Anthropometric Survey provided the best starting point. Although this Survey had been very thoroughly made and documented, little had been done to interpret the data in terms of furniture design, and there was no real evidence that what little had been done in this respect was reliable. Interpretation of data with recommendations for design formed an important part of the Committee's work—bridging the gap between the doctor and the designer.

An examination of the Birmingham recommendations for chair dimensions for the school age-range of five to fifteen years showed that following a study of a percentage of misfits, increments of 1½ in. for chair heights could be accepted. All other dimensions varied precisely in accordance with variations in body dimensions, no compromise having been made for manufacturing convenience and economy. Having reduced some of these dimensional variations, particularly in respect of seat widths and depths and deduced some related table heights, it was decided to have "mock-up" chairs and tables made both to the original Birmingham recommendations and the new assumptions, in order to test them in fitting trials in schools. This mock-up furniture was not designed or finished for use in the school—in fact each child occupied it only for a minute or two while visual, written and photographic records were made. The tables were designed with a different top rail depth on each side to assist in assessing knee clearances and with one of the corner legs missing in order to reveal clearly in elevational photographs the position of the children's legs. The scaled background screen enabled further dimensional data to be read from the photographs, such as the space occupied by legs, the reach of the arm, and eye levels, for example, all of which it was anticipated would be useful for work to follow on classroom tables and desks (see Fig. 1).

The primary objects, however, of these fitting trials were:—

1. To check whether children from the whole school age-range could be properly fitted on a range of chairs with 1½ in. seat height differences.
2. To check the Birmingham recommended distribution of sizes.
3. To check whether an 8½-in. chair height recommended in the Birmingham Survey and a chair height greater than 17¾ in. were required.

An arbitrary selection of children was made by fitting every third child on the register of an infants, junior and a secondary school in Harrow, Middlesex (82 infants, 182 juniors and 264 secondary children—in addition 21 grammar school children were fitted between the ages of 16 and 18+). Apart from the data on the record cards completed for each chair and the photographic evidence available for future work, charts indicated that:

1. Every child could be fitted satisfactorily on a range of chairs of 1½-in. height differences.
2. Neither the 8½-in. chair nor the chair greater than 17¾ in. were required.
3. The Harrow children needed a greater proportion of higher chairs than the Birmingham children, by reason of their greater stature. The important point here is that distributions can be calculated and adjusted provided that average statures are known. This is not an improbable proviso as all schoolchildren are measured at regular intervals.

A second set of fitting trials for which a range of horizontal seat chairs was made, were undertaken in the same schools and confirmed the following points:

1. The operative height for a chair is the front edge and not the back or lower edge in the case of a sloping seat as assumed by the Birmingham Survey.
2. A backrest slope of 95° to the horizontal was preferable to one of 100° for a comfortable upright posture. This backrest slope is satisfactory for either horizontal seats or seats sloped at 5°.

As a result of this work, it can now be asserted with confidence that given proper distribution in the school, a range of chair and table sizes has been established which, within the limits of five sizes, will provide reasonable comfort and facilities for various postures for the different shapes and sizes of children to be found in the school age-range

SPECIFIED DIMENSIONS

Below are described the most important dimensions specified in the Standard, and the aspects of comfort and posture they are intended to achieve. A principle of the work is that there should be no attempt to design for a fixed sitting position. Freedom to change position frequently is essential for comfort:

1. *Seat height* (applicable to the front edge of horizontal and sloping seats). This ensures that a child's foot can rest on the floor and at the same time there is no pressure between the underside of the knee and the chair seat, so that the weight of the trunk can be taken on that part of the body (ischial tuberosities) adapted for so doing (see Fig. 1).
2. *Seat depth.* The primary consideration of this dimension is that the ischial tuberosities shall be supported and that when the backrest is in full use, there shall be adequate clearance between the back of the calf and the front edge of the seat (see Fig. 1).
3. *Position of backrest.* It must be sufficiently rigid to support the weight of the trunk but must not restrict movement of the spine, arms or shoulder blades so that support for the whole of the back is not possible. This restricts the backrest to the lumbar region and research shows that properly designed lumbar support renders support in the upper part of the back unnecessary for upright chairs. The recommended angle of 95° to the horizontal for the backrest is designed to give support to the back while sitting in an upright position. The dimensions and angles are not appropriate for reclining purposes. The transverse section of the backrest should be designed to support the back over as large an area as possible but its length should not restrict body movement.
4. *Slope of the seat.* The arguments in favour of both horizontal and sloping seats are so strong that both are recommended and the related table heights for each are given.
5. *Height of front rail.* It was considered important to specify the height below which it is undesirable to have a cross rail between the front legs of the chair. For freedom of movement it is important to be able to place the feet under the chair, also rising from the chair is made easier by being able to draw the feet under the seat.
6. *Height of the table.* The height of the

table is related to the height of the elbow, the position of which depends on the height of the chair. Hence, the reason for related chair and table heights. The distance between the chair seat and the table top is designed to allow the fore-arm to rest on the table surface without raising the elbow and turning the shoulder round (see Fig. 1). The table height, so determined prevents the minimum distance for satisfactory vision from being infringed. The minimum height of the underside of the top or supporting rail is specified to ensure that adequate knee room is provided.

7. *Area of table tops.* The areas of the dining tables are expressed in terms of minimum areas per place and minimum table perimeters per place which are based on the numbers and sizes of plates and dishes used and the elbow room required by each child. Thus, provided both these minimum criteria are met, the designer is not restricted to particular sizes or shapes.

DISTRIBUTION OF SIZES

As suggested earlier, the success of these recommendations depends on the sensible distribution of various sizes throughout the schools. To assist both purchasers and teachers whose co-operation is essential, the Standard gives recommended distributions of the five sizes of furniture on two bases:

1. For each type of school covering an age-range of two years (infants), four years (juniors) and four more years (secondary).
2. For single year age-ranges where the furnishing of classrooms is concerned.

The distributions are given for different average statures so that where these are known, the appropriate distribution can be selected and account can be taken of any regional differences that are known to occur. Distributions are also given in a similar manner where the range of sizes is restricted to either three, two or even one in number (the fewer sizes provided the greater will be the number of misfits). Because table heights related to flat seat chairs are higher than those related to sloping seat chairs, two series of related sizes are given in the Standard. The reference to the seat height is to the front edge for both types so that the same recommended distributions apply to both.

The co-operation of school staffs is sought to ensure that related chair and table sizes are always used together as otherwise the recommendations in the Standard will not achieve their purpose. To facilitate their proper use, therefore, the Standard recommends that coloured symbols of the same colour are used on related chairs and tables. In this way, it is hoped that height consciousness will be encouraged in the school and that certain children will know that in whatever room in the school they find themselves, furniture with "yellow" symbols is their best fit for this term. Similarly, if a "yellow" set was not available, the same children would know that, for example, a "red" set would provide the second best fit.

CLASSROOM FURNITURE

The work described above in connection with dining room furniture will also apply to classroom furniture, but further research into problems associated with table working areas and leg clearances is in hand. Opportunity has been taken to make some analytical and photographical surveys in schools furnished since the war, to obtain definite evidence of the frequency of misfits and the commonest types of postural defects. From these surveys, it was established that only 5 per cent. of children were sitting at appropriately size furniture, that is, at chairs of a height that enabled the foot to be placed flat on the floor without pressure on the underside of the knee and at tables of a height that allowed the fore-arm to be rested on the top surface without raising the elbow and turning the shoulder.

Compare Fig. 1, which shows a child seated at properly sized furniture, with Figs. 2 and 3, which both show the same girl first sitting back in her chair and then working at her table; note the heels off the floor and the consequent pressure on the underside of the knees. Note also the relation of the elbow to the table top (how would you like to work with the table top level with your chest?). As these faults were found in 95 per cent. of children observed, can it be wondered that children fidget in class! Fig. 4 shows, in diagrammatic form, the comparison between the chair and table shown in Figs. 2 and 3 and the BS 2639 chair and

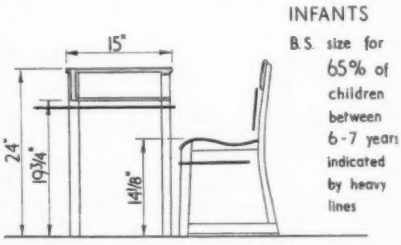

Fig. 2 (far left). Girl sitting back in her chair. (Note: her feet are off the floor.) Fig. 3 (left). The same girl writing at her table. Note that the table height forces her to raise her elbow and thence to turn her shoulder. Fig. 4 (above). Diagram comparing the chair and table shown in Figs. 2 and 3 with the table top, chair seat and back positions recommended in the new BS. Fig. 5 (below left). Chairs too deep and table too high. Children have to perch on the front edge in order to get at their work.

table height that is recommended for 65 per cent. of children of this girl's age (between six and seven years).

The result of the very noticeable difference between the position of the backrest used and recommended in Fig. 4 is clearly illustrated in Fig. 5 where the children have to perch themselves on the front edge of the chairs in order to get at their work and overcome the excessive height and depth of chairs that have been provided for them.

It is important to emphasize two points at this stage. Firstly, these photographs are not of freak cases but are typical of dozens that have been taken showing these faults. It is felt that because these conditions can be observed in varying degrees in most classrooms, the subject is an urgent one for all those responsible to tackle. There is little doubt that a bad posture from ill-fitting furniture causes discomfort and consequent fidgeting and restlessness. When prolonged for several years, not only is the quality of the children's work likely to suffer, but also eyesight may be affected and lasting postural defects be caused. This unsatisfactory state is not confined to school furniture but also furniture in offices is often subject to many of these criticisms. Secondly, no criticisms of the furniture shown in the photographs is implied. The fault lies largely with the choice of size for these particular children and the unsatisfactory relation between the type and size of table and chair that have been chosen.

19TH CENTURY EVIDENCE

During the last half of the 19th century when there was much state school building activity in both Europe and America, governments were commissioning international surveys to collect experience and ideas and philanthropists were busy making their recommendations on, among other things, school furniture. It is both amusing and salutary to read some of these, for we are reminded that the principles of good seating now being put forward were frequently stated with considerable force nearly a hundred years ago. It also shows how completely we have forgotten its advice during the spate of activity in the last ten years.

Edward Coombes, in a survey made in 1880 on behalf of the government of New South Wales, reports "the seat should be so made that the feet of every child, when properly seated, can rest on the floor and the upper and lower part of the leg forming a right-angle at the knee . . ." and "the desk should be broad enough to permit the pupil to rest the fore-arm in a comfortable position when writing or ciphering; when the wrist can only be rested, the body is thrown out of its natural position, causing him to elevate one shoulder more than the other."

Robert Scott Burn, in a survey made in 1856, after a generous recommendation, makes a very pertinent observation: "Every pupil, young or old, should be provided with a chair or bench. . . . The height should be regulated so as to admit the feet of the occupant resting upon the floor without the muscles of the thigh being pressed hard upon the front edge of the seat."

James Johonnot's book, written in 1859 with this resounding title: "The Country School-Houses containing elevations, plans and specifications, with estimates, directions to builders, furniture, apparatus, etc., and a treatise on School-House Architecture," contains at least two sentences on the subject of furniture with a useful message for today. "All effort to reform in the building of School-Houses will fall far short in accomplishing its object unless it comprehends a radical change in School-House furniture," and "with seats so high that children are perched so high that their feet cannot rest on the floor, 'to sit' becomes an exceedingly active verb and restlessness, aches and distortions often result."

E. R. Robson's book entitled merely "School Architecture" published in 1877, makes a very wide survey of the subject and in the following extracts it is shown that today's recommendations are only echoes of earlier ones: "The way of opinion is to the effect that the height of the seat should correspond with the length of the scholar's leg from the knee to the sole of the foot. There must be no stretching of muscles, therefore the sole of the foot must rest on the floor or upon some flat surface. If the seat be too high, the swinging of the foot in the air causes a compression of blood vessels and nerves of the hinder part of the leg and knee; if it be too low, the thighs of the scholar are pressed against his stomach, to the disadvantage of health," and "the height of desk should be so arranged that the under part of the arm may rest comfortably upon the desk top and that the powers of vision may not be strained or in other words that the normal distance for vision be preserved." Fig. 6 is one of several diagrams which show there is considerably less difference between 19th century recommendations and BS 2639 than frequent post-1946 provision. Fig. 7 again shows how extraordinarily close are the earlier recommendations to BS 2639, in this case for children aged 11 to 13+. This example from "Rules to be observed in planning and fitting up Schools" by the Committee of Council of Education, is particularly interesting as it was published in 1871 by Her Majesty's Stationery Office. Apparently the absence of backs was an English characteristic which met disapproval from Germany, from which country Dr. Wiese—a physician—fore-shadowed BS 2639 by recommending low backs to chairs which will support the lower part of the body, leaving the upper part free.

It is regrettable that such a significant part of the post-war school building programme has been achieved in the last ten years without more conscientious application of well-established medical principles being applied to the furniture and equipment—but better late than never.

COMMITTEE TEAM WORK

The medical profession, the school furniture industry, and the architectural profession are among those represented on the Committee responsible for the anthropometric work, and the recommendations in the Standard

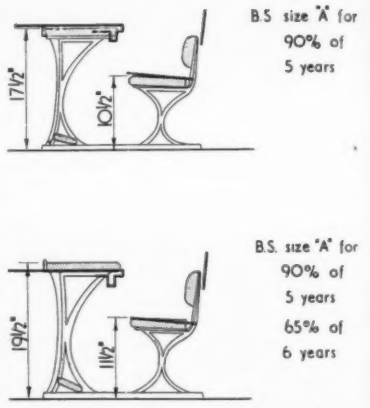

Fig. 6. Two sizes of desks for infants schools recommended by E. R. Robson in School Architecture, *published* 1877. *The heavy lines show BS sizes for children of corresponding age compared to the Victorian design which is closer to the BS than the post war furniture shown in Figs.* 2, 3 *and* 4.

represent the compromise between the strict interpretation of anthropometric data which would have given a greater variety of dimensions and the requirements of simplicity and economy of production. It was not difficult to compromise on seat widths and the curvature of the backrest, as these dimensions are relatively less critical than others, but knee clearance was a more difficult compromise, due to the necessity of comparatively deep top supporting rails in some forms of table construction. The work has been an interesting example of how real progress can be made, where the determination to achieve a practical result has outweighed the ideals

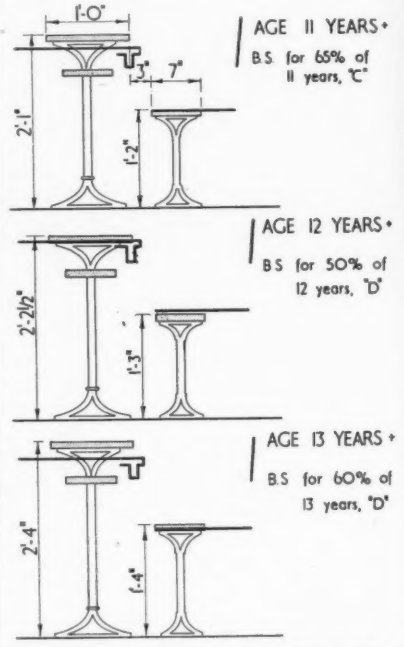

Fig. 7. Comparison between table and bench heights given in Rules to be observed in planning and fitting up schools *by the Committee of Council on Education, published by HMSO in* 1871, *with BS sizes for children of the same age shown in heavy lines.*

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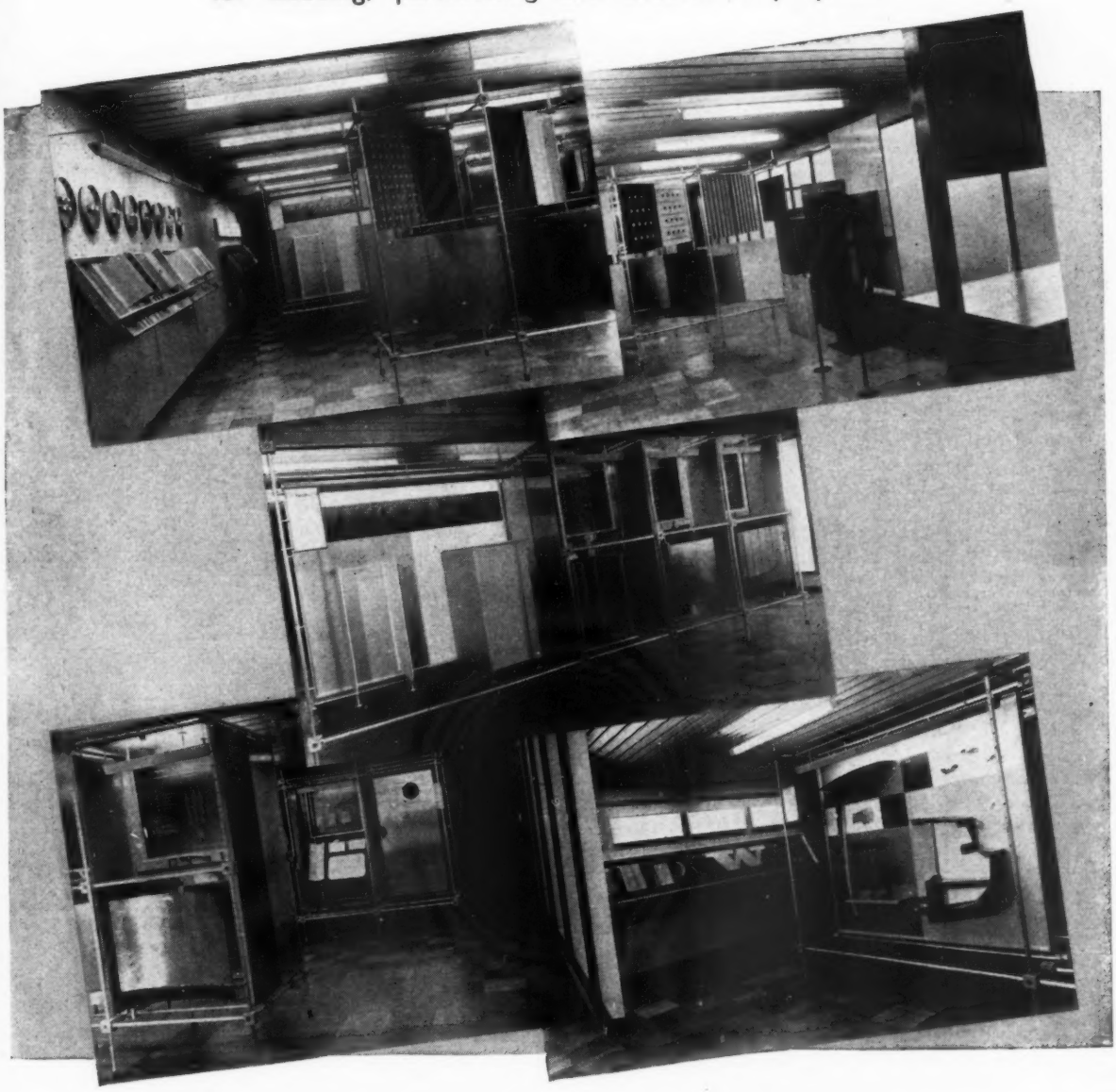

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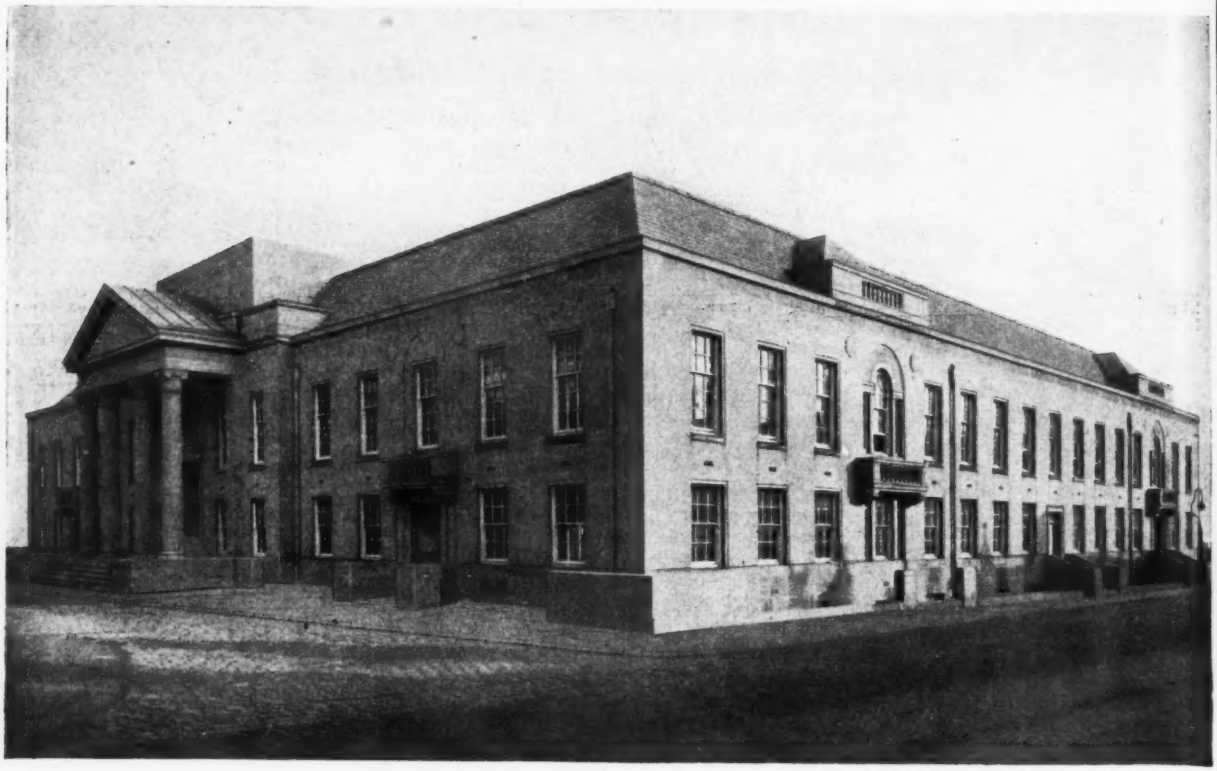

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of either the research worker or the manufacturer. Although each party may be disappointed in certain respects, the improvement which may be realized in schools is greater than could have been achieved by any single party working alone. The new Standard gives no recipes and the quality of the furniture based upon its recommendations will depend, as it rightly should, not on the fidelity with which Standard designs can be copied, but on the skill of the designer and the manufacturer using the data. Unsatisfactory design can result from one or both of two causes, lack of knowledge of the objectives and lack of design and ability. The BSI should and can provide the objectives but should not, in the subject of furniture, usurp the prerogative of the designer.

The four photographs used in this article are reproduced by the kind permission of Dr. D. F. Roberts, Department of Human Anatomy, University Museum, Oxford.

INFORMATION CENTRE

A digest of current information prepared by independent specialists ; printed so that readers may cut out items for filing and paste them up in classified order.

6.51 social and recreational
SCOTTISH HOUSING

Scottish Special Housing Association 8th Annual Digest. SSHA.

This report gives the number of houses completed by the Association (35,470 altogether), their distribution according to region, and the numbers according to use (miners, quarry workers, forestry workers, etc.). It gives a detailed summary of the Association's accounts presented in part by diagrams, and several full-page photographs of completed houses and work in progress. There is a brief account of the Direct Labour organization in which architect-builder collaboration, use of a mobile laboratory and a newly set up production engineering section for pre-planning and work study are mentioned in connection with plans to build two ten-storey blocks of flats at Tonyglen, Glasgow—each with three flats per floor.

The last section in the booklet shows diagrammatically the " economics of a present-day four-apartment house." It seems that with a rent of £33 6s., subsidy of £56 10s., interest on loan at 5 per cent., outgoings equal income if the house costs £1,246. Above this there is an annual deficit, below, a surplus.

7.51 practice
LAW OF BUILDING CONTRACTS

Law and Practice of Building Contracts. Donald Keating. With a Glossary of Building Terms by Paul Badcock. (Sweet and Maxwell Ltd. 50s.)

This book is directed equally to the lawyer and to the architect and builder. Hudson on Building Contracts will remain the most exhaustive work on the subject but its last edition appeared in 1946 and Cresswell on Building Contracts, last edited in 1952, offers the closest comparison. For both deal with the contract and its variation, approval and certificates, default, assignments, sub-contracts, arbitration, and bankruptcy. It may be said at once that this book is more attractively produced than Cresswell. It is on better paper and case references are mostly in their proper place as footnotes. Further, unlike Cresswell, it gives a special place to setting out and commenting in detail on the Clauses of the R.I.B.A. Standard Forms of Contract in the light of decided cases. For example, Clause 24 is analysed with reference to Hoenig v Isaacs, a case in 1952 which appears to have established that the entire completion of the works, including the making good of any defects under Clause 12, is a condition precedent to the right to a final certificate and hence to the release of the second moiety of the retention fund. There is a reference to Payne v Wheeldon which, in 1954, determined that if the architect's certificates are for aliquot parts of the contract sum the court may hold that they include proportionate parts of the surveyor's fees although the certificates make no reference to these fees, and there is a comment on L.C.C. v Wilkins by which, in 1953, it was held that under Clause 3, the contractor's temporary buildings, if not on the site for too transient a period, are rateable.

Mr. Keating, in his general text, refers to decisions through which, in very recent years, the Court of Appeal has reinterpreted the law of contract sufficiently for lawyers to talk now of the " New Equity." Take, for instance, the case of Sumpter v Hedges, a decision of 1893. Here, a builder contracting to build a house for a client for £565, did work to the value of only £333, received payment for part of this, and abandoned the contract. The client completed the house, incorporating the builder's work. The builder then sued for the balance of his £333 but failed to recover it. Today, as Mr. Keating observes, the court might well apply the doctrine of " unjust enrichment " (given new life in Boots v Christopher in 1952) to enable him to succeed.

The practising lawyer will probably find a special chapter on " Litigation " somewhat sketchy but it gives the expert witness an excellent grasp of his function both before and during court proceedings. It covers, for example, the value of exact Pleadings and early Discovery and is probably unique in setting out precedents for the Scott or Referee's Schedule which is usually demanded in building disputes of any complexity as a convenient means of dealing with the items in dispute.

The County Courts Act 1955 is outlined in summary form. One would have liked a little more comment on it. This Act increases jurisdiction in County Courts to £400. It will result in many more building disputes being tried in those courts and it is probable that, in view of the penalties in costs a Plaintiff may suffer who in future brings High Court proceedings and recovers small damages, lawyers will depend even more on the judgment of their expert witnesses.

The extensive Glossary of building terms, prepared by Mr. Badcock, reflects the learned author's hope that his fellow lawyers faced, as he says, with a " necking " or a " nogging " in a surveyor's report, can now continue to pretend to that omniscience which is a part of their mystique.

9.55 design: general
THERMAL INSULATION

Thermal Insulation of Buildings. Nash: Comrie: Broughton (HMSO 1955. 12s. 6d.).

This is a very valuable addition to the all too small collection of books from the Building Research Station. It should rapidly become accepted as the standard reference on the subject and one of the " essential " books for all architects' office shelves.

The book is divided into three parts. In the first part the principles of thermal insulation are very clearly set out with easy-to-follow instructions on how to calculate U values together with useful notes on such things as condensation and vapour barriers, temperature gradients, pattern staining, and the economies of insulation. There is nothing very new in this section of the book but it does gather together in one place and explain quite clearly all that the average architect needs to know on the design side of the subject.

Part two consists of data sheets about most of the materials commonly used for thermal insulation. These sheets give the usual conductivity and resistivity figures but go further in adding information about moisture movement, incombustibility, non-inflammability, spread of flame, susceptibility to fungal attack, together with notes on how the material is supplied, fixed and finished and, often, some useful general remarks as well.

Part Three consists of a series of tables showing the application of a wide range of materials to different situations such as flat roofs, sloping roofs, walls, etc., with costs of material and fixing. It is unusual to find cost data of this kind in a book because of the difficulty that it inevitably quickly becomes out of date. The cost data in this case is given in such a way that it is a relatively easy matter to substitute up to-date figures. This is a most practical and welcome addition.

The book is well illustrated with clear line diagrams and altogether seems to give the architect just what he needs to know. As an answer to the criticism that the research worker does not " put over " his material to the man on the job this is splendid—one can only hope it will achieve the success it deserves and be very quickly followed by other publications of the same kind, as there are plenty of other subjects which need to be treated in the same way.

15.134 plasters
GYPSUM BUILDING PLASTERS

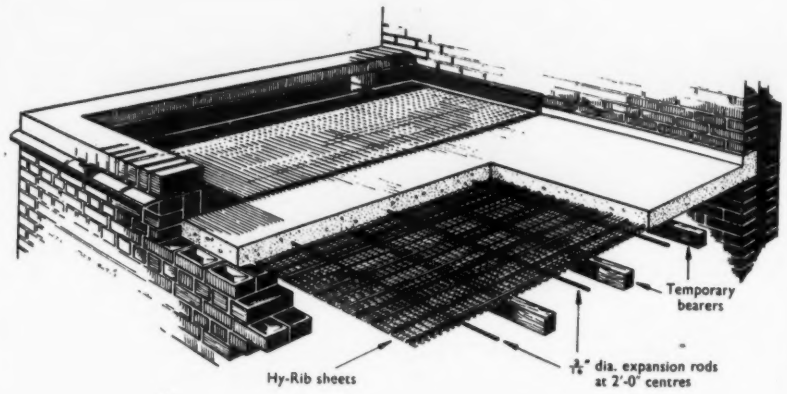
Gypsum Building Plasters. BS.1195: 1955. (BSI. 4s.)

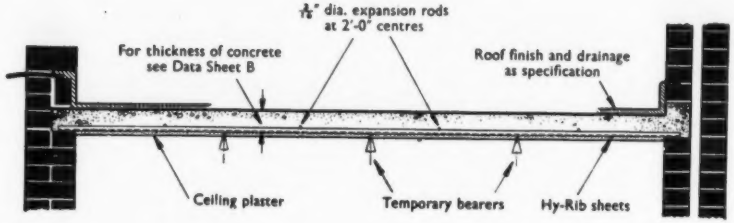
This replaces BS.1191: 1944, *Gypsum and Anhydrite Building Plasters,* anhydrite plasters having been omitted from the new Standard for the very good reason that they are no longer made. Of specialist interest, detailing the tests each variety must pass before it reaches the architect.

24.196 lighting
ELECTRIC LAMPS

The Use and Abuse of Modern Electric Lamps. By A. D. S. Atkinson.

This was the first of a series of three conferences on lighting for architects organized





CROSS SECTION

Hy-Rib is a combined centering and reinforcement and eliminates close board shuttering. The Hy-Rib mesh provides a ready-formed key for the plaster ceiling.

Notes on the construction of Hy-Rib roof slabs are given on Data sheet B with maximum spans for slabs of various thicknesses.

HY-RIB FOR FLAT CONCRETE ROOFS

THE TRUSSED CONCRETE STEEL CO., LTD.
TRUSCON HOUSE, LOWER MARSH, LONDON, S.E.1
Telephone: WATerloo 6922

Data Sheet A

MAXIMUM CLEAR SPANS FOR SUPERLOAD OF 30 LB. PER SQ. FT.
(Allowance already made for self-weight and 26 lb. per sq. ft. finishes)

Concrete thickness	Hy-Rib alone		With rods		Minimum length to add to give adequate bearings for Hy-Rib sheets	Rod data—code used in table under "rods" heading
	28G	26G	26G	rods		
3"	6' 5"	7' 3"	7' 7"	a1	4"	Diameter:— a: ¼" b: 7/16" c: ⅜" d: 7/16" e: ½"
3½"	6' 9"	7' 8"	9' 0"	a2		
4"	7' 1"	8' 0"	10' 5"	b2		
4½"	7' 4"	8' 3"	11'10"	e1	5"	
5"	7' 8"	8' 6"	13' 3"	e2		Spacing:— 1: 10½" crs. 2: 7" crs. 3: 3½" crs.
5½"	7'10"	8' 7"	14' 8"	c3	6"	
6"	8' 0"	8'10"	15' 6"	d3		Lengths:—clear spans less 2' 0". (laid centrally)

HY-RIB SHEET DATA

Width of sheets is 10½ in. with ribs at 3½ in. centres.
Lengths are standardised:—26G. Hy-Rib: 6 to 16 ft. } in 1 ft. increments
28G. Hy-Rib: 6 to 9 ft. }

CONSTRUCTION DATA

1. All Hy-Rib sheets to be well interlocked and punched or wired together at 2' 0" centres along all side laps.
2. ⅛" dia. expansion rods to be placed on the Hy-Rib sheets at right angles to the ribs at 2' 0" centres and wired thereto at every sixth rib (1' 9" centres) with 17 gauge wire. Laps 12" minimum and staggered.
3. During concreting, the Hy-Rib sheets are to be well supported by means of temporary bearers spaced at intervals not greater than those given in the following table:

Gauge of Hy-Rib	Thickness of Concrete						
	3"	3½"	4"	4½"	5"	5½"	6"
26G.	2' 6"	2' 4"	2' 2"	2' 0"	1' 10"	1' 8"	1' 6"
28G.	2' 3"	2' 1"	1' 11"	1' 9"	1' 7"	1' 5"	1' 3"

The spacing must be reduced by 4" for every 1" thickness of wet concrete screed or finish placed in the same operation and which is extra to the thickness of concrete given in the span table above. The temporary bearers may be formed of rough timbers, tubular scaffolding or patent propping and after concreting these bearers must be left in position for the same length of time as would be necessary for a timber shuttered slab.

4. P.C. Concrete mix 1:2:4 throughout. The thicknesses of concrete shown in the span table above are minimum and concrete or screed for forming drainage falls or finishes must be additional.

FOR CONSTRUCTION DETAILS SEE DATA SHEET A

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Data Sheet B

by the Electric Lamp Manufacturers' Association. As it contains much useful information and (to the best of our knowledge) it has not been printed elsewhere, we give a summary of his list of lamp types and uses.

In his introduction Mr. Atkinson mentioned that the variety and range of lamps now available is enormous and it is thus difficult for anyone outside the lamp industry to keep pace with the progress that is being made. He gave it as a good rule, however, that the simplest and cheapest lamp that will do the job, provided it will do it well, should be used. "In lamps there is nothing simpler and nothing cheaper to instal than the tungsten filament lamp."

USES OF FILAMENT LAMPS

Mr. Atkinson gave the following as conditions where filament lamps are especially applicable.

1. A familiar colour of light is required and over-emphasis of reds is unimportant.
2. Lamps are to be dimmed to zero or to low brightness for short periods.
3. A degree of sparkle or glint is required on lighted objects.
4. Lamps are switched frequently.
5. Current is cheap.
6. The light is to be confined to a directional beam.
7. The initial cost of installation is considered of greater importance than running costs.
8. Lamps will be used only occasionally.

The main characteristics of *Ordinary General Service Lamps*, were then demonstrated, the principal attributes of the following lamps being noted:—

USES OF ORDINARY GENERAL SERVICE LAMPS

Internally silica-coated. For domestic and commercial use up to 200 W. where the lamp is not normally seen, but parts of the fitting or its suspension may cast shadows on the ceiling or upper walls.

Pearl bulb. For all normal purposes, up to 150 W, except where "silica" lamps are preferred.

Clear bulb. For applications where a "hard" shadowy light is preferred and to produce glitter for chandeliers, glass displays, etc. Also for industrial fittings above 150 W and commercial fittings above 200 W. Clear lamps *must* be used if a fitting is to have precise optical control of the light.

Reflector lamps. (150 W and 75 W tungsten filament.) For high-lighting shop windows and interior displays where ease of adjustment and compactness of lighting equipment are important; "porthole" lighting for domestic and other interiors; local lighting from a distance in industry, and short-range floodlighting of limited exterior surfaces.

Projector lamps. Slide and film apparatus and accurate lens systems must have projector lamps to suit the particular optical design.

Rough service lamps. Where the lamp may be subjected to shock or heavy vibration—portable garage lamps, local lighting mounted on work-benches, etc. Also perhaps for the ceiling light in the living-room beneath nursery or playroom.

Candle lamps. For wall brackets where the lamp is at least partially screened. For multi-arm ceiling fittings, and as a substitute for candles in chandeliers where sparkle is essential.

Single-capped tubular. For wall brackets where the lamp is unscreened. At the sides of mirrors.

Double-capped tubular. Useful where a line of light is required in a restricted space, but fluorescent lamps are not favoured. For show-cases, shelf lighting, self-lighted display boxes, aquaria, etc.

Architectural tubular. As above, but the lamp may be viewed directly without discomfort. For mirrors and "occasional" decorative effects. The side connections to these lamps makes it possible to butt them together.

USES OF TUBULAR FLUORESCENT LAMPS

New Warm White A lamp of exceptionally high efficiency obtained at some slight sacrifice of colour property, in the sense that the middle parts of the spectrum are emphasized at the expense of the ends. This lamp tends to make people look rather sallow, dulls reds and is inclined to deaden or give a purple tinge to blues. But it is very much the lamp to use where colour is not very important but quantity of light is, as in streets, the great majority of factories and many industrial offices. It is also perfectly satisfactory for the display of yellow initial, and neutral coloured or unpainted metal ware.

Daylight. There is not quite so much light from this lamp, the main difference in colour being that it has rather more blue-green and rather less yellow, giving a white effect. With the exception of lighting gold-coloured objects, Mr. Atkinson suggested this lamp also as suitable for the applications just mentioned, particularly where a good apparent match with outdoor daylight is required, as for instance where the lighting will be used to supplement daylight during daytime. Provided there is plenty of it, he has also found this colour quite satisfactory for commercial offices.

Red colours still appear weakly, blues again take on a purplish tinge.

Natural. This lamp combines both high efficiency and good colour-rendering properties. It gives rather better colour but not quite so much light as either of those previously mentioned. It has been used very successfully in shops other than those selling food, fabrics and fashions and is very good for offices. It is, in fact, a first-class general-purpose light which does not differ widely from outdoor daylight.

Deluxe Warm White.—Until this lamp was introduced, a year or so ago, there was no successful fluorescent lamp for social and domestic purposes. All the previous ones gave a colour which few people felt really happy with in these applications because it was unexpected and different from anything that they were used to. Mr. Atkinson regarded this lamp as an example of the way in which lamp manufacturers meet the demands of the public and he thought it was no small achievement to have produced a fluorescent lamp which matches ordinary filament lamps in colour but still gives twice as much light.

Colour-Matching.—It appears that too many people who know of this lamp tend to write it off for ordinary lighting schemes because of its supposed low efficiency although it is still more than twice as efficient as filament lamps. It gives a very white light and although it tends to look almost bluish by comparison with filament lighting it is excellent for showing reds and pinks. The blues also show up far better and more clearly than under anything else. The whole effect is lively and fresh. This lamp shows colours almost exactly as seen by outdoor daylight and more or less *has* to be used wherever correct appreciation of colour is vital—picture galleries, skin clinics, colour judging processes, shops selling fabrics and decoration materials and so on. There is, however, a wide field for this lamp in other shops, when it is assisted by a proportion of ordinary filament lamp lighting to add the highlights and shadows which are probably otherwise missing.

25.119 water supply: sanitation
COPPER PIPE LINES

Copper Pipe-line Services in Building (CDA).

This is the 14th revised impression of a book which was first published in 1938. Its purpose is described in the foreword as "to collect within one volume much of the theoretical and practical information on copper pipe-line services in building which exists in published or unpublished form, but which is too scattered for easy reference. Particularly useful is a chapter which tells you how to calculate pipe sizes for water services and provides the requisite graphs. This is information which is always difficult to come by and is, of course, valid for other types of pipe. There is a good section on panel heating and another on hot water supply. The chapter on sanitation is disappointing as it does not describe the "single stack" system (which is now permitted in London), while the approach to the problem of wash basin wastes is distinctly behind the times.

25.120 water supply: sanitation
SANITARY ENGINEERING

New Developments in Sanitary Engineering, by G. Croft, F.R.SAN.I., F.R.SAN.E., F.I.S.A. (The Sanitarian. Nov. 1955.)

A paper given at this year's Conference of the Sanitary Inspectors' Association. Though most of the points made should be familiar to readers, it provides a useful summary of the changes that have taken place in the last few years, given by one of the greatest authorities on the subject.

In reviewing the established systems of drainage, Mr. Croft stated that during the 19th century when water carriage drains were introduced, the general assumption was that gases and foul odours from drains and sewers were harmful to health. Informed opinion today does not support this contention in the slightest.

The dual pipe system. The first one generally used, *i.e.*: separate waste pipes, one for w.c.'s and one for waste water. To make this system function economically rainwater heads were often fitted at intervals down the R/W-pipe to take the discharge from baths and basins at the respective levels. This practice fell into disrepute as the rainwater heads became foul and often gave rise to nuisance.

The dual-pipe system is still much used, particularly for one- and two-storey buildings, but when used without R/W heads in the way mentioned it is expensive.

The one-pipe system: Although this system has many good points, the use of deep-seal traps and thorough trap ventilation throughout is essential. In the circumstances this system is very expensive.

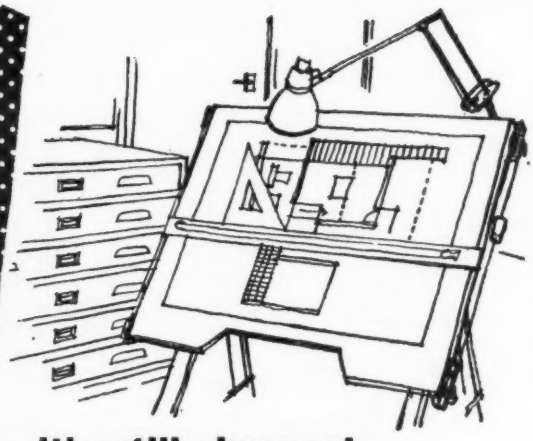
The single-stack system: Simply described, this system is essentially the one-pipe system without the trap ventilation pipes. Properly designed, it is sound and the most economical system to use.

But also success depends on compliance with a number of rules: (*a*) All branches are separately connected to the stack; (*b*) Maximum slope of branch pipe varies with distance between stack and trap weir—recommended fall between 1½ deg. and 5 deg.; (*c*) Trap seals of waste water appliances to be not less than 3 in.; (*d*) The connection between stack and drain to be made by bends of large radius in order to reduce the effect of back pressure.

He mentioned that this system had been installed in many multi-storey buildings not exceeding six storeys, although a few eight-storey dwellings had also installed the single-stack system, but until further investigations have been carried out it would appear advisable to vent the traps of w.c.s above six storeys.

Mr. Croft tabulated the costs for five-storey flats each having a w.c., bath, lavatory basin and sink, closely grouped round a 4-in. cast iron stack pipe in a pipe duct, the prices

...specify solid fuel for the heating



...it's still cheapest— and far more efficient with the latest appliances

For continuous domestic heating, solid fuel is still far and away the cheapest fuel. And, used in modern appliances, it is far more efficient than ever before. New fires, for instance, with restricted chimney throats and convection jackets, give up to 40 per cent more heat from the fuel. Like the new stoves, cookers and boilers, they're much easier to run, quick to clean—and very well made.

For dwellings of all kinds these up-to-date appliances are a wise—and farsighted—choice. They will give years of fine service economically.

HOW TO GET THE FACTS

The Coal Utilisation Council has established various services to help you get the right appliances for each job and ensure correct installation.

Recommended Appliances Lists of recommended domestic solid fuel appliances are published twice a year in co-operation with the Solid Smokeless Fuels Federation and are yours for the asking.

The C.U.C. publishes booklets on appliances, their installation, fuel storage and insulation, all of which would be useful to you or your staff. If you would like copies of all, or some, send for them by filling in the coupon below.

C.U.C. Training Centres where courses are held in London and Glasgow for architects', local authorities' and builders' staffs. Instruction in correct installation is given by experts. These Training Centres can be visited by housing officials, architects, builders and others professionally interested in domestic heating by appointment. For those who cannot attend courses in London and Glasgow, special one-day courses are held in Technical Colleges in various parts of the country.

C.U.C. Information Centres in many major cities display the latest appliances, have leaflets, and can give you expert information. See the addresses below.

C.U.C. INFORMATION CENTRES

Birmingham : Burlington Passage, New Street.
Bristol : 5 Broad Quay, City Centre.
Cambridge : 24 St. Andrew's Street.
Cardiff : 9 Castle Street.
Glasgow : 341 Bath Street.
Leeds : 99 Albion Street.
London : The Building Centre, 26 Store Street, W.C.1.
Manchester : 257 Deansgate.
Newcastle upon Tyne : 18 Saville Row.
Nottingham : 4 & 6 St. Peter's Gate.

SEND COUPON FOR FREE BOOKLETS

To the Coal Utilisation Council, 3 Upper Belgrave St., London, S.W.1

Please send me the following:
List of Recommended Domestic Solid Fuel Appliances
Details of C.U.C. Installation Courses
And also copies of booklets:
Warmer Homes with Solid Fuel
Architectural Design Data for Solid Fuel
Fuel Stores for Houses and Flats
Make Your House Cosier in Winter (*Insulation booklet*)
(Please cross out those not needed)

Name .....

Address .....

..... (A.J.3)

including a simple design for each type, pipework to the nearest manhole, standard fittings, traps and ventilating pipes.

Costs for various systems for five-storey flats

System	*Cost in £'s*
Two-pipe fully vented	206
One-pipe fully vented	171
One-pipe w.c.'s vented only ...	122
Single stack—no venting	98

It was made clear that on the evidence now established, properly designed single stack and simplified one-pipe systems are less expensive, and no less safe and efficient than two-pipe drainage.

Rainwater discharging into soil pipes: Mr. Croft pointed out that the Public Health (London) Act, 1936, and the Draft Revised Bye-Laws of the LCC accept this practice. There is no reason to prohibit this practice where the inlet of the rainwater pipe is so situated that when acting as a vent to a drain it will not cause a nuisance, particularly as it is reported that for the past 100 years a number of soil stacks in Edinburgh have been used to take rainwater and that several new buildings in course of erection in Edinburgh the soil stacks have been designed to serve this dual purpose. Also the rainwater from a number of schools and multi-storey buildings in London has been satisfactorily dealt with in this way. In the circumstances it would seem that the parent Public Health Act (not the London one) and the Model Byelaws are out of date in this respect.

Gradients: A common practice is to accept the rule that fall of a pipe is found by multiplying the diameter by ten, i.e. 1 in 40 for a 4 in. pipe, 1 in 60 for a 6 in. pipe, without considering the flow. Research on this matter has produced evidence that 4 in. pipes may be satisfactorily laid within a range of gradients of 1 in 70 to 1 in 15. Obviously great economies can ensue from reliable knowledge of this kind. Another point made was the fact that many authorities permit 20 houses to be drained by one 4 in. diameter pipe, thereby ensuring that the depth of flow is increased over that in a 6 in. pipe, and the flushing effect is also increased, so reducing the tendency for blockage. The figure of 20 houses on one 4 in. pipe should not be regarded as a maximum in the light of present day experience.

Grease-traps to kitchens: Mr. Croft made several telling points on the use of such traps and made clear that they were rarely if ever necessary or efficient.

Intercepting traps: The speaker stated that contemporary research on the bacteriological contamination of air in sewers and drains does not support the common theory that house drains should be intercepted from sewers to eliminate the risk of disease. He inferred that the omission of intercepting traps would not only keep air in sewers and drains cleaner by reason of increased natural ventilation but would remove one of the chief causes of drain blockage.

Plumbing within buildings: Mr. Croft contended that present day plumbing practice rendered the risk of drain air leakage in buildings negligible and the placing of plumbing inside a building would reduce maintenance costs as well as improve the external appearance of buildings.

Drains within buildings: Certain absurdities exist in this connection. Firstly the fresh air inlets to most drainage are usually defective. Then the point already made that the incidence of disease from foul air emanations is now considered a minor risk as compared to the risk from foul drinking water or contaminated milk. Also pipes within a building are protected from damage by traffic or frost by the building itself. Then there is usually a concrete slab over the site. Why then the need for 6 in. of concrete round stoneware pipes placed in the ground below buildings? Byelaws should be so framed as to require this precaution only in circumstances warranting it.

THE INDUSTRY

From the Industry this week Brian Grant reports on coloured plastic sheeting, glass cladding, roof vents, water heating by paraffin, two other new boilers, two new washing machines and a new sink unit.

PLASTICS IN PLAIN COLOURS

Over the past years Formica sheeting has been available in many different patterned colours, but there has been no plain sheeting other than in black. The manufacturers have now added five strong plain colours to their range—blue, yellow, beige, red and grey. The absence of plain colours in the past has been the lack of a good quality paper for backing, for any paper defects are magnified during the process of manufacture, so that mottled and linen textures have been necessary in order to hide minor blemishes in the finished surface. Better quality paper is now available and this explains why the cost of the new colours is 4s. 6d. per square foot as opposed to 4s. for patterns. Two or three further colours will be available later on and will be sold, like the present range, in panels 4 ft. wide and in lengths of 8 and 9 feet. (*Thomas De La Rue & Co. Ltd.*, 84 *Regent Street, London, W.*1.)

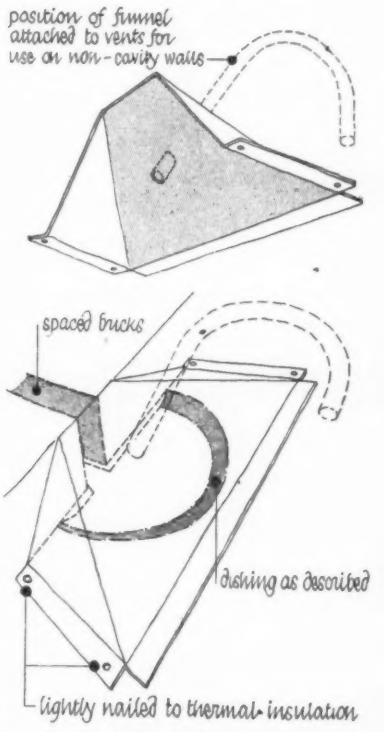
GLASS CLADDING MATERIAL

Pilkington Brothers have just introduced a new product called Muroglass, which is intended for the cladding of steel-framed buildings in the spaces between continuous bands of fenestrations. Muroglass consists of rough cast glass to one side of which is applied a film of unmelted vitreous enamel during the process of manufacture. The heat in the main ribbon of glass melts the enamel and the two glasses fuse together, the result being a single piece of glass with a thin skin of opaque coloured glass on one side. The colour is always applied to the non-patterned side of the glass, which should be fixed with the coloured surface inside. The external surface is lightly textured to prevent hard reflections and is to all intents and purposes self-cleaning.

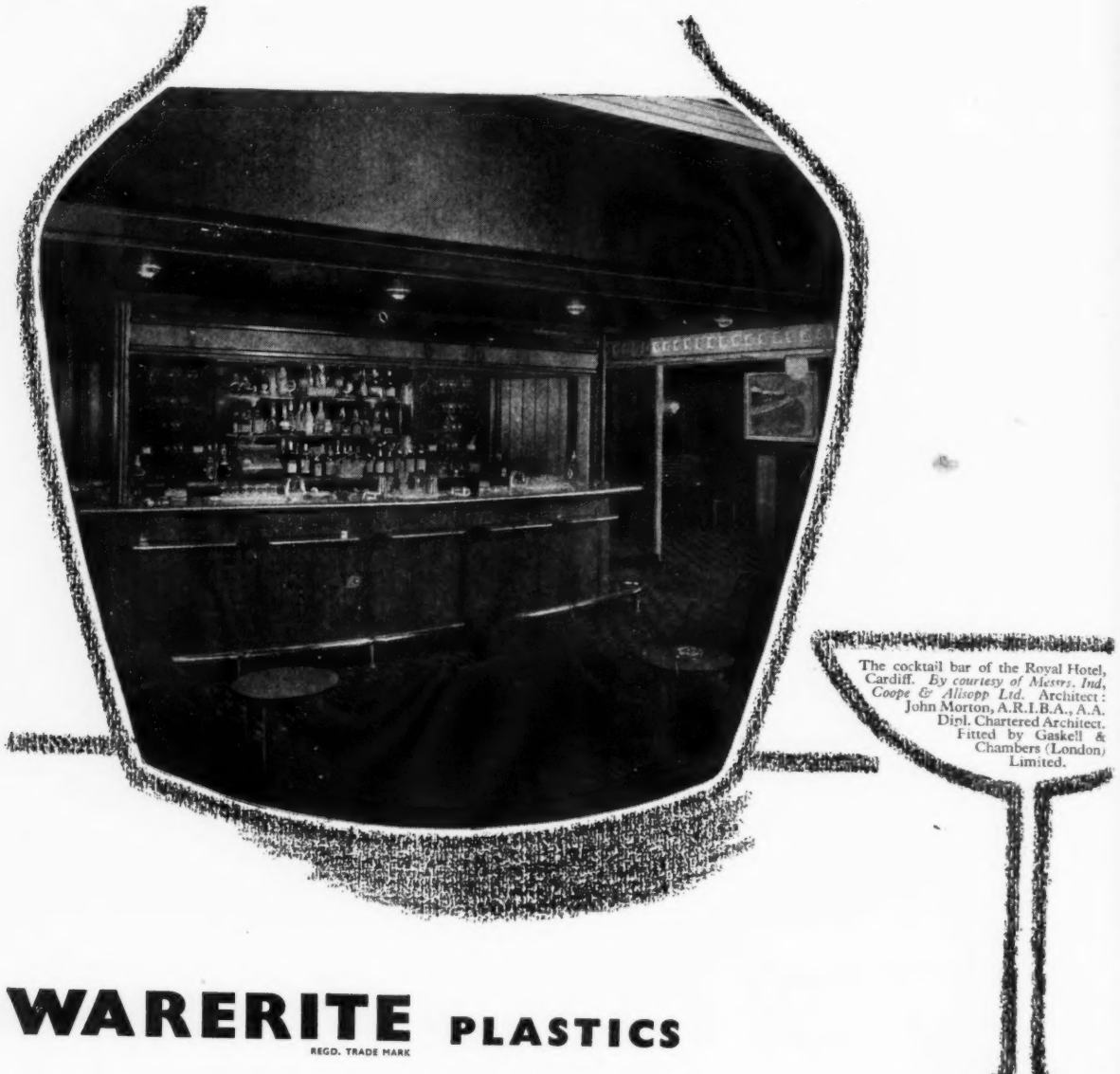
The new glass is available at present in six different colours, red, green, light and dark blue, grey and yellow, but the range will soon be extended to include light green and pink. The supply of special colours presents a certain amount of difficulty, but for any jobs requiring more than 10,000 square feet in a special colour a possible production time would be about three months. The price is from 3s. 6d. to 4s. a square foot and the standard sizes are 24 in. and 48 in. wide, with lengths up to 100 in.; other widths and greater lengths are available at slightly higher prices. Standard thickness is ¼ in. and the material is produced with or without wire mesh embedded. (*Pilkington Bros. Ltd., St. Helens, Lancs.*)

ASPHALTE ON INSULATED ROOFS

Messrs. Paramount Asphalte have noticed that asphalte membranes and bituminous felt roofs, when laid on insulating materials containing entrapped air, tend after a time to crack and lift. This, they suggest, is due to the expansion of air or water vapour in the insulating material, which can easily exert the comparatively small pressure necessary to lift an impervious membrane. They have therefore produced various types of vent fitting, which are nailed to the insulating material after the waterproof membrane and



Sheet metal vent for the escape of air or water vapour from under asphalte or felt coverings. Top: underside view of vent; Above: vent shown at junction of flat roof with parapet.



The cocktail bar of the Royal Hotel, Cardiff. *By courtesy of Messrs. Ind, Coope & Allsopp Ltd.* Architect: John Morton, A.R.I.B.A., A.A. Dipl. Chartered Architect. Fitted by Gaskell & Chambers (London) Limited.

WARERITE PLASTICS

REGD. TRADE MARK

are called to the bar

Hardwearing WARERITE Laminated Plastics can take on the hardest assignments—like the top of this new cocktail bar. Made by the London branch of Gaskell & Chambers Ltd. for the Royal Hotel, Cardiff, the top is in a colourful WARERITE 'Raindrop Red' pattern, which blends perfectly with the teak woodwork and brass setting of the bar. Long-lasting and smooth; resistant to cigarette burns; unharmed by liquids and stains; easily wiped clean and dry, WARERITE is an ideal surface for any busy bar or counter top.

WARERITE Laminated Plastics are available in many different patterns and Woodprints. Please write for details of this versatile material to:

WARERITE LIMITED (Unit of Bakelite Limited) WARE · HERTS · TELEPHONE: WARE 502

TGA W176

screed have been cut away. These fittings are known as Parovents, and it is suggested that one fitting for every 20 sq. yds. of roof area is enough. The type illustrated is intended for use at the junction between roofs and parapet walls, space being left between bricks so that vapour can pass into the cavity: with a solid wall a vent pipe is provided (shown dotted in the diagram) and a small asphalte collar is formed round the base of it. (*Paramount Asphalte & Flooring Co. Ltd.*, 149, *Kennington Park Road, London, S.E.*11.)

WATER HEATING BY PARAFFIN

In a recent instalment of these notes, reference was made to a paraffin burner intended for fitting inside existing domestic boilers. One of the Flavel group of companies has now produced the Oilmaster, a self-contained storage water heater with a 30-gallon cylinder, suitable for use with paraffin or most types of gas oil.

Two models are produced, with outputs of 25,000 and 35,000 BTUs per hour, which will provide 30 and 50 sq. ft. of heating area as well as the normal household hot water supply, and the manufacturers claim that the average paraffin consumption for the smaller model is ¾ gallon per day. Oil flow is controlled by an on and off valve, but there is also a thermostat which can be adjusted to give a water temperature between 120 and 160 degrees. There is also a safety device which cuts off the oil flow if the flame should be extinguished. Oil flow can vary between a maximum of 2 pints and a minimum of 0.152 pints per hour. There is a 4½-gallon daily service tank for use if an outside tank is not required. Price of the complete unit is £67 3s. 6d. (*Turley & Williams Ltd.*, 74/76, *Borough High Street, London, S.E.*1.)

SOLID FUEL BOILER

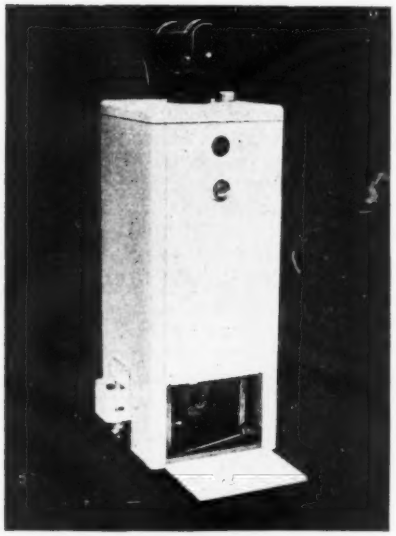
Ideal Boilers have just announced a new O-XLC boiler which, from the beginning of this year, replaced the previous O-XLB model: price remains unchanged at £15 7s. 6d. Changes include an easily-operated rocking grate, a re-designed hot-plate with a larger square-fronted fuelling lid, and improved draught control. Rating is 20,000 BTUs per hour. (*Ideal Boilers and Radiators Ltd., Ideal Works, Hull.*)

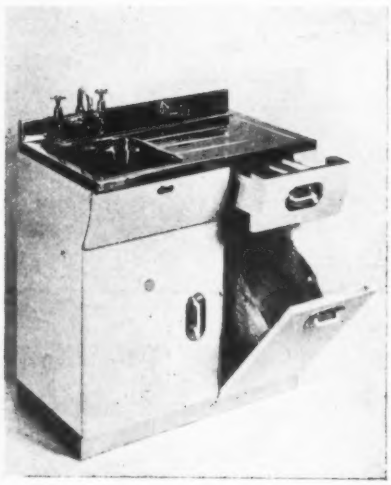
GAS-FIRED BOILER

The new Kayenco Popular gas-fired boiler has an hourly output of 45,000 BTUs and costs only £54, including tax, which seems to make it the lowest priced of its kind on the market. The makers guarantee an efficiency of 80 per cent. and claim that the flues need cleaning only once a year. There is, of course, a thermostat, and also a flame failure device which cuts off the gas if the flame should go out. Dimensions are 32 in. high by 22 in. wide, with a depth of 14 in.; finish is cream enamel. (*Frederick Kay* (*Engineering*) *Ltd., Nashleigh Works, Chesham, Bucks.*)

WASHING MACHINES

English Electric have recently announced two new washing machines, which hold 10 gallons of water and will deal with 8 or 9 lb. of laundry. The only difference between the two models is that one of them has a 3-kW. heating element underneath the agitator, protected so that clothes cannot come in contact with it, while the other model (4004) is dependent for its hot water upon the domestic supply. Both models have power-drive wringers, with the usual quick-release safety device to prevent damage to fingers trapped between the rollers: the wringers are quickly detachable and can be stowed away in a compartment in the base of the machine. Prices, not including purchase tax, are £61 17s. for model 4005 (illustrated) with immersion heater, model 4004 costing £52. (*The English Electric Co. Ltd., Marconi House, Strand, London, W.C.*2.)

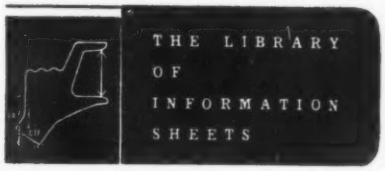




Top left: the 'Oilmaster' paraffin or gas oil boiler. There are two models of 25,000 and 35,000 BTU rating. Top right: The 'Ideal' O-XLC solid fuel boiler of 20,000 BTU rating. Above left: English Electric model 4005 washing machine. This has its own water heater and can deal with 8 or 9 pounds of laundry. Another model (4004) must be supplied with hot water. Above right: The 'English Rose' V45 sink unit designed for small flats.

SMALL SINK UNITS

The photograph above right shows a new small English Rose sink unit (V45) designed for small flats and measuring 36 in. wide by 22 in. deep, though the height remains standard at 36 in., or 3 in. more including the splashback. The sink and draining board are stainless steel, the sink being 14 in. by 16 in. by 7 in. deep: the cabinet is aluminium, enamelled white, cream or green. Right- or left-hand units can be supplied, and the hopper-hung door under the cutlery drawer carries a 1 cu. ft. rubbish container fitted with a carrying handle. (*C.S.A. Industries Ltd., Warwick.*)



27.B10 *REFERENCE BACK*

Readers are asked to note that the manufacturer's address is now: 58, Highgate West Hill, London N.6 Telephone:

Readers requiring up-to-date information on building products and services may complete and post this form to the Architects' Journal, 9, 11 and 13, Queen Anne's Gate, S.W.1

ENQUIRY FORM

I am interested in the following advertisements appearing in this issue of "The Architects' Journal." (BLOCK LETTERS, and list in alphabetical order of manufacturers names please.)

.....

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Please ask manufacturers to send further particulars to :—

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PROFESSION or TRADE.....

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ADDRESS.....

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12.1.56

Fitzroy 1221 (7 *lines*). *Telegrams: Kulmco London N.6*

REFERENCE BACK

Readers are asked to delete the following entries to cancelled Sheets which were incorrectly included in the Alphabetical Index to December 15, 1955. *Main entry "Floor Construction," delete "clay block, prestressed . . . 20.B1" and "concrete, dovetailed steel sheeting . . . 20.Z12 20.Z13."*

36.B1 *REFERENCE BACK*

Readers are asked to note that in the list of Revisions for 1955 *an omission was made in the entry for Sheet* 36.B1, *heading "Construction," sub-heading "Hose." The amendment refers to the lengths of* ¾*-in. hose.*

Announcements

PROFESSIONAL

The City Architect, Exeter City Council, 2, Southernhay West, Exeter, is revising his Catalogue of Building Products and will be pleased to receive current trade literature and technical booklets.

Ernest W. Haysom, F.R.I.B.A., has moved from Overdale, 168, Station Road, Knowle, to Curtis House, Poplar Road, Solihull, Warwickshire. (Tel.: Solihull 4326.) He will be pleased to receive Trade Catalogues at this address.

Newberry & Wyatt, A/A.R.I.C.S., Chartered Quantity Surveyors, have moved to Coastal Chambers, 172, Buckingham Palace Road, London, S.W.1. (Tel.: SLOane 8291/2.)

TRADE

Wadkin Ltd., Leicester, woodworking and machine tool manufacturers, announce that they have arranged to acquire a group of four woodworking machinery manufacturing companies by the purchase of the whole of the Issued Share Capital of J. Sagar & Co. Ltd., Canal Works, Halifax, the parent company. The three wholly owned subsidiaries of this company are: Sagar Burs-green Ltd., Canal Works, Halifax; Burrows Green Ltd., Trawden, Colne, Lancs.; Houghton Engineers Ltd., Houghton-le-Spring, Co. Durham. J. B. Bullivant, Deputy Chairman of Wadkin Ltd., will be appointed the Chairman of J. Sagar & Co. Ltd., and all its subsidiaries, and other Directors of Wadkin Ltd. will be appointed to the various Boards. H. Gordon Sagar will remain as a Director of that company and J. G. Sagar as the Managing Director, and the Managing Directors of the subsidiary companies will also continue in their present capacities. J. G. Sagar will be appointed a Director of Wadkin Ltd.

Southerns Ltd., Timber Importers of 16, Temple Back, Bath Street, Bristol 1, have moved to new premises at Hartcliffe Way, Bristol 3. Visitors will be welcomed by Mr. Frank Jones (local manager) and his staff.

Sherwoods Paints Ltd., of Barking, Essex, have appointed P. A. Halsall, a former representative of Smith & Walton Ltd. in the London area, as an Architectural Representative in that area.

From January 1, 1956, The British Rubber Development Board has been renamed The Natural Rubber Development Board. This is to emphasize that its promotional activities are confined to the interests of natural rubber.

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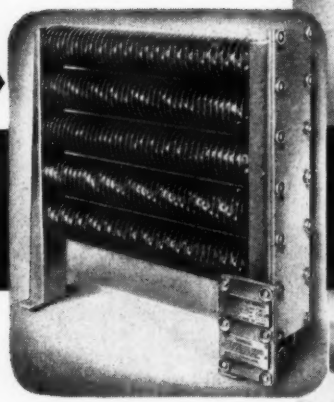

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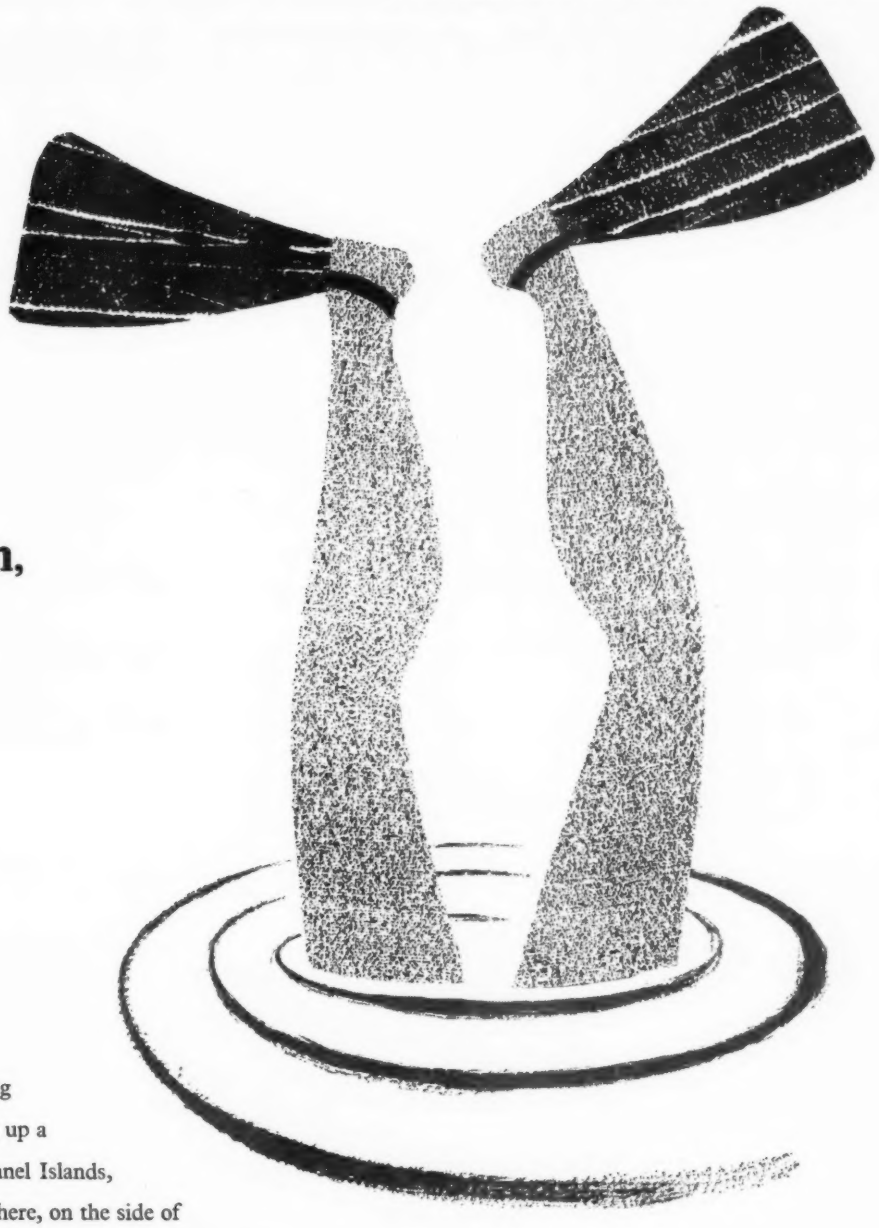
"I'm going down," said the frogman, "to look at our walls"



There are more ways of inspecting a wall surface than that of climbing up a ladder. At a place in the Channel Islands, you dive into 12 feet of water. There, on the side of a certain swimming pool, and very much against our wishes, you will find Pammastic—doing fine. It is not, of course, designed for life underwater. But this happy misuse provides a dramatic demonstration of a point that deserves publicity—*Pammastic is the plastic emulsion paint that can be used outside a building as well as inside.* Suitable for most surfaces, it needs no primer or undercoating, and dries in an hour. Its fine matt surface can be washed down and *scrubbed* clean repeatedly. Further information about the remarkable properties of Pammastic—and its notable complementaries, Pammel (the luxury gloss enamel), Pammelette (the superfine eggshell enamel) and Pammatt (the superfine flat enamel)—is available on request.

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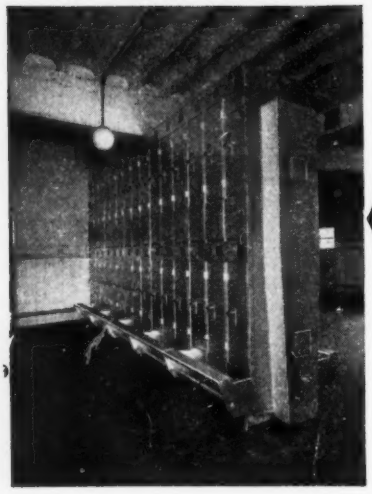

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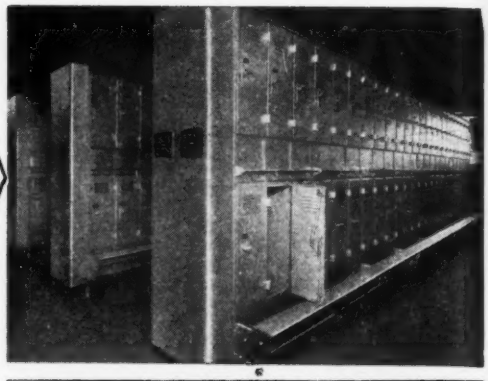

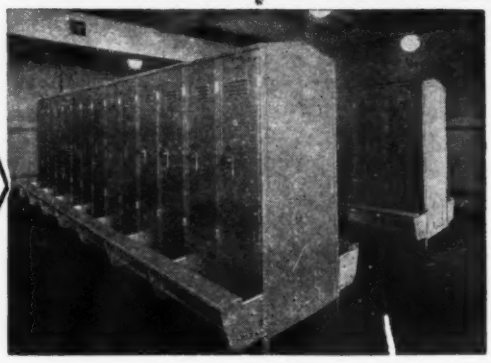

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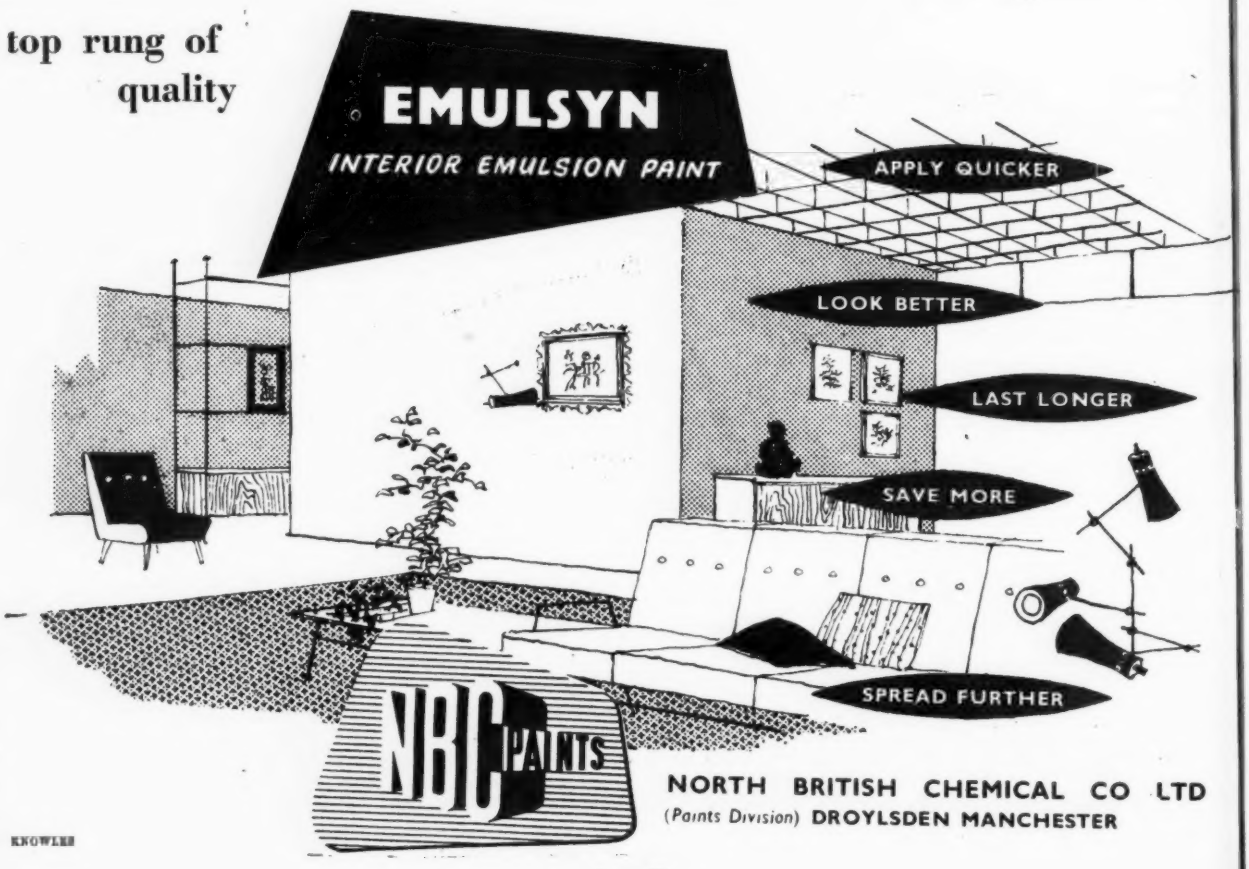

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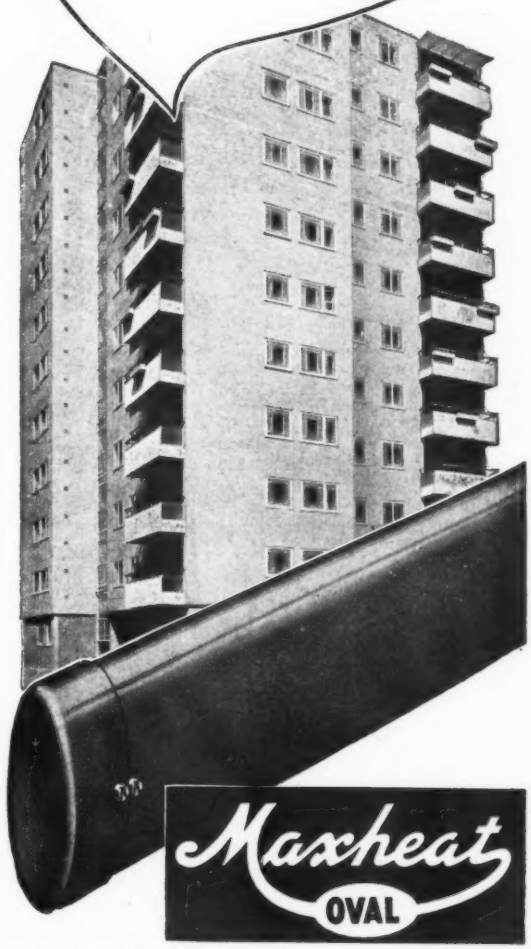

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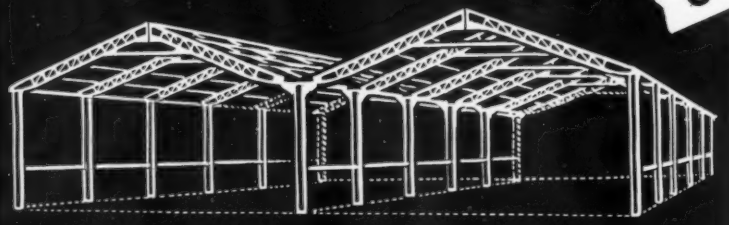

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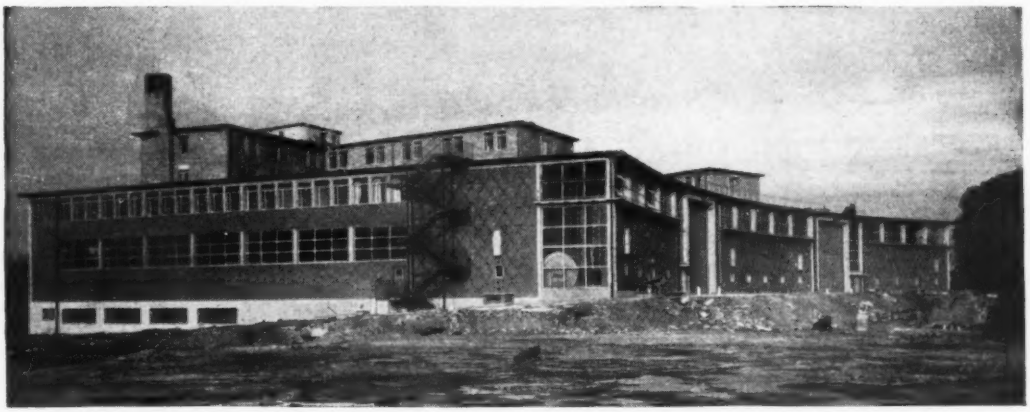

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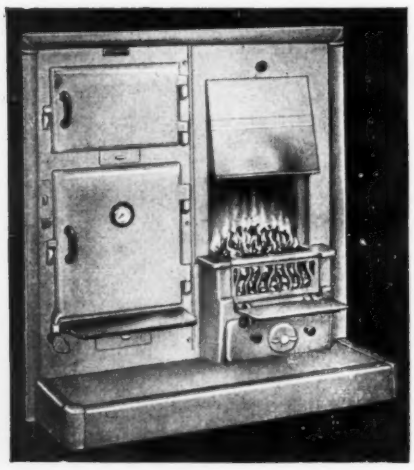

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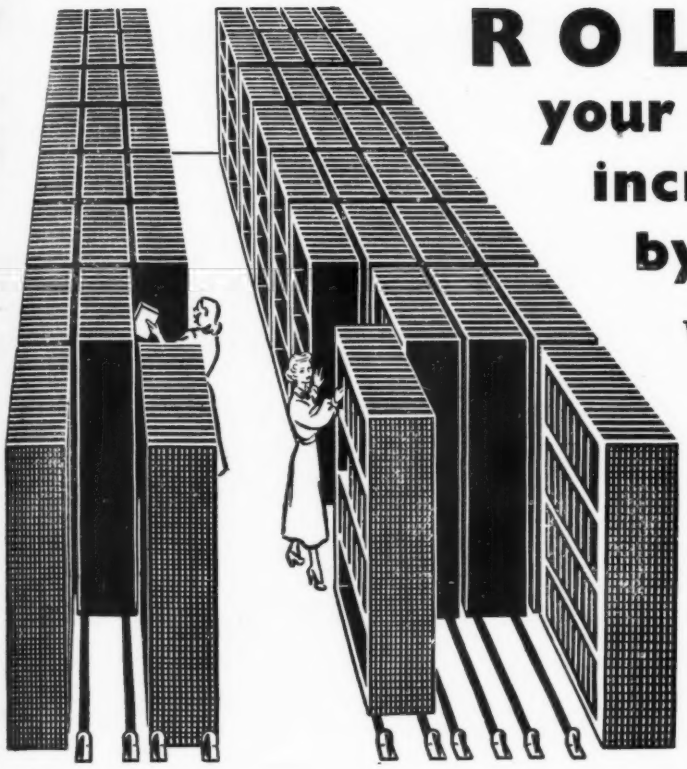

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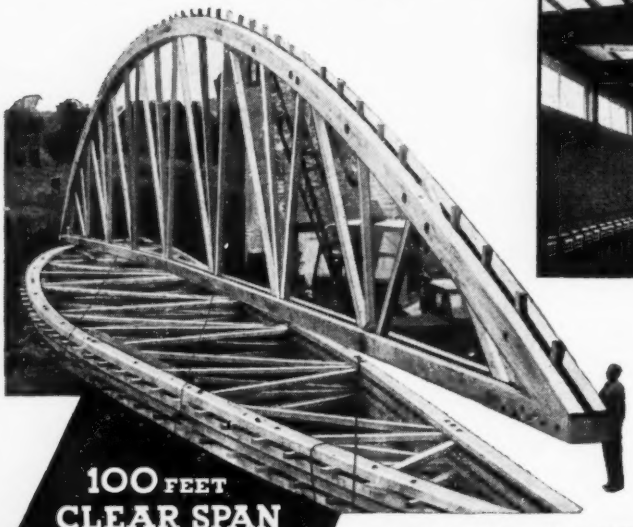

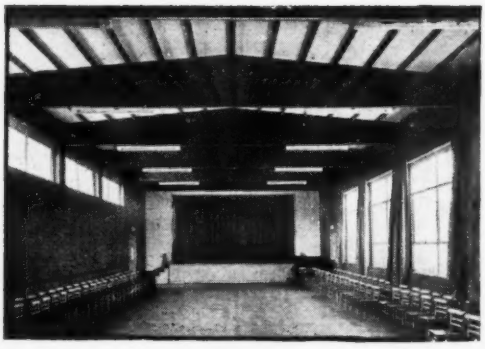

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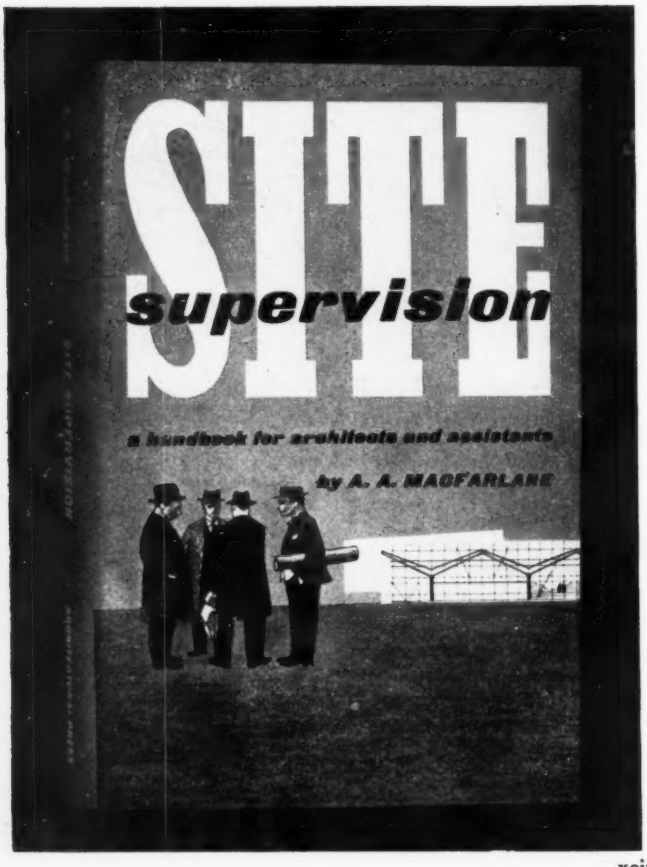

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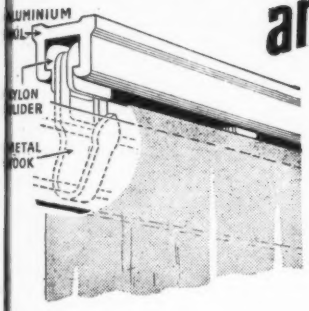

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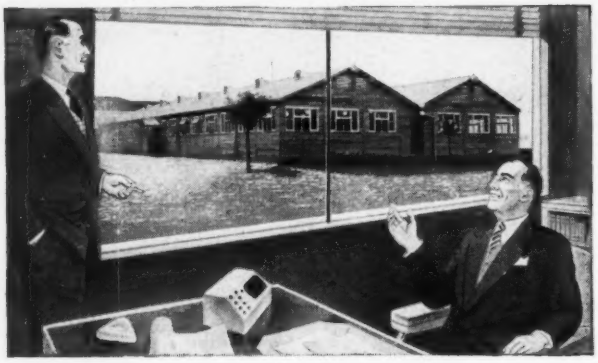

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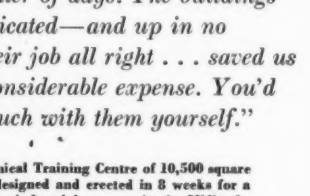

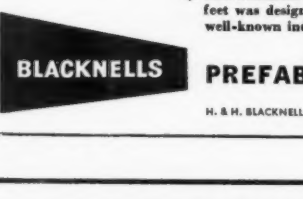

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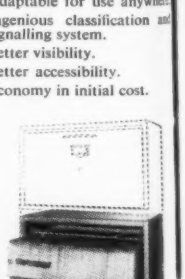

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CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

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

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

HAYES AND HARLINGTON URBAN DISTRICT COUNCIL.

Applications are invited for:—

(*a*) ARCHITECTURAL ASSISTANT (PERMANENT), Grade A.P.T. II, *i.e.*, £560—£640 p.a.; (*b*) SENIOR ARCHITECTURAL ASSISTANT (TEMPORARY), Grade A.P.T. IV, *i.e.*, £675—£825 p.a., plus London weighting in both cases, 21-25 years £20 p.a., 26 years and over £30 p.a. Candidates for (*a*) must have passed the R.I.B.A. Inter. Exam., good experience of housing work with a local authority; (*b*) must be a Registered Architect, have good general experience in design and construction in relation to municipal housing and other works, and capable of supervising large building contracts. The Council is unable to provide housing accommodation for either of these appointments. Further particulars and form of application available from the undersigned, which when completed must be returned as soon as possible.

GEORGE HOOPER,
Clerk and Solicitor.

Town Hall, Hayes, Middx. 3712

COUNTY BOROUGH OF STOCKPORT

ASSISTANT ARCHITECT required. Salary A.P.T. III (£600—£725) per annum according to qualifications and experience.—Applications, giving names of two referees, to Borough Architect, Town Hall, Stockport, by 21st January, 1956. Post pensionable subject to medical examination. Applicants must state whether related to any member or officer of Council. 7011

COUNTY BOROUGH OF STOCKPORT

SENIOR QUANTITY SURVEYOR required, A.P.T. Grade VII (£900—£1,100 per annum).

QUANTITY SURVEYORS required, A.P.T. Grade IV (£675—£825), and Grade III (£600—£725).

Posts pensionable, subject to medical examination. Canvassing disqualifies.—Applications disclosing whether related to any member or senior officer of the Council, and giving names of two referees, to be sent to Borough Architect, Town Hall, by 21st January, 1956. 7012

BIRMINGHAM REGIONAL HOSPITAL BOARD ARCHITECTURAL STAFF APPOINTMENTS

(Donald A. Goldfinch, E.R.D., F.R.I.B.A., Dip.T.P —Architect to the Board)

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

(*b*) ASSISTANT QUANTITY SURVEYORS (2). £640 × £25 (4) × £30 (4) × £35 (2)—£930. Final R.I.C.S. or I.Q.S. or I.A.A.S. and experience in taking off and preparing bills of quantities and settling final accounts essential.

(*c*) ASSISTANT ENGINEERS (2)—£640 × £25 (4) × £30 (4) × £35 (2)—£930 according to age and experience. A.M.I.H.V.E. desirable. Duties include preparation of plans and specifications and site supervision of heating, ventilating, steam, water and other engineering services as well as steam boiler house installations. Hospital experience not essential.

(*d*) ARCHITECTURAL ASSISTANTS (2) (required for large new hospital project). £480 × £20 (7) × £25 (2)—£670. Point of entry according to experience, maximum £560. Inter-R.I.B.A. essential.

(*e*) JUNIORS (three architectural). Male £170 (aged 16) maximum £400 (aged 25). Female £165 (aged 16) maximum £330 (aged 25). Salary under revision, equal pay to be implemented. Successful candidates expected to study for professional examination.

All appointments superannuable.—Apply, naming three referees, to Secretary, 10 Augustus Road, Birmingham 15, by 23rd January, 1956. 7013

SURREY COUNTY COUNCIL

Applications are invited for following appointments:—

(1) ASSISTANT ARCHITECT, GRADE IV, £675 × £30—£825 p.a. plus London allowance. Must be Associate Member R.I.B.A.

(2) ARCHITECTURAL ASSISTANT, GRADE II, £560 × £20—£640 p.a., plus L.A. Must be of good general training, and preference given those who have passed Inter. R.I.B.A.

Full details and present salary, accompanied by copies of 3 recent testimonials, to County Architect, County Hall, Kingston, as soon as possible. 7031

EAST SUSSEX COUNTY COUNCIL APPOINTMENT OF AREA PLANNING OFFICER

Applications are invited for the appointment of ASSISTANT COUNTY PLANNING OFFICER in charge of the Area Office at Bexhill at a salary within Grade A.P.T. IV of the National Joint Council scales, according to qualifications and experience.

Applicants must be Corporate Members of the Town Planning Institute and preference will be given to those who also hold a recognised qualification in architecture. Applicants should have had considerable experience in the administration of County Development Plans and the general work connected with the Control of Development in Urban and Rural areas of a County.

The successful applicant will be required to provide a car and travelling allowance will be paid at the rate applicable to an 8 h.p. car in accordance with scales approved by the County Council for essential users. The Council will be able to offer the successful applicant housing accommodation in Bexhill.

The appointment will be terminable by one month's notice on either side; it is superannuable and the successful candidate will be required to pass a medical examination.

Applications, stating age, qualifications and details of experience, together with the names of two referees, should be sent to the undersigned not later than January 31st, 1956.

Applicants must disclose in writing whether or not they are related to any member of the Council or any officer of the Authority. Canvassing will disqualify.

L. S. JAY,
County Planning Officer.

County Hall,
Lewes, Sussex.
22nd December, 1955. 7014

AIR MINISTRY Works Designs Branch requires in London and Provinces (with liability for overseas service) ARCHITECTURAL ASSISTANTS experienced in planning/preparation of working drawings and details for permanent and semi-permanent buildings. Salaries up to £850 (men) and £752 p.a. (women). Starting pay dependent on age, quals. and experience. Paid overtime. Long term possibilities with promotion and pensionable prospects, 4 weeks' leave a year. Natural born British subjects. Write stating age, quals., employment details incl. type of work done to any Employment Exchange quoting Order No. Borough 2303. 3788

COUNTY BOROUGH OF PRESTON.

Appointment of:

(*a*) ASSISTANT ARCHITECT, and (*b*) JUNIOR ASSISTANT ARCHITECT.

Applications are invited for the above-mentioned appointments in the Borough Engineer and Surveyor's Department, Preston.

For appointment (*a*) the salary will be in accordance with the A.P.T. Special Grade. The candidate must be a Registered Architect, also a Corporate Member of the R.I.B.A., having had a good general experience in the design and erection of Public and Educational Buildings, together with Housing Schemes.

For appointment (*b*) the salary will be in accordance with A.P.T., Grade I. The candidate must have completed preliminary professional training and have had some office experience.

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

Standard form of application, obtainable with the Conditions of Appointment, from my Department, should be completed and returned to the undersigned not later than Monday, 30th January, 1956.

W. E. E. LOCKLEY,
Town Clerk.

Municipal Building, Preston. 8024

BURGH OF KILMARNOCK.
BURGH ARCHITECT'S DEPARTMENT.
ARCHITECTURAL ASSISTANT.

Applications are invited from Registered Architects for appointment as Architectural Assistant. Salary and conditions will be in accordance with the recommendations of the Joint Industrial Council for Local Authority Services (Scotland). Salary scale A.P.T. Grade V (£665×£15×£15×£20 to £715). The post is superannuable, and the applicant will require to pass a medical examination satisfactorily. Housing accommodation will be made available if required.

Applications, giving full particulars of age, qualifications, experience and previous appointments held, accompanied by copies of recent testimonials, should be lodged with N. S. Sutherland, Burgh Architect, 64a, Bank Street, Kilmarnock, not later than the 23rd January, 1956.

W. L. WALKER,
Town Clerk.

Council Chambers, Kilmarnock. 8025

METROPOLITAN POLICE.

ARCHITECTURAL ASSISTANTS required for unestablished appointments in New Works Branch of Chief Architect and Surveyor's Department, New Scotland Yard, S.W.1.

Rates of Pay

Men: £463 10. 0. (aged 21) × £20 — £523 10 0. × £25 — £725. Women: £463 10. 0. (age 21) × £15 — £493 10. 0. × £20 — £533 10. 0. × £25 — £645 0. 0.

Annual leave 24 days. Conditioned hours 45½ a week, overtime paid for 1½ hours a week.

Apply to Chief Clerk, Chief Architect & Surveyor's Department, New Scotland Yard, S.W.1. 29th December, 1955. 8039

BEDFORDSHIRE COUNTY COUNCIL.

ASSISTANT ARCHITECTS, A.P.T. IV (£675 to £825).

ARCHITECTURAL ASSISTANTS, A.P.T. II (£560 to £640).

ARCHITECTURAL ASSISTANTS, A.P.T. I (£500 to £580).

SURVEYING ASSISTANT (ESTATE WORK), A.P.T. I (£500 to £580).

TECHNICAL ASSISTANT (RECORDS), A.P.T. I (£500 to £580).

Applications are invited for the above posts in the County Architect's Department, Bedfordshire County Council. Application forms from County Architect, Shire Hall, Bedford, to be returned by 20th January, 1956. 6038

HAWARDEN RURAL DISTRICT COUNCIL.
ARCHITECTURAL ASSISTANT.

Applications are invited for the appointment of Architectural Assistant in the Architect and Surveyor's Department, from persons preferably with previous experience in municipal housing and other architectural work of a Local Authority.

The salary payable will be in Grade A.P.T. III of the National Scheme of Conditions of Service (£640—£765).

A house may be allocated to the successful candidate.

Applications, giving names and addresses of two referees to whom reference can be made, must reach the undersigned not later than the 21st January, 1956. Canvassing will disqualify.

L. G. WATSON,
Clerk to the Council.

Council Offices, Hawarden, near Chester.
3rd January, 1956. 7086

CAMBRIDGESHIRE COUNTY COUNCIL.
COUNTY ARCHITECT'S DEPARTMENT.

Applications are invited for the appointment of TWO ARCHITECTURAL ASSISTANTS, Grade A.P.T. III (£640×£25—£765).

Applicants should be Registered Architects, and preference will be given to Members of the R.I.B.A. They should have experience in the design and construction of public buildings, housing and modern schools; the preparation of specifications and of site supervision.

The appointments are subject to the Local Government Superannuation Acts, 1937 to 1953, the National Scheme of Conditions of Service, a satisfactory medical examination, and termination by one month's notice on either side.

Applications, stating age, present salary, present and previous appointments, details of training, and experience, together with one recent testimonial and the names and addresses of two referees, should be submitted to the undersigned not later than 25th January, 1956.

CHARLES PHYTHIAN,
Clerk of the County Council.

Shire Hall, Cambridge.
2nd January, 1956. 7088

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

SURVEYING ASSISTANT required in the Architect's Department. Salary within the scale £480 to £670, plus £20—£30 London weighting. Candidates should have passed the Intermediate Examination of the R.I.C.S. (IIIB), and be competent specification writers and able to prepare working drawings for alteration works. The work is varied and interesting, and the Board operates a scheme of financial assistance to students studying for professional examinations.

Apply, stating age, qualifications and experience, and giving names of two referees, to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 31st January. 7064

BOROUGH OF BLYTH.
SENIOR ARCHITECTURAL ASSISTANT.

Applications are invited for the post of Senior Architectural Assistant, in the Borough Engineer's Department, at a salary in accordance with the Special Grade for qualified Architectural Assistants of the National Scheme of Conditions of Service.

Applicants should be Registered Architects or hold the Final Examination of the R.I.B.A., with experience in Municipal housing.

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

Applications, suitably endorsed and accompanied by the names of two referees, must reach the undersigned on or before 19th January, 1956.

Canvassing will disqualify, and applicants must state whether they are related to any member or senior official of the Council.

HOUSING ACCOMMODATION WILL BE PROVIDED IF NECESSARY.

E. W. CARTER,
Town Clerk.

"Dinsdale," Marine Terrace, Blyth,
Northumberland. 7065

COVENTRY CORPORATION require GROUP ARCHITECT, A.P.T. VII (£900—£1,100), to take charge of important new group undertaking development work in collaboration with Architectural Divisions, analysing comparative costs of new methods and materials, assessing results of completed schemes, and responsible for technical library and samples. If desired, a later opportunity will be given to transfer to normal architectural work. Housing accommodation may be available. Application forms and conditions from Arthur Ling, Bull Yard, Coventry, returnable within 15 days of publication. 7077

CARSHALTON URBAN DISTRICT COUNCIL.
Population 62,000.

TWO ASSISTANTS, Architectural Section of Engineer and Surveyor's Department. Must hold Final Examination certificate of the R.I.B.A. and be Registered Architects. Must also be competent in design and construction, and have had a full and varied practical experience. Salary within Grade A.P.T. IV, plus London weighting (£740—£915).

Applications on forms obtainable from the undersigned must be returned with names of three referees not later than 26th January, 1956. Canvassing will disqualify.

C. H. DURRANT,
Clerk of the Council.
Council Offices, The Grove, Carshalton, Surrey. 7067

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY.

Applications are invited for the following appointments:—

ARCHITECT. To exercise critical supervision of planning and construction of new College buildings and laboratories. Must have lively mind and be able to draw upon a good experience. Salary not less than £1,000 per annum.

ARCHITECTURAL DRAUGHTSMAN or DRAUGHTSWOMAN. Salary about £500 per annum.

Further particulars from Director of Building Works, Imperial College, Prince Consort Road, London, S.W.7, to whom applications should be made by 28th January, 1956. 7069

MANCHESTER CITY ARCHITECT'S DEPARTMENT.

Applications are invited for the following appointments:—

PERMANENT STAFF:

(*a*) SENIOR ASSISTANT ARCHITECT. Salary A.P.T. Grade IV, £710—£885 per annum. Applicants must be A.R.I.B.A., with some years' office experience.

(*b*) ARCHITECTURAL ASSISTANT. Salary, Basic Grade, £690—£840 per annum. Applicants must have passed parts 1 and 2 of the R.I.B.A. Final Examination or its equivalent, and have had at least 5 years' experience, including the period spent in theoretical training.

(*c*) ARCHITECTURAL ASSISTANT. Salary A.P.T. Grade II, £595—£675 per annum. Applicants must have passed the Intermediate Examination of the R.I.B.A. or its equivalent.

(*d*) TECHNICAL ASSISTANT/DRAUGHTSMAN. Salary A.P.T., Grade II, £595—£675 per annum. Applicants should be experienced in the design and detailing of all types of school furniture.

(*e*) STRUCTURAL ENGINEERING ASSISTANT. Salary A.P.T. Grades I/II, £530—£675 per annum. Applicants must be experienced in the design of structural steelwork and reinforced concrete.

(*f*) ASSISTANT HEATING, VENTILATING AND MECHANICAL ENGINEER. Salary Basic Grade, £690—£840 per annum. Applicants should be experienced in the design of heating and ventilating installations.

(*g*) ASSISTANT HEATING, ETC., ENGINEER. Salary A.P.T., Grades I/II, £530—£675 per annum. Applicants should be experienced in the design of heating installations.

(*h*) SENIOR ASSISTANT QUANTITY SURVEYOR. Salary A.P.T. Grade IV, £710—£885 per annum. Applicants must have had considerable experience in the preparation of Bills of Quantities and Specifications, Interim Valuations and settlement of final accounts for all classes of local authority building work.

(*i*) ASSISTANT QUANTITY SURVEYOR. Salary Basic Grade, £690—£840 per annum. Applicants should be experienced in the preparation of Bills of Quantities and Specifications, Interim Valuations and settlement of final accounts for all classes of local authority building works.

(*j*) QUANTITY SURVEYING ASSISTANT. Salary A.P.T., Grades I/II, £530—£675 per annum. Applicants should have had not less than 3 years' experience in a Quantity Surveyor's office.

TEMPORARY STAFF:

(*k*) SENIOR ASSISTANT ARCHITECT. Salary A.P.T. Grade IV, £710—£885 per annum. Applicants must be A.R.I.B.A., with some years' office experience.

(*l*) ARCHITECTURAL ASSISTANT. Salary Basic Grade, £690—£840 per annum. Applicants must have passed parts 1 and 2 of the R.I.B.A. Final Examination or its equivalent, and have had at least 5 years' experience, including the period spent in theoretical training.

Further particulars and form of application should be obtained from the City Architect, Box No. 488, Town Hall, Manchester, 2. The completed forms to be returned to the same address by 28th January, 1956.

Canvassing is prohibited. 8018

METROPOLITAN BOROUGH OF HOLBORN. BOROUGH ARCHITECTS' DEPARTMENT.

JUNIOR ASSISTANT ARCHITECT required. R.I.B.A. Intermediate or equivalent. Salary A.P.T. III (£600—£725, plus London weighting). Application to Town Clerk, Town Hall, High Holborn, W.C.1. 7075

MIDDLESEX COUNTY COUNCIL—COUNTY PLANNING DEPT.

SENIOR PLANNING ASSISTANT (A.P.T. IV, £705—£855 p.a., including London weighting, increase under consideration). Should have good experience and qualifications in architecture, planning or surveying. Appointment will be made at appropriate point on grade, according to qualifications and experience. Established, pensionable, subject to medical assessment and prescribed conditions. Application forms from County Planning Officer, 10, Gt. George Street, S.W.1, returnable by 26th January (quote S.51 AJ). Canvassing disqualifies. 7084

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

The Board are engaged on a number of new building projects, including a new hospital at Welwyn, and the following staff are required to fill new posts on the establishment created to deal with the increased work:—

(*a*) SENIOR ASSISTANT ARCHITECT. Applicants must have had considerable experience in design and construction, preferably in hospitals and associated buildings. Salary scale £920×£30 (5)×£25—£1,095, plus £40—£50 London weighting.

(*b*) ASSISTANT ARCHITECTS. Good experience of design and construction necessary, preferably in hospital work. Salary scale £640×£25 (4)×£30 (4)×£35 (2)—£930, plus £20—£40 London weighting.

(*c*) ARCHITECTURAL ASSISTANTS. To give technical assistance to professional officers. Salary scale £480 (age 21 and over)×£20 (7)×£25 (2)—£670, plus £20—£30 London weighting.

Applicants for (*a*) and (*b*) above must be Associate Members of the R.I.B.A., and for (*c*) must have Inter. R.I.B.A. Commencing salary above minimum may be paid to successful candidates under (*b*) and (*c*), according to appropriate experience since qualification. Posts are subject to Whitley Council conditions, and are superannuable. Apply, stating which post and giving age, qualifications (with dates) and experience, with names of two referees, to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 31st January, 1956. 7074

SWADLINCOTE URBAN DISTRICT COUNCIL. APPOINTMENT OF ARCHITECTURAL ASSISTANT.

Applications are invited for the position of Architectural Assistant on the permanent staff of the Engineer and Surveyor Department in accordance with salary Grade A.P.T. III.

Preference will be given to applicants holding the Intermediate Examination of the Royal Institute of British Architects or having equivalent qualification.

Applications, stating age, training, experience, past and present appointments, together with the names and addresses of two referees, should be delivered to the undersigned not later than the 23rd January, 1956.

HOUSING ACCOMMODATION WILL BE PROVIDED, IF REQUIRED.

J. SANDIFORD.
Clerk of the Council.
Clerk's Office, Council Offices, Swadlincote, Burton-on-Trent.
3rd January, 1956. 8002

COUNTY BOROUGH OF GLOUCESTER. CITY ARCHITECT'S DEPARTMENT.

Applications are invited from persons having suitable qualifications and/or experience for the following permanent appointment:—

ASSISTANT ARCHITECT (£690×£30—£840). Superannuable post. Medical examination. Municipal experience not essential. Contemporary approach preferred. Opportunity to take responsibility of supervising contracts. Office commitments include multi-storey flats redevelopment, schools, various public buildings, including R.C. shell construction.

Applications, stating age, married or single, training, qualifications, experience, previous and present appointments with copies of recent testimonials or names of referees, to J. V. Wall, A.R.I.B.A., City Architect, Suffolk House, Gloucester, not later than 23rd January, 1956. 7099

COUNTY OF LINCOLN—PARTS OF KESTEVEN ENGINEERING ASSISTANT (HEATING) A.P.T. III

Applications are invited for the above appointment in the County Architect's Department, for work on designing, estimating and supervising installation and maintenance of heating schemes in County buildings.

Preference will be given to applicants who have passed the Intermediate Examination of the Institute of Heating & Ventilating Engineers or equivalent. Appointment will be subject to the usual conditions of service for Local Authorities' staff.

Applications, stating age, experience, qualifications, past and present appointments with dates and salaries, together with copies of two recent testimonials, should be received by the undersigned not later than the 31st January, 1956.

J. E. BLOW,
Clerk of the County Council.
County Offices,
Sleaford, Lincs. 8008

THE LONDON HOSPITAL, Whitechapel, E.1, requires SENIOR ARCHITECT. Salary £850—£950 p.a. Applications, stating age, experience, etc., to the House Governor. 7059

BRACKNELL DEVELOPMENT CORPORATION.

Applications are invited from Corporate Members of the R.I.B.A. for the post of ARCHITECT, Grade III. Salary £975×£50 (3)×£45 (1)—£1,170.

Superannuation schemes. Medical examination. Housing available in due course. Apply by 20th January, 1956, giving age, education and qualifications; experience and appointments held (with dates and salaries), and names of two referees, to the General Manager (A.III), Bracknell Development Corporation, Farley Hall, Bracknell, Berks. 7091

LEEDS REGIONAL HOSPITAL BOARD. SECOND INSERTION.

Applications are invited for the following appointments:—

(*a*) PRINCIPAL ASSISTANT QUANTITY SURVEYOR (£1,050×£40 (5)×£25 (1)—£1,275 per annum).

Applicants must hold the Corporate Membership of the Royal Institution of Chartered Surveyors and have had experience in the Settlement of Final Accounts, Specifications, Estimates, and in the preparation of Bills of Quantities.

(*b*) SENIOR ASSISTANT ENGINEER (MECHANICAL) (£920×£30 (5)×£25 (1)—£1,095 per annum).

Applicants must hold the Corporate Membership of the Institution of Mechanical or Civil Engineers, and possess experience in a senior capacity in the design of boiler plants, steam, heating, hot water and ventilating systems, and have a sound knowledge of all associated mechanical equipment.

Applications, giving age, present salary, qualifications and experience, together with names and addresses of two referees, to the Secretary, Park Parade, Harrogate, within 14 days. 8000

NEWCASTLE REGIONAL HOSPITAL BOARD. ARCHITECTURAL STAFF APPOINTMENTS.
(Philip H. Knighton, M.B.E., A.R.I.B.A., Regional Architect).

In connection with a large new hospital project, the Board invites applications for the following permanent (superannuable) appointments on the Headquarters' Staff of the Regional Architect in Newcastle.

(*a*) ASSISTANT ARCHITECT.

Applicants must be Registered Architects. Commencing salary within Grade £640×25 (4)×£30 (4)×£35(2) to £930 per annum, with an additional increment for each year of practical experience since becoming a Registered Architect, provided that the additional increments are not more than the number of years by which the officer's age exceeds 25.

(*b*) ARCHITECTURAL ASSISTANT.

Applicants must have passed the Intermediate Examination of the R.I.B.A. or an examination recognised by the Institute as equivalent, and some practical experience is essential. Commencing salary within Grade £480 (at age 21 or over)×£20 (7)×£25 (2) to £670 per annum, according to practical experience since passing Intermediate Examination but not exceeding £560 per annum.

The posts offer opportunity for gaining all-round general as well as hospital experience and for doing good-class work in an expanding department. Evening study facilities are available at King's College of Durham University in Newcastle.

Applications, stating age, qualifications, past and present appointments, present salary and details of experience and training, together with the names of three referees (of whom at least two should be architects), should be forwarded to the Secretary, Newcastle Regional Hospital Board, Walker Gate Hospital, Benfield Road, Newcastle upon Tyne, 6, not later than 20th January, 1956. 8001

COUNTY BOROUGH OF OLDHAM. BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT. APPOINTMENT OF SENIOR ARCHITECTURAL ASSISTANT.

Applications are invited for the above appointment at a salary in accordance with Grade A.P.T. V (£795—£970), commencing salary according to experience.

Applicants should be well qualified, and the National Conditions and Local Government Superannuation Acts apply.

Housing accommodation available if required.

Applications, endorsed "Senior Architectural Assistant," together with the names and addresses of two referees, should reach me not later than Monday, 30th January, 1956.

A. L. HOBSON,
Borough Engineer and Surveyor.
75, Union Street, Oldham. 8016

BOROUGH OF SOUTHGATE. RE-ADVERTISEMENT ARCHITECTURAL STAFF.

Applications are invited for the following permanent superannuated posts:—

(i) FIRST ARCHITECTURAL ASSISTANT, A.P.T., Grade V. Qualifications: A.R.I.B.A.

(ii) ARCHITECTURAL ASSISTANTS. A.P.T., Grade III.

Applications are to be made on a form to be obtained from the Borough Engineer and Surveyor, and must be returned to the undersigned not later than 9 a.m. on Monday, 30th January, 1956.

GORDON H. TAYLOR,
Town Clerk.
Town Hall, Palmers Green, London, N.13.
January, 1956. 8023

COUNTY OF LINCOLN—PARTS OF KESTEVEN.

(*a*) ARCHITECTURAL ASSISTANTS, A.P.T. Grade II.

(*b*) QUANTITY SURVEYING ASSISTANTS, A.P.T., Grade IV.

Applications are invited for the above appointments in the County Architect's Department, chiefly for:—

(*a*) Educational Buildings, County Office Extensions, Old People's Homes, etc., and

(*b*) "Taking Off" and all other branches of Quantity Surveying work for major Contracts.

Preference will be given to (*a*) Students of the R.I.B.A. and (*b*) Associate Members of the R.I.C.S. or equivalent.

Appointments will be subject to the usual conditions of service for Local Authorities' Staff.

Applications, stating age, experience, qualifications, past and present appointments, with dates and salaries, together with copies of two recent testimonials, should be received by the undersigned not later than the 31st January, 1956.

J. E. BLOW,
Clerk of the County Council.

County Offices, Sleaford, Lincs. 8009

BOROUGH OF LEYTON.

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

Applications are invited for the following permanent appointment, at a salary in accordance with the National Scale indicated:—

ASSISTANT ARCHITECT, A.P.T. Grade V (£780—£930 per annum—at present under review).

The above salary is inclusive of London weighting (£30), which is reduced according to scale where the age of the successful applicant is less than 25 years. The commencing salary will be fixed at a point in the scale according to the qualifications and experience of the successful candidate.

Candidates must be Associates of the Royal Institute of British Architects, and must have considerable experience in contemporary design and the construction and supervision of erection of multi-storey flats. The candidate appointed will be employed in connection with the Corporation's extensive programme for Redevelopment Areas.

HOUSING ACCOMMODATION MAY BE MADE AVAILABLE, IF REQUIRED.

Alternate Saturday mornings are free of duty, and canteen facilities are available in the Town Hall.

Details of the above appointment and form of application may be obtained from Mr. H. D. Peake, M.Sc.(Eng.), Borough Engineer and Surveyor, Town Hall, Leyton, E.10, to whom they should be returned not later than Tuesday, 31st January, 1956.

D. J. OSBORNE,
Town Clerk.

Town Hall, Leyton, E.10. 8034

AMENDED ADVERTISEMENT.
COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE.
COUNTY PLANNING DEPARTMENT.
APPOINTMENT OF DEPUTY COUNTY PLANNING OFFICER.

Applications are invited for the appointment of Deputy County Planning Officer, at a salary within the range £1,535—£1,797 10s. per annum. Applicants should hold appropriate qualifications and have a wide and varied experience of planning and a considerable knowledge of local government procedure. An architectural qualification would be a particular advantage.

Applications, stating age, qualifications and experience, and giving the names and addresses of three referees, should reach the undersigned not later than 21st January, 1956.

Candidates who made application in response to the previous advertisement are not required to re-apply as applications already received will be re-considered.

ARTHUR BATES,
County Planning Officer.

71, Northgate, Wakefield. 8012

COUNTY OF ESSEX.
BOROUGH OF WALTHAMSTOW—COMMITTEE FOR EDUCATION.

Applications are invited for the appointment of ARCHITECT, to be responsible for the Education Architect's Office, under the general technical supervision of the Borough Architect, Engineer and Surveyor (F. G. Southgate, A.R.I.B.A., M.I.Mun.E., A.M.T.P.I.). The salary will be in accordance with Grade C of the N.J.C. Scales, commencing at £1,202 10s. per annum, and rising by annual increments of £52 10s. to £1,412 10s. per annum. The post is a permanent one and subject to the provisions of the appropriate Superannuation Act. The successful applicant will be required to pass a medical examination.

Applicants must be Associate Members of the R.I.B.A. and be good designers, with considerable experience in school building and maintenance, capable of controlling staff and organising and supervising building contracts.

Applications by letter, giving full details of age, qualifications and experience, should be sent to the undersigned, from whom further particulars may be obtained, within three weeks of the appearance of this notice.

E. T. POTTER,
Borough Education Officer.

Town Hall, Forest Road, Walthamstow, E.17. 8030

DENBIGHSHIRE COUNTY COUNCIL.

Applications are invited for the following appointments in the Department of the County Architect (Mr. R. A. Macfarlane, A.R.I.B.A.), Wrexham, *viz.*:—

(*a*) TWO ARCHITECTURAL ASSISTANTS, A.P.T., Grade II (£595—£675).

(*b*) QUANTITY SURVEYING ASSISTANT, A.P.T., Grade IV (£710—£885).

(*c*) QUANTITY SURVEYING ASSISTANT, A.P.T., Grade III (£640—£765).

(*d*) ASSISTANT HEATING ENGINEER, A.P.T., Grades III/IV (£640—£885).

Further details and application forms may be obtained from me. Completed application forms are to be received by me not later than 28th January, 1956, except post (*d*) which are to be returned not later than 7th February, 1956.

W. E. BUFTON,
Clerk of the County Council.

County Offices, Ruthin. 8010

LEYTON COMMITTEE FOR EDUCATION.
APPOINTMENT OF JUNIOR ARCHITECTURAL ASSISTANT.

Applications are invited for the permanent appointment of a JUNIOR ARCHITECTURAL ASSISTANT, A.P.T. Grade I, £530—£610 per annum, including London weighting (£30), which is reduced according to scale where age is less than 26.

The successful applicant will be employed by the Essex County Council, and will work in the School Architect's Section of the Borough Engineer and Surveyor's Department, Town Hall, Leyton, London, E.10.

Alternate Saturday mornings free of duty and canteen facilities available.

Details and form of application from the Borough Education Officer, Kirkdale Road, Leytonstone, E.11, to whom they should be returned by Thursday, 2nd February, 1956.

D. J. OSBORNE,
Town Clerk.

Town Hall, Leyton, E.10. 8033

STAFFORDSHIRE COUNTY COUNCIL
EDUCATION COMMITTEE.
ASSISTANT ARCHITECT—SCHOOL MEALS DEPARTMENT.

A vacancy occurs for an Assistant Architect in the School Meals Section of the County Education Architect's Department. Work includes design of new Canteen, kitchens and dining-room, adaptations to existing, and also to hired, premises. Car allowance. Applications will be considered from those with suitable experience, preferably qualified, though this is not essential; salary according to qualifications and experience. Forms of application to be obtained from County Education Architect, "Green Hall," Lichfield Road, Stafford, to be returned not later than 19th January, 1956. 8055

BEESTON AND STAPLEFORD URBAN DISTRICT COUNCIL.

Vacancies for ARCHITECTURAL ASSISTANTS up to Grade A.P.T. II (£595 to £675), according to qualifications and experience.

Applications, naming two referees, to the Surveyor, Town Hall, Beeston, Nottingham, by 30th January, 1956.

H. D. JEFFRIES,
Clerk of the Council.

Town Hall, Beeston, Nottingham. 8048

PADDINGTON BOROUGH COUNCIL require DRAUGHTSMAN, architectural drawing office. Salary £190—£670, according to ability and experience. Appointment suitable for probationer member of R.I.B.A. N.J.C. conditions apply. Send particulars of age, education, training, experience, addresses of three referees, to the under-signed (quoting A. 267) by 28th January, 1956.

W. H. BENTLEY,
Town Clerk.

Town Hall, Paddington Green, W.2. 8044

STAFFORDSHIRE COUNTY COUNCIL.
COUNTY PLANNING AND DEVELOPMENT DEPARTMENT.

Applications are invited for the appointment of JUNIOR PLANNING ASSISTANTS on A.P.T., Grades I-II (£500—£640 per annum), in the Area Planning Offices at Stafford and Wolverhampton.

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

Applicants should give details of age, education and training qualifications, present and previous appointments and experience, and the names of two persons to whom reference can be made. Applications, in which relationship to any member or senior officer of the County Council must be disclosed, should be sent to D. W. Riley, County Planning and Development Officer, 41a, Eastgate Street, Stafford, not later than 25th January, 1956.

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

8052

BERKSHIRE COUNTY COUNCIL, Planning Department. SENIOR DRAUGHTSMAN, capable of taking charge of small Planning Office Drawing Section. Salary on A.P.T. II (£595 × £20—£675 p.a.). Form of application from County Planning Officer, 7, Abbot's Walk, Reading, to be returned by 31st January, 1956. E. R. DAVIES, Clerk of the Council. 8053

BOROUGH OF CHELMSFORD.
BOROUGH ENGINEER, SURVEYOR AND ARCHITECT'S DEPARTMENT.

Applications are invited for the under-mentioned appointments:—

ASSISTANT ENGINEERS, A.P.T. IV.
ASSISTANT ARCHITECT, A.P.T. IV.

Housing accommodation can be offered. Further particulars may be obtained from the Borough Engineer, Surveyor and Architect, Municipal Offices, Chelmsford.

Closing date: 31st January, 1956.

B. A. FRANCIS,
Town Clerk.

8042

Tenders Invited

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

DENBIGHSHIRE COUNTY COUNCIL.
PROPOSED TWO-FORM ENTRY SECONDARY MODERN SCHOOL AT GWERSYLLT, WREXHAM

BUILDING, CONTRACTORS, HEATING AND ELECTRICAL ENGINEERS, desirous of submitting a Tender for all or any of the following works viz. (*a*) ERECTION OF NEW TWO-FORM ENTRY SECONDARY MODERN SCHOOL (in traditional construction prestressed concrete floor and roof slabs), (*b*) NEW LOW PRESSURE HEATING AND DOMESTIC HOT WATER AND COLD WATER INSTALLATIONS, and (*c*) A COMPLETE NEW ELECTRICAL INSTALLATION (Tenders to be based on (*a*) Plans and Bills of Quantities, (*b*) and (*c*) Plans and Specifications) are invited to forward their names, together with a deposit of £3 3s. (Three Guineas) in respect of each contract (returnable on receipt of a *bona fide* tender) to the County Architect, Grove Park, Wrexham, not later than the 20th day of January, 1956. Contractors are to indicate which of the Contracts they wish to tender for, and deposit cheques are to be made payable to the "Denbighshire Education Committee" and crossed "Midland Bank Ltd." The lowest or any Tender will not necessarily be accepted nor will any allowance be made for estimates.

W. E. BUFTON,
Clerk of the County Council.

County Offices,
Ruthin. 8031

Architectural Appointments Vacant

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

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

ARCHITECTURAL ASSISTANT required for busy office.—F. X. Velarde, Windsor Buildings, George Street, Liverpool. 7049

LANCHESTER & LODGE require SITE ARCHITECT in Leeds for University Buildings. Write full particulars Lanchester & Lodge, 10, Woburn Square, London, W.C.1. 7056

NORTH & PARTNERS, Maidenhead, have several vacancies for experienced ARCHITECTURAL ASSISTANTS / DRAUGHTSMEN. Work of an extensive and varied nature. Also an ASSISTANT with some experience in specifications, builders' accounts, etc. Excellent salaries to be agreed. Superannuation scheme for permanent staff. 7061

THE LONDON HOSPITAL, Whitechapel, E.1, requires SENIOR ARCHITECT. Salary £850—£950 p.a. Applications, stating age, experience, etc., to the House Governor. 7059

ARCHITECTURAL ASSISTANTS (Senior and Junior) required for general and commercial practice. Apply, stating age, experience, qualifications and salary required, to Duncan Clark & Beckett, F./L.R.I.B.A., F./F.R.I.C.S., 7, West Stockwell Street, Colchester. 7042

MALE ASSISTANTS of all standards urgently required. Five-day week. Luncheon vouchers. Lanchester & Lodge, 10, Woburn Square, London, W.C.1. 7065

ARCHITECT'S ASSISTANT required by well-known London Brewery for work in connection with Bottling Store alterations, maintenance, etc. Brewery experience not essential. State age, experience, salary required.—Reply Box 7050.

ARCHITECTS' CO-PARTNERSHIP require unmarried, qualified, experienced ASSISTANT in their Lagos office. Maximum tour 14 months. Flat provided. Write 44, Charlotte Street, London, W.1, or telephone Langham 5791. 3274

ARCHITECTURAL ASSISTANTS, with approx. 5 years' office experience, required for West End Architect's office engaged on large office building and cinema contracts. Commencing salary £625. 'Phone Whitehall 1624 for appointment. 3561

BUSY London Office requires two ARCHITECTURAL ASSISTANTS, approximately Intermediate standard or upwards. Also requires one ASSISTANT with considerable perspective experience, particularly able to do quick interior colour sketches. Five-day week, good salaries. Lewis Solomon, Son & Joseph, 21, Bloomsbury Way, W.C.1, HOL 5108 or 7082. 3483

WANTED urgently: Capable DRAUGHTSMEN for preparing working drawings of industrial buildings from sketch designs. Salary according to experience. Write or telephone to Percy Bilton Ltd., 113, Park Street, W.1. Telephone number MAYfair 8240. 3437

ARCHITECTURAL ASSISTANTS, Senior and Junior required, preferably with London practice experience, office and factory buildings. Write, giving particulars of experience, etc., to Messrs. Bates & Sinning, 89, Chancery Lane, W.C.2. 2508

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

ARCHITECTS' CO-PARTNERSHIP require qualified ASSISTANT with experience. Write 44, Charlotte Street, London, W.1, or Telephone Langham 5791. 3275

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

ARCHITECTS with large London practice require a qualified ARCHITECT who combines a knowledge of construction with a high standard of draughtsmanship, to work on office buildings or allied projects. Box 6034.

CO-OPERATIVE WHOLESALE SOCIETY, LTD. ARCHITECT'S DEPARTMENT, MANCHESTER. APPLICATIONS are invited for the following appointments:—

(*a*) SENIOR ASSISTANT ARCHITECTS, with experience of work on commercial and industrial projects.
(Salary range £820 to £975 per annum.)

(*b*) ASSISTANT ARCHITECTS, capable of preparing working drawings from preliminary details.
(Salary range £550 to £820 per annum.)

There is a five-day week in operation, and both appointments offer prospects of upgrading.

Applications, stating age, experience, qualifications and salary required, to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4. 3871

ASSISTANT ARCHITECT and ARCHITECTURAL ASSISTANTS required in City office for work on important modern buildings. Sound knowledge of construction essential. Very good salaries paid to successful applicants. Write or telephone, Campbell Jones & Sons, 9, Dowgate Hill, E.C.4 (Central 7748). 8054

NATIONAL COAL BOARD—N.W. DIVISION. DIVISIONAL HEADQUARTERS.
CHARTERED QUANTITY SURVEYOR required. Should be competent to carry out surveying duties without supervision, on contracts up to six-figure value, able to control junior staffs. Car an advantage, regular travelling involved. Salary within the scale £1,000×£35—£1,300 p.a. Applications, giving age, education, qualifications and experience, to Establishment Officer, 40, Portland Street, Manchester, within 14 days. 8056

REQUIRED. One JUNIOR ASSISTANT and one ASSISTANT of Intermediate Standard. Please reply to P. A. Cranswick, Esq., A.R.I.B.A., A.M.T.P.I., 36, Sackville Street, London, W.1. 8049

ASSISTANT required by multiple shop company with enthusiasm for design and detail. Age between 20 to 25. Post offers good opportunities with Superannuation, Social facilities, and Staff Canteen. Please reply, giving age, experience and salary required, to Box 8047.

BUCKINGHAMSHIRE firm of Architects within thirty miles of London with a varied practice, require qualified ARCHITECTURAL ASSISTANTS. Five-day week. Salary according to age and experience. Please write, giving full details, to Box 8046.

ARCHITECT'S ASSISTANTS required. R.I.A.S. Pension Scheme in operation. Applications, stating age, particulars of experience, and salary required, to Wylie, Shanks & Wylie, Chartered Architects, 12, Clairmont Gardens, Glasgow, C.3. 5041

ARCHITECTS. Senior and Junior ASSISTANTS required for Edinburgh and Kirkcaldy Offices. Seniors must be widely experienced and able to handle major projects. Interesting contemporary work including schools and hospitals. Salary range £900 to £950 with placing according to experience and ability. Applications to Alison & Hutchison & Partners, F.R.I.B.A., 73, George Street, Edinburgh, and 22, Carlyle Road, Kirkcaldy. 8041

ARCHITECTURAL ASSISTANT required of Inter. Standard. First class Draughtsmanship essential, with office experience, mainly for domestic schemes, in small busy practice. Please apply in writing, stating salary and full particulars, Box 8050.

ARCHITECTURAL ASSISTANTS required in City office. Qualified or Intermediate Standard. Varied work, 5 day week. Salary range, £550—£800. Telephone London Wall 3825. 8051

ARCHITECT'S Department in City requires ASSISTANTS, 20-30 years of age. Interesting good class work. Salary according to age and experience. Apply, giving full particulars and salary required, Box 6066.

ARCHITECT'S ASSISTANT required in Nottingham Office. Capable of preparing working drawings and details from preliminary sketches. Applications, stating age, experience, qualifications and salary required, to W. B. Starr, Hall & Clifford, Beedham House, 7 Wellington Circus, Nottingham. 8043

CO-OPERATIVE WHOLESALE SOCIETY, LTD., ARCHITECT'S DEPARTMENT, LONDON.
ASSISTANT ARCHITECTS, WORKER-UP, AND SHOP FITTING DRAUGHTSMAN. Applications are invited from suitably qualified persons. Salary on a scale £485—£945 inclusive of L.W., with placing according to age, qualifications and experience. The posts are superannuable, subject to medical examination. Five-day week in operation. Applications, stating age, experience, qualifications and salary required, to.—W. J. Reed, F.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 99, Leman Street, London, E.1. 2824

CO-OPERATIVE WHOLESALE SOCIETY, LTD. ARCHITECT'S DEPARTMENT, BIRMINGHAM. APPLICATIONS are invited for the following appointments in a newly formed Branch Office. Interesting and varied commercial and industrial projects.

(*a*) SENIOR ASSISTANT ARCHITECT, with experience in Store and Shop Design.
(Salary range £820 to £975 per annum.)

(*b*) ASSISTANT ARCHITECTS, capable of preparing working drawings and details from preliminary sketches.
(Salary range £550 to £820 per annum.)

Both appointments offer prospects of upgrading. Applications, stating age, experience, qualifications, and salary required, to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4. 3872

SENIOR ARCHITECTURAL ASSISTANT required immediately. R.I.B.A. Final examination standard required. Experienced in preparing working drawings, details, supervising contracts. West End office. 5-day week. Apply, stating salary required, to Eric H. Davie, F.R.I.B.A., A.M.T.P.I., Staff Architect, Hillier, Parker, May & Rowden, 77 Grosvenor Street, W.1. 6033

HASTIE, WINCH & KELLY require ARCHITECTURAL ASSISTANT, able to take charge of medium-sized jobs, including Churches, Hostels, Factories, etc. Telephone for an appointment, WEL 8863, or write with particulars to 1 Bentinck Street, W.1. 6043

ARCHITECTURAL ASSISTANT required. Good Draughtsman with office experience and knowledge of building construction. Apply, stating salary required, to Caroe & Partners, 16 Great College Street, Westminster. 6044

ARCHITECTURAL ASSISTANTS required for office in Hertfordshire. Intermediate or Final standard, for work on School, Commercial and Industrial Projects. Write, giving brief details of experience and salary required, to Box 7002.

SUSSEX ARCHITECT on South Coast requires ARCHITECTURAL ASSISTANT—Intermediate to Final standard for general practice. Apply, stating age, experience and salary, etc., to Egerton W. Owen, Chartered Architect, 33, Beach Road, Littlehampton. 6021

ARCHITECTURAL ASSISTANTS required. Junior and Senior, in busy office with much varied work, 5-day week. Previous office experience desirable. Write, stating training and experience and salary required, to Graham Crump & Denis Crump, F.A.R.I.B.A., 43 George Street, Croydon. 6030

NORMAN & DAWBARN require a SENIOR ASSISTANT ARCHITECT to co-ordinate the services for a series of large contracts on a site in London. Whilst some experience of large scale service problems would be an advantage, the primary requirement is ability to co-ordinate the work of various specialists and to negotiate effectively with Authorities and Heads of Departments. Applications stating age and details of career should be made in writing to 5, Gower Street, London, W.C.1. 6057

NORMAN & DAWBARN require ARCHITECTURAL DRAUGHTSMEN to prepare working drawings on major projects in London. Professional qualifications are not required but applicants should have had not less than five years' experience in an architectural drawing office. Accurate draughtsmanship and sound knowledge of building construction and detailing are essential. Applications in writing only to 5, Gower Street, London, W.C.1. 6058

ADAMS, HOLDEN & PEARSON require ARCHITECTURAL ASSISTANTS immediately. Write, giving particulars of experience and salary required, to 38, Gordon Square, W.C.1. 6076

ARCHITECTURAL ASSISTANT, Intermediate standard, required for Ipswich office of private Architect. Reply, giving full particulars, to Box 6078.

WANTED immediately in London office of A.R.I.B.A., engaged on work for a London Housing Company, ARCHITECTURAL ASSISTANT, Inter. R.I.B.A. standard. Experience in preparation of working drawings, specifications, site work essential. Salary up to £625, according to experience and capabilities. Pension scheme. Box 7000.

ARCHITECTURAL ASSISTANTS required in West End office, qualified or intermediate standard, varied and interesting work, 5-day week. Salary range, £600—£800. 6028

ARCHITECTURAL ASSISTANT required urgently. Final standard. General Commercial practice. Apply Waite & Waite, 3a, Cavendish Square, W.1. Mayfair 4912, ex. 12. 6070

LOUIS DE SOISSONS, PEACOCK, HODGES & ROBERTSON have vacancies in their London and Welwyn Garden City offices for SENIOR and JUNIOR ARCHITECTURAL staff. The work is varied and covers Ecclesiastical, Schools, Offices and Housing (Cottages and Flats). Write, stating age, salary and experience, to Louis de Soissons, Peacock, Hodges and Robertson, 3, Park Square Mews, Upper Harley Street, London, N.W.1. 6026

REQUIRED immediately qualified ARCHITECT (A. or preferably F.R.I.B.A.), to assist principal in practical administration of large hospital and other projects in London. Sound business sense and previous hospital experience essential. High salary. Apply in confidence, giving full details or previous experience, age, etc., to Box 6091.

ARCHITECTS and Architectural Assistants resident in West Surrey, who seek local post, are requested to apply for the position of ASSISTANT ARCHITECT AND ASSISTANT to firm of Architects, with rapidly growing and interesting practice. Salary by agreement, subject to experience and qualifications. Apply Percy, Hopkins & Partners, 19, Commercial Road, Woking, Surrey, by letter or telephone. Telephone Woking 4731. 6094

JUNIOR or INTERMEDIATE ASSISTANT with initiative and capable draughtsmanship required. Varied and interesting work. Apply Alexander Flinder, 30b, Wimpole Street, W.1, or 'phone HUNter 0841. 6095

ARCHITECTURAL ASSISTANTS required for good general contemporary work in busy office in the Watford area. Excellent salary for suitable applicants. Write, giving brief details of experience, etc., to Box 7003.

ARCHITECTURAL ASSISTANT, Intermediate standard, required in expanding firm with varied practice. Excellent prospects and good salary. Write to Winter & Pickering, 13A Holborn, E.C.1, stating age and experience. 6000

SENIOR ASSISTANT ARCHITECTS and INTERMEDIATE ASSISTANTS required in busy West End Office. Senior Assistants should be capable of taking complete charge of jobs. Practice is varied and includes Housing Schemes, Office Blocks, Private Houses and miscellaneous schemes. Write, stating training, experience and salary required, or telephone for appointment to Thomas Sibthorp, F.R.I.B.A., A.R.I.C.S., A.M.T.P.I., 10, Manchester Square, W.1. Welbeck 9247 and 0783. 7088

ARCHITECTURAL SURVEYING AND CIVIL ENGINEERING ASSISTANTS required for work on the development of Housing Sites, principally in the Home Counties. Good salary. Pension scheme. Canteen. Write, Taylor Woodrow Homes Ltd., Taywood Road, Greenford, Middlesex. 7081

ASSISTANT ARCHITECTS required for interesting work on modular, prefabricated structures of varied types. A contemporary outlook is preferred, and applicants should be Associates or approaching qualification. Please write, stating salary required, age and details of experience, to Taylor Woodrow (Building Exports) Limited, 41, Welbeck Street, W.1. 7092

ARCHITECTURAL ASSISTANTS required for office in St. Albans, Hertfordshire, Intermediate or Final Standard, for work on School, Commercial and Industrial Projects. Write, giving brief details of experience and salary required, to Box 7083.

ASSISTANT, good draughtsman, required for office off Piccadilly. Contemporary outlook. Five-day week. Apply, giving particulars, to Box 7085, or 'phone GRO 1907 for appointment.

ARCHITECTURAL ASSISTANTS for varied practice. £500/£600. Knapton & Deane, F.R.I.B.A., 123/4, Newgate Street, E.C.1. Monarch 9080. 7089

PERMANENT SENIOR ARCHITECTURAL ASSISTANTS required by Troup & Steele, Chartered Architects, 14, Gray's Inn Square, W.C.1. Pension scheme in operation. 7090

SCHERRER & HICKS require a number of ARCHITECTURAL ASSISTANTS immediately. Salary £400—£750 p.a. according to experience. Five-day week with luncheon vouchers. Write, 19, Cavendish Square, W.1, or telephone Museum 1105. 7096

ARCHITECTURAL ASSISTANT, Grade I, required by the National Coal Board, Lugar, Cumnock, Ayrshire. Salary on the scale £625 × £25—£750. Applicants should have Intermediate R.I.B.A. with not less than 3 years' subsequent practical experience in housing design, supervision, surveys, specifications and general work. Applications in writing, stating age, qualifications and experience, and present salary, to Area Secretary, National Coal Board, Lugar, Cumnock, Ayrshire. 7065

ASSISTANT ARCHITECT required by the Atomic Weapons Research Establishment, Aldermaston, Berks, to prepare sketch plans, working drawings and detailed specifications for various types of buildings associated with atomic development. Candidates should be A.R.I.B.A. or have equivalent qualifications and must be at least 30 years of age. They should have a contemporary outlook in Architectural design with good general experience in construction and specification writing.

Salary: £873—£1,130 p.a. Contributory superannuation scheme. Married officers now living outside the Establishment's transport area will be eligible for housing on one of the Authority's estates, alternatively assistance towards legal expenses incurred in house purchase will be available; until housed, a lodging allowance may be payable.

Requests for application forms by Postcard to the Senior Recruitment Officer at the above address. Quote reference 851/119. 7062

ASSISTANT ARCHITECT required for the London head office of a major oil company. Applicants must be A.R.I.B.A., capable of supervising staff and controlling work through all stages of development. Must hold a current driving licence. Five-day week, good pension and life assurance scheme, sickness benefits and free luncheon vouchers. Social club. Write, giving full details, stating age, experience and salary required, to Box 7068, quoting Ref. AS969.

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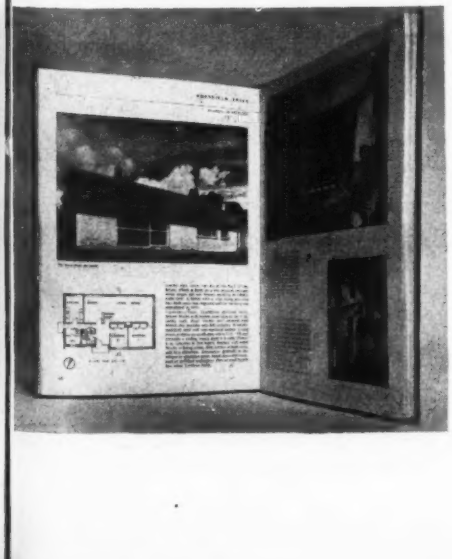

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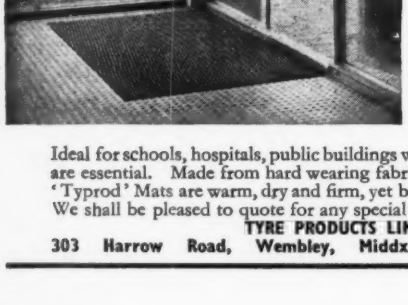

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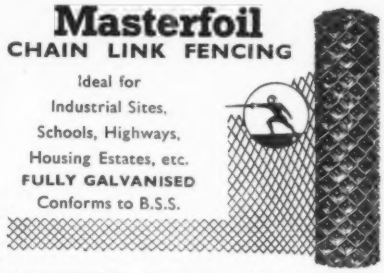

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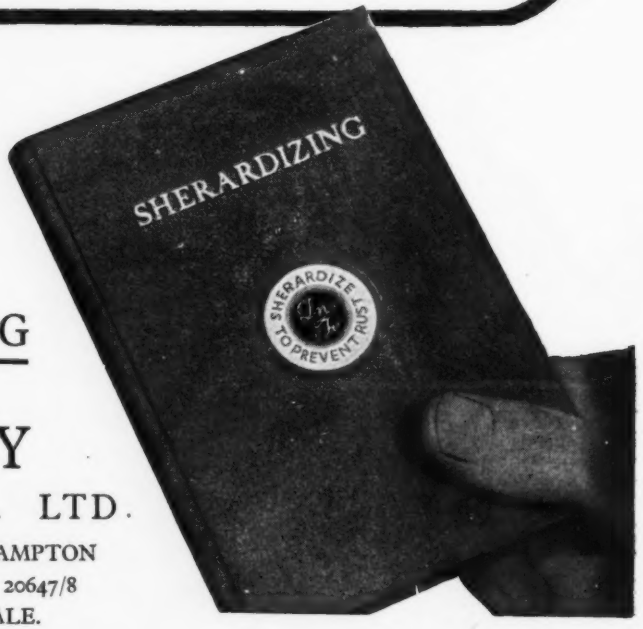

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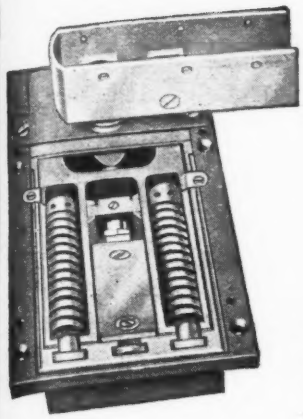

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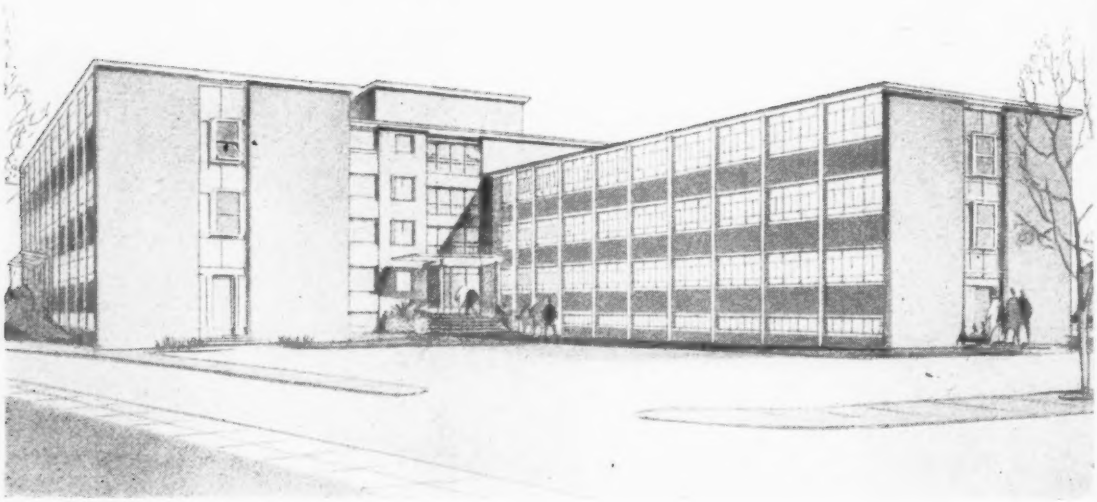
Scheme in Progress



The Institute of Pathology and Regional Blood Transfusion Centre

AT NEWCASTLE GENERAL HOSPITAL FOR THE NEWCASTLE REGIONAL HOSPITAL BOARD

Architects : Scherrer & Hicks, in collaboration with P. H. Knighton, M.B.E, Architect to the Board

This 'U' shaped building has a floor area of 68,000 square feet. There is a basement protected by a heavily reinforced concrete ground floor. On one side of the central corridors a double wall forms a continuous vertical duct containing all the service mains and main drainage, and there is a ceiling panel hot water heating system with coils embedded in the concrete ceiling structure.

LAING

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