

THE ARCHITECTS' JOURNAL



Standard contents

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

NEWS and COMMENT

Astragal's Notes and Topics

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TECHNICAL SECTION

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Information Centre

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CURRENT BUILDING

Major Buildings described:

Details of Planning, Construction,

Finishes and Costs

Buildings in the News

Building Costs Analysed

Architectural Appointments

Wanted and Vacant

No. 3426]

[Vol. 132

THE ARCHITECTURAL PRESS

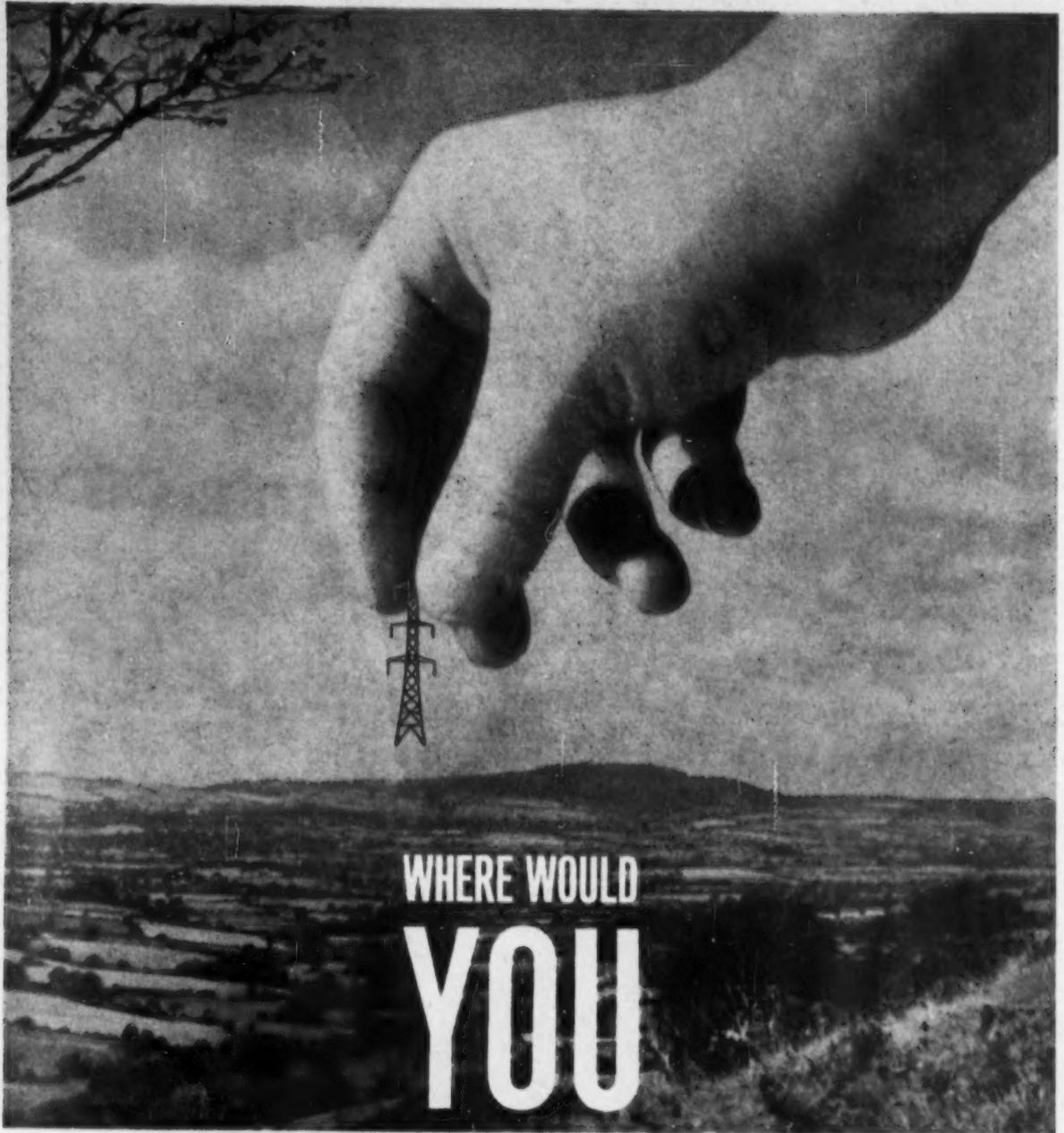
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★A glossary of abbreviations of Government Departments and Societies and Committees of all kinds together with their addresses and telephone numbers. The glossary is published in two parts—A to Ii one week, II to Z the next. In all cases where the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

ILA	Institute of Landscape Architects. 1, Park Crescent, W.1.	Museum 3473
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, W.C.2.	Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1.	Museum 7197
IQS	Institute of Quantity Surveyors. 98, Gloucester Place, W.1.	Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3.	Avenue 6851
IRA	Institute of Registered Architects. 68, Gloucester Place, W.1.	Hunter 1945
ISE	Institution of Structural Engineers. 11, Upper Belgrave Street, S.W.1.	Sloane 7128
JFRO	Joint Fire Research Organisation (DSIR & Fire Offices' Committee), Fire Research Station, Boreham Wood, Herts.	Elstree 1341/1797
LDA	Lead Development Association. 18, Adam Street, W.C.2.	Whitehall 4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1.	Museum 3891
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1.	Trafalgar 7711
MOE	Ministry of Education. Curzon Street House, W.1.	Hyde Park 7070
MOH	Ministry of Health. 23, Savile Row, W.1.	Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1.	Whitehall 4300
MOLNS	Ministry of Labour and National Service, 8, St. James's Square, S.W.1.	Whitehall 6200
MOS	Ministry of Supply. Shell-Mex House, W.C.2.	Gerrard 6933
MOT	Ministry of Transport, Berkeley Square House, W.1.	Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1.	Reliance 7611
NAMMC	Natural Asphalt Mine Owners and Manufacturers Council, 14, Howick Place, Victoria Street, S.W.1.	Victoria 1600 & 6477
NAS	National Association of Shopfitters. 2, Caxton Street, S.W.1.	Abbey 4813
NBR	National Buildings Record. 31, Chester Terrace, N.W.1.	Welbeck 0619
NCBMP	National Council of Building Material Producers. 10, Storey's Gate, S.W.1.	Abbey 5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry, 21, John Adam Street, Adelphi, W.C.2.	Trafalgar 3927
NFBTE	National Federation of Building Trades Employers, 82, New Cavendish Street, W.1.	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives, Federal House, Cedars Road, Clapham, S.W.4.	Macaulay 4459
NFHS	National Federation of Housing Societies. 12, Suffolk St., S.W.1.	Whitehall 1631
NHBRC	National House Builders Registration Council. 58, Portland Place, W.1.	Langham 0064/5
NPL	National Physical Laboratory. Head Office, Teddington.	Molesley 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3.	Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street S.W.1.	Trafalgar 6838
NT	National Trust. 42, Queen Anne's Gate, S.W.1.	Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1.	Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1.	Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh. Fountainbridge 7631	
RIB	Rural Industries Bureau. 35, Camp Road, S.W.19.	Wimbledon 5101
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1.	Langham 5533
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1.	Whitehall 5322/9245
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1.	Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, W.1.	Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2.	Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1.	Sloane 5134
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1.	Victoria 2186 Abbey 7244
SE	Society of Engineers. 17, Victoria Street, S.W.1.	
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, E.C.3.	Mansion House 3928
SIA	Society of Industrial Artists. 7, Woburn Square, W.C.1.	Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1.	Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council, Hon. Sec., Robert Pollock, Town Clerk, Rutherglen	
SPAB	Society for the Protection of Ancient Buildings, 55, Great Ormond Street, W.C.1.	Holborn 2646
TCPA	Town and Country Planning Association, 28, King Street, Covent Garden, W.C.2.	Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, E.C.4.	City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1.	Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4.	City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1.	Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1.	Grosvenor 6636



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to preserve the amenities of the country as they go.

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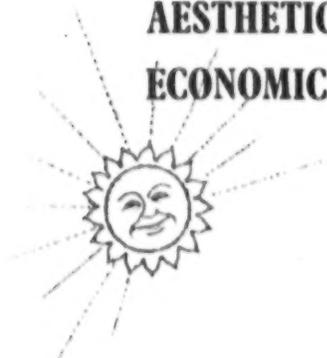




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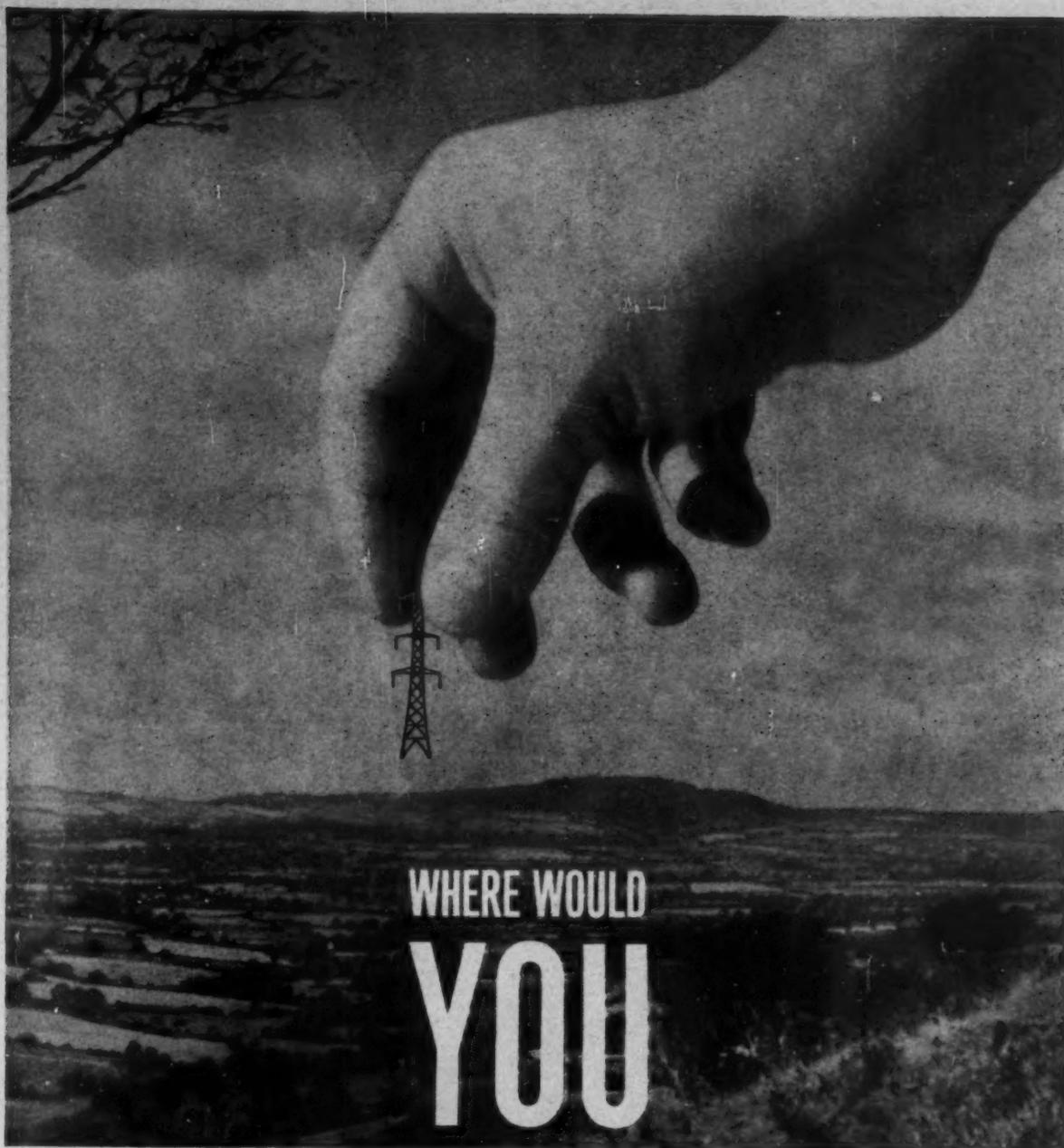
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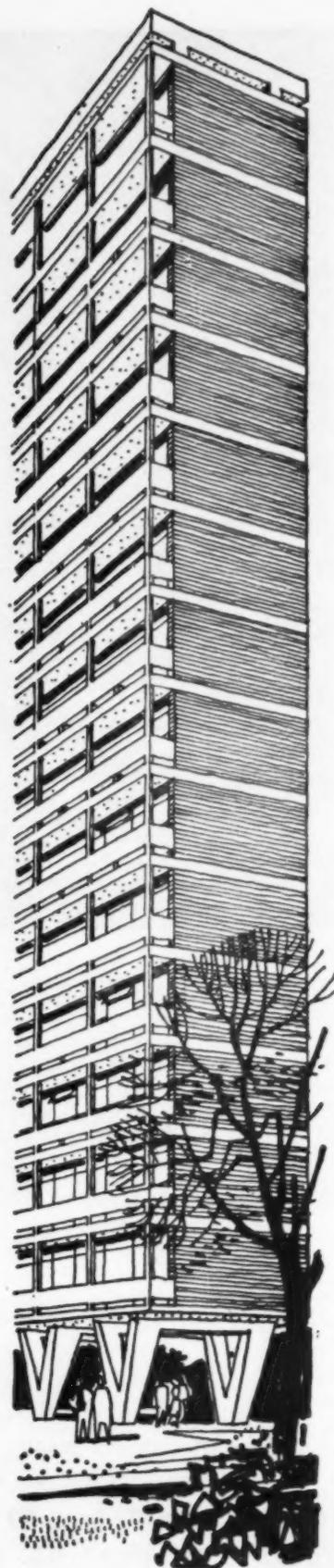
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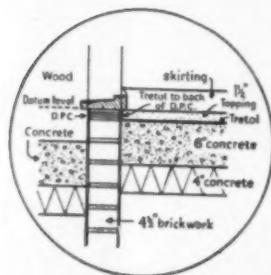
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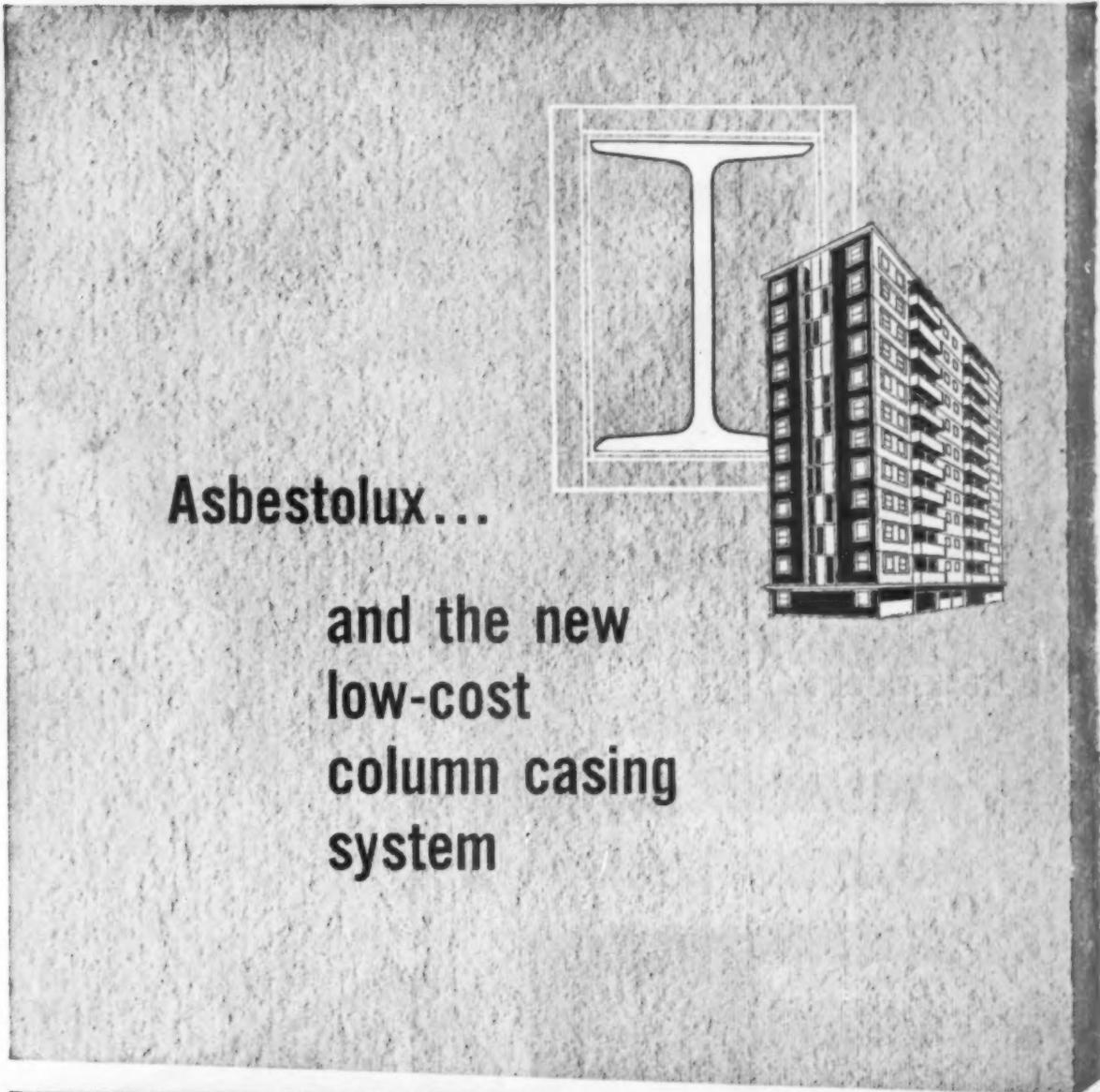
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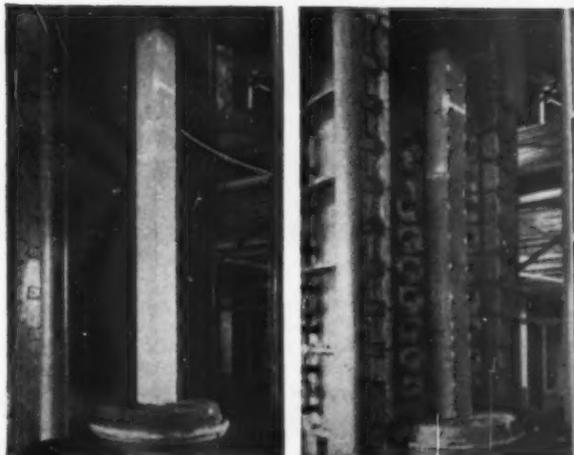
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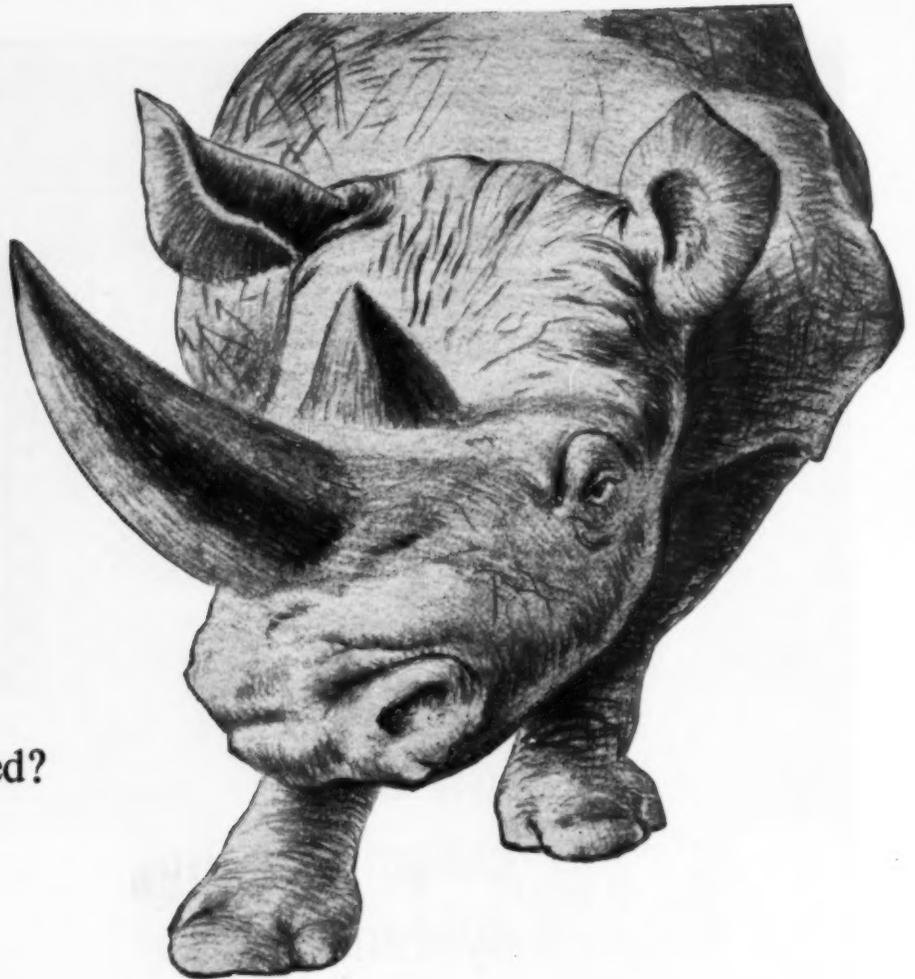


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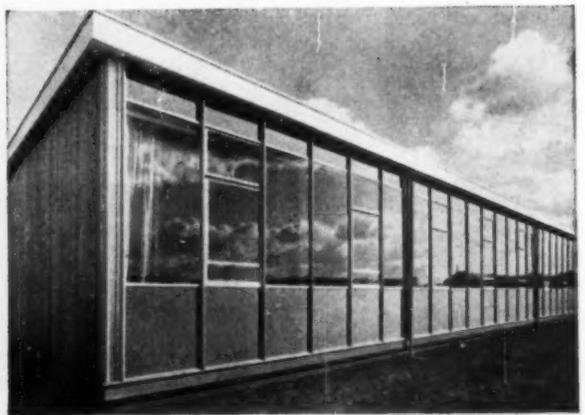
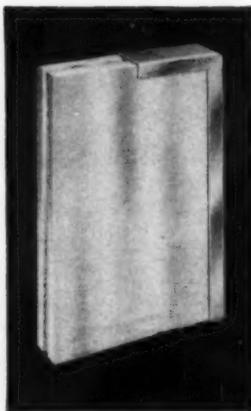
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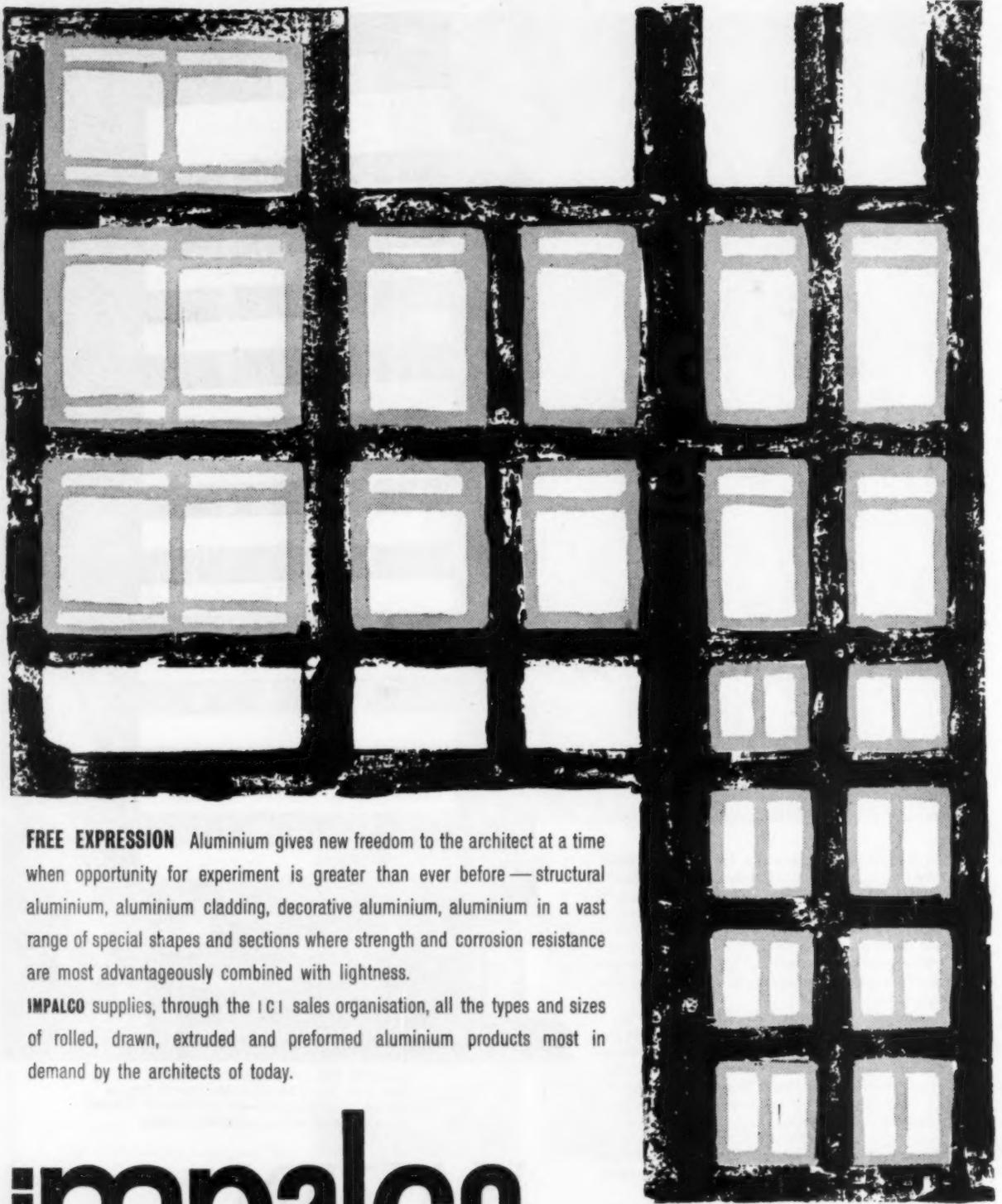
*Architects: Dennis E. Pugh and Associates
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Consulting Structural Engineers: Ove Arup & Partners
Quantity Surveyors: Davis, Belfield & Everest*

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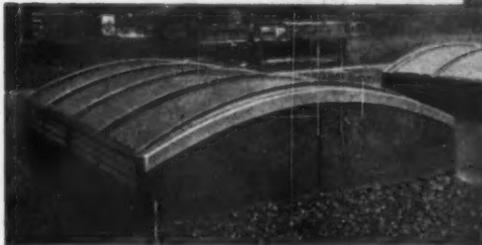
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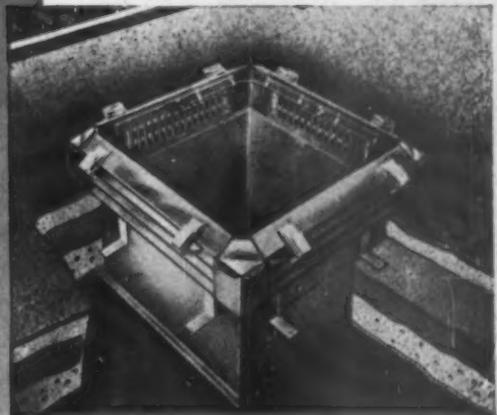
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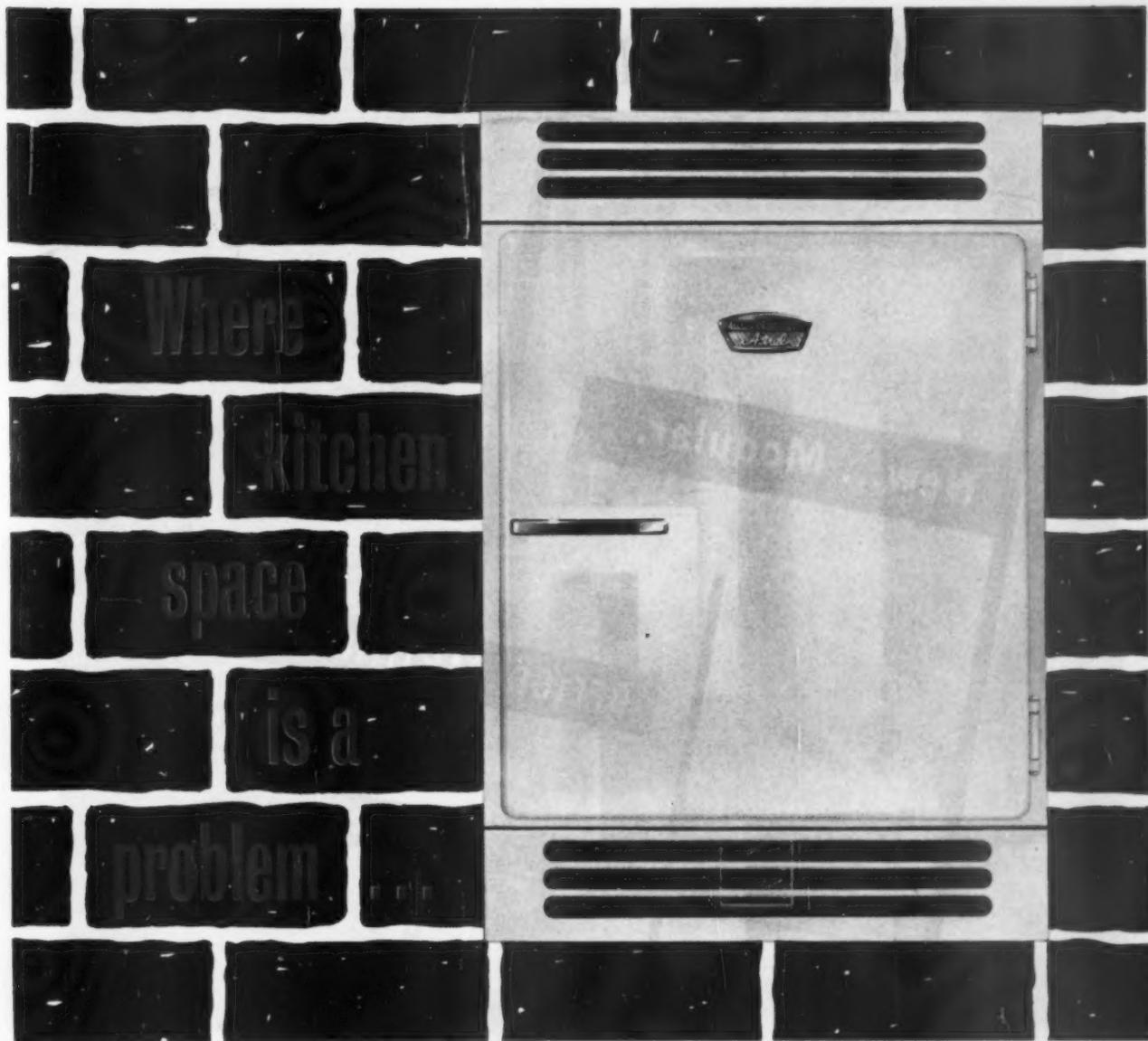
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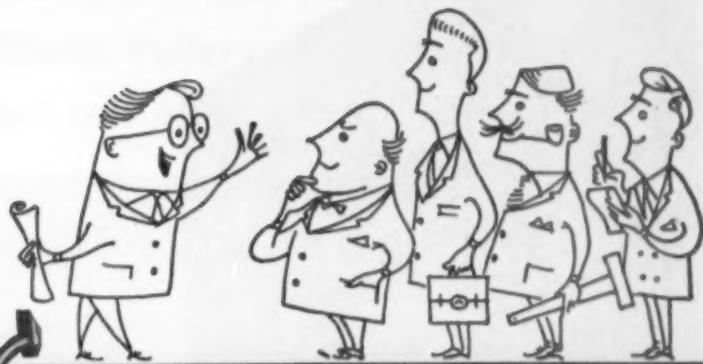
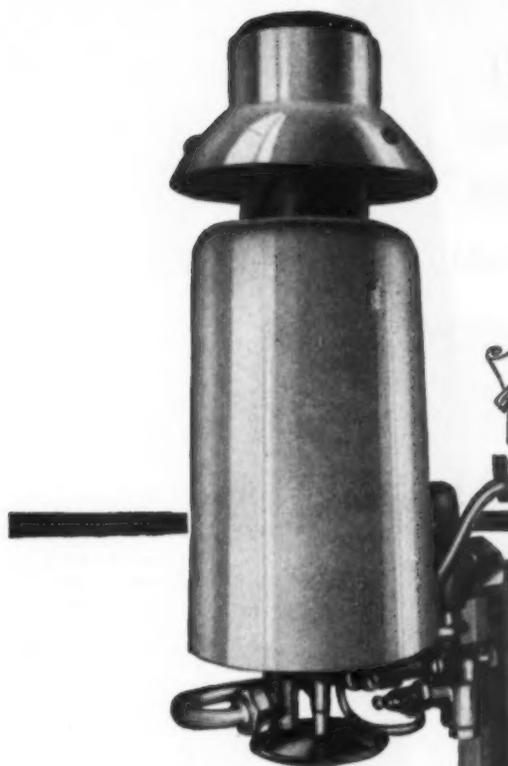
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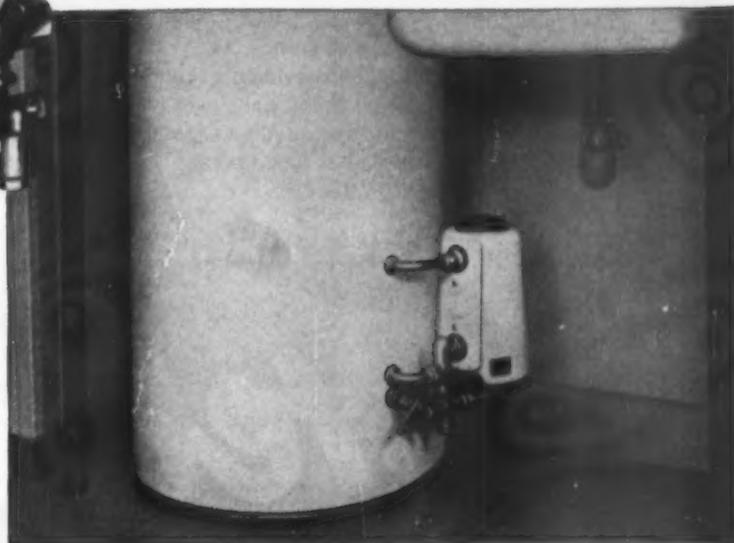
NEW WORLD CIRCULYN GAS WATER HEATERS

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NEW WORLD Water Heaters also can be used as an auxiliary to a solid fuel system for intermittent use.

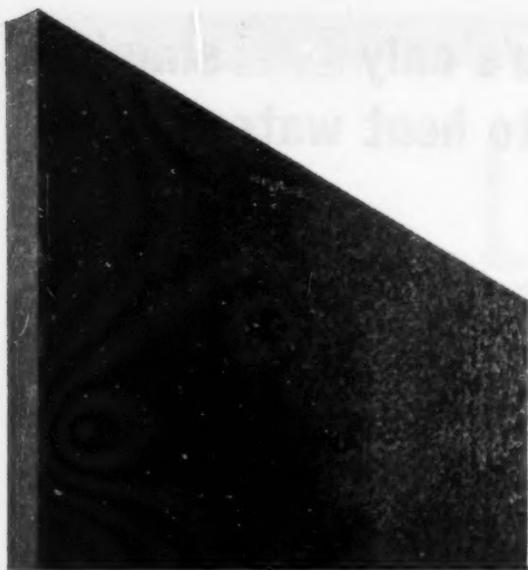
Some 35 County, Borough, Urban and Rural Councils are using the C.12LF./20 gallon cylinder Under Draining Board unit including: L.C.C., Willesden, Ilford, Camberwell, Battersea, Coventry, Lambeth, West Ham, Enfield, Edinburgh, Preston, Romsey, Liverpool.

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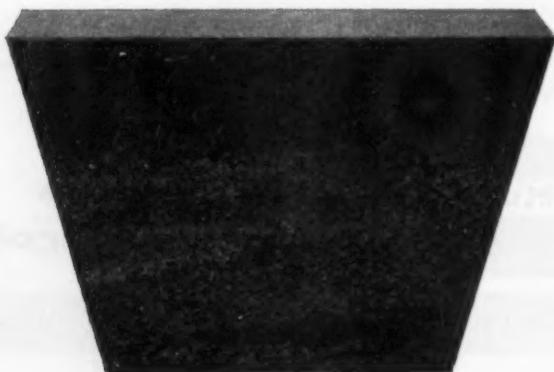


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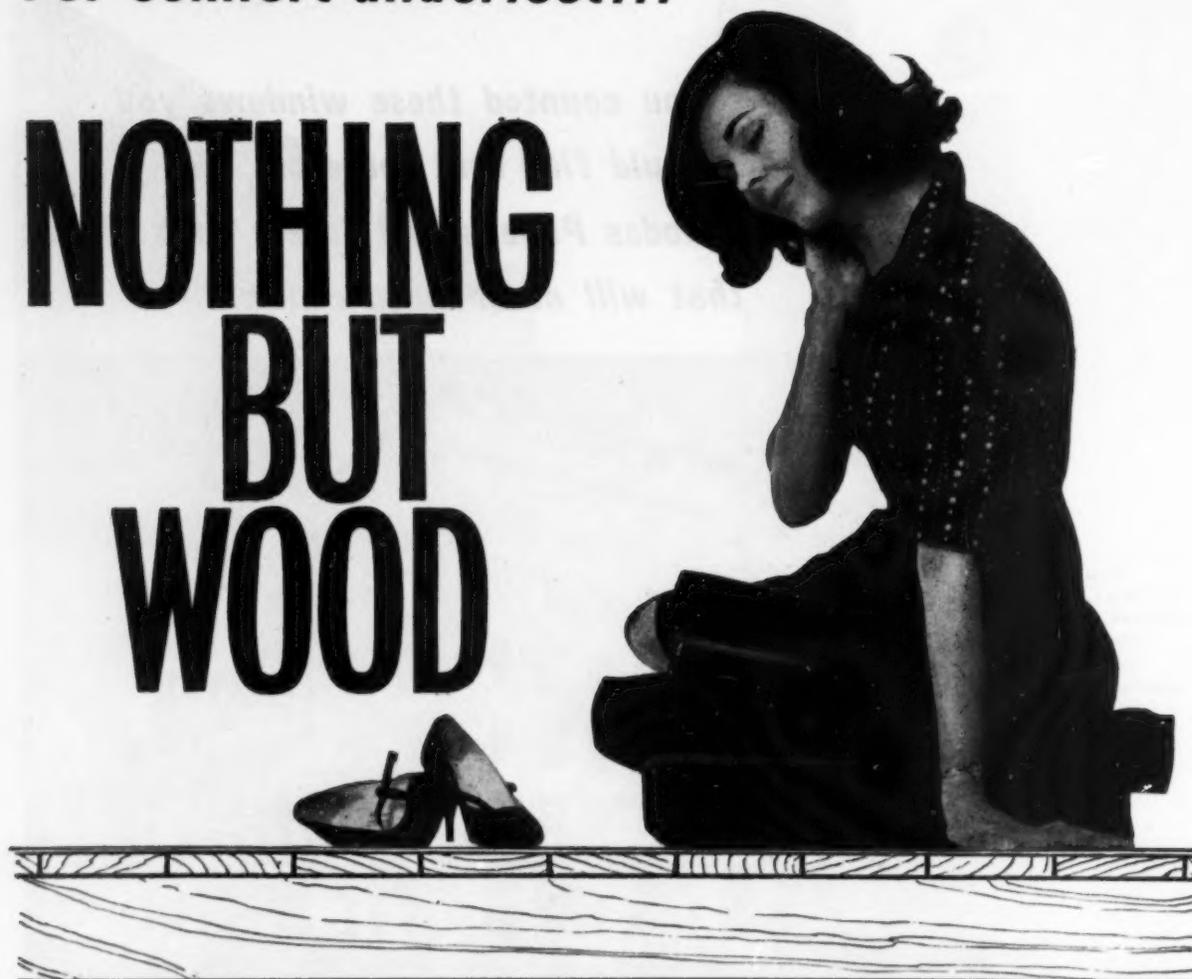
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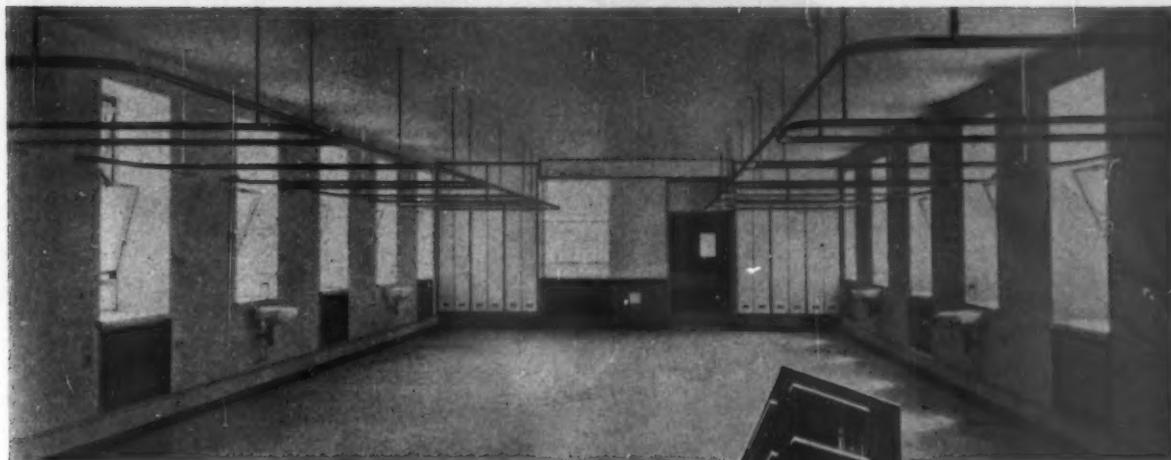
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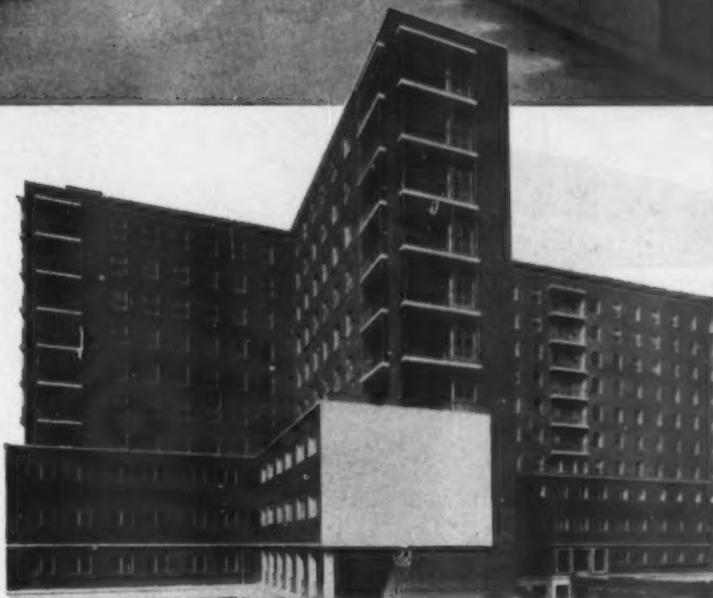
1,000 Ideal radiators go into new surgical block at Guy's Hospital



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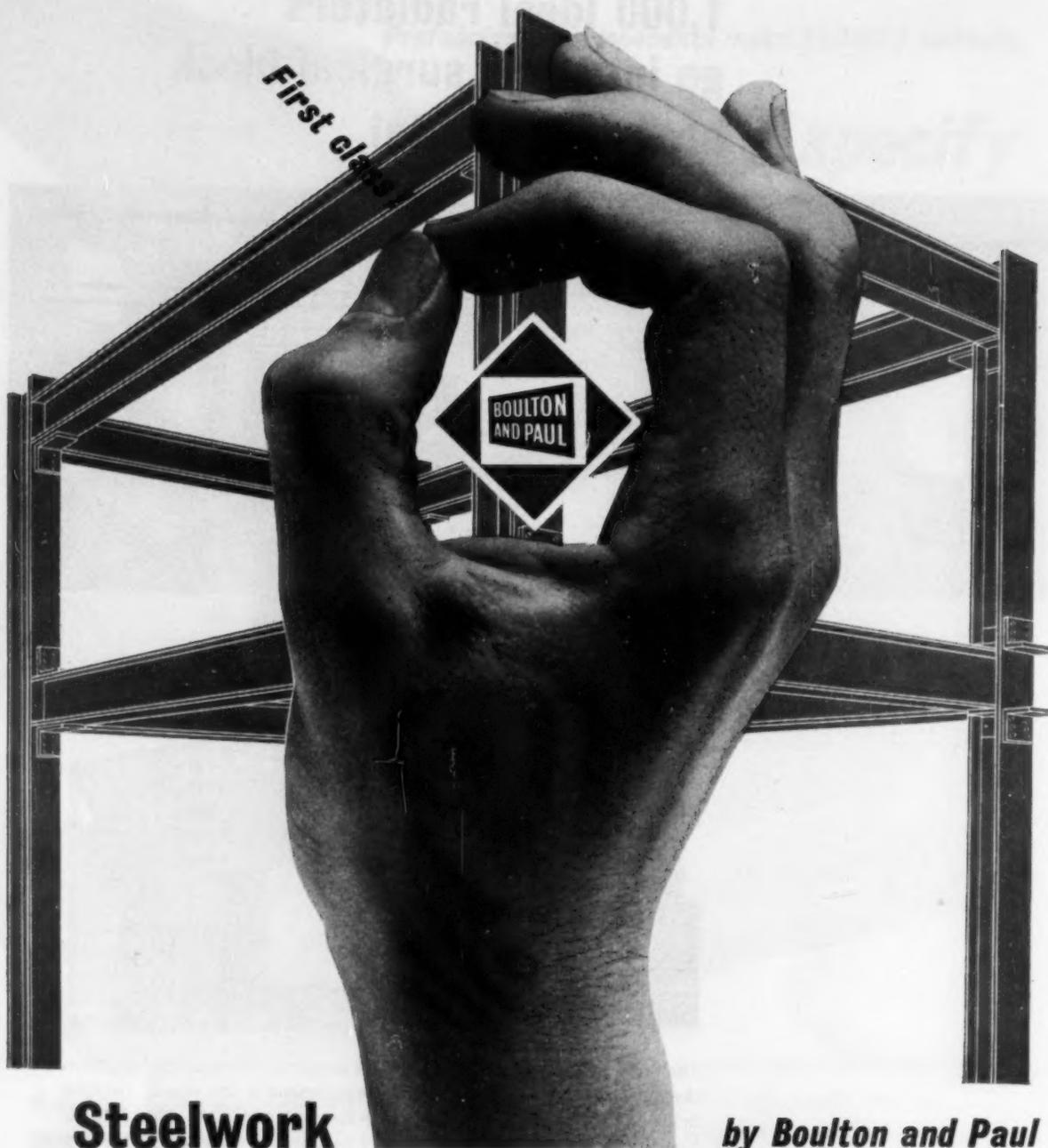
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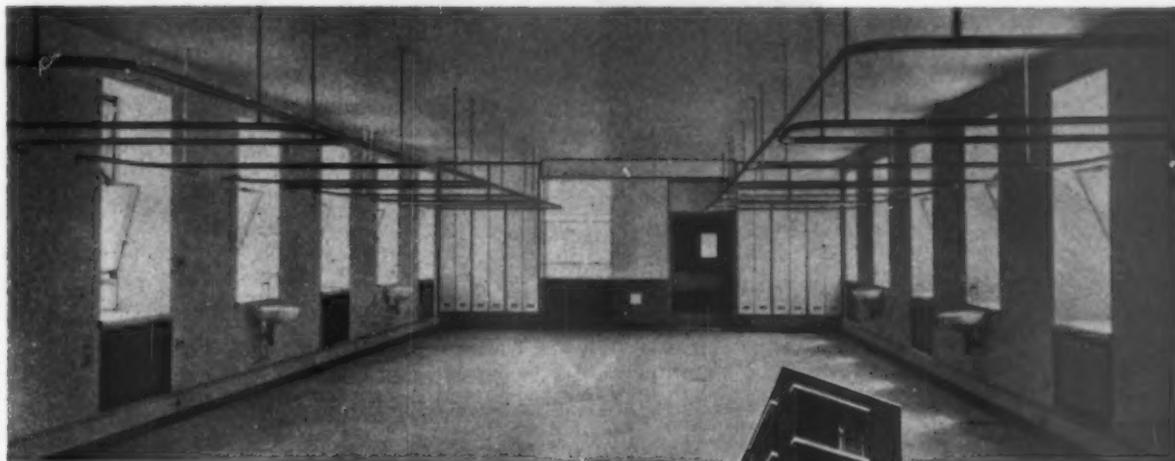
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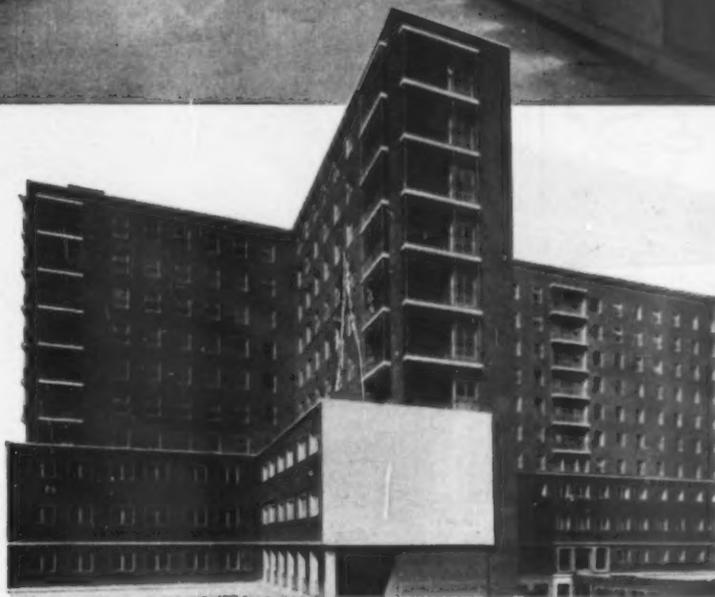
1,000 Ideal radiators go into new surgical block at Guy's Hospital



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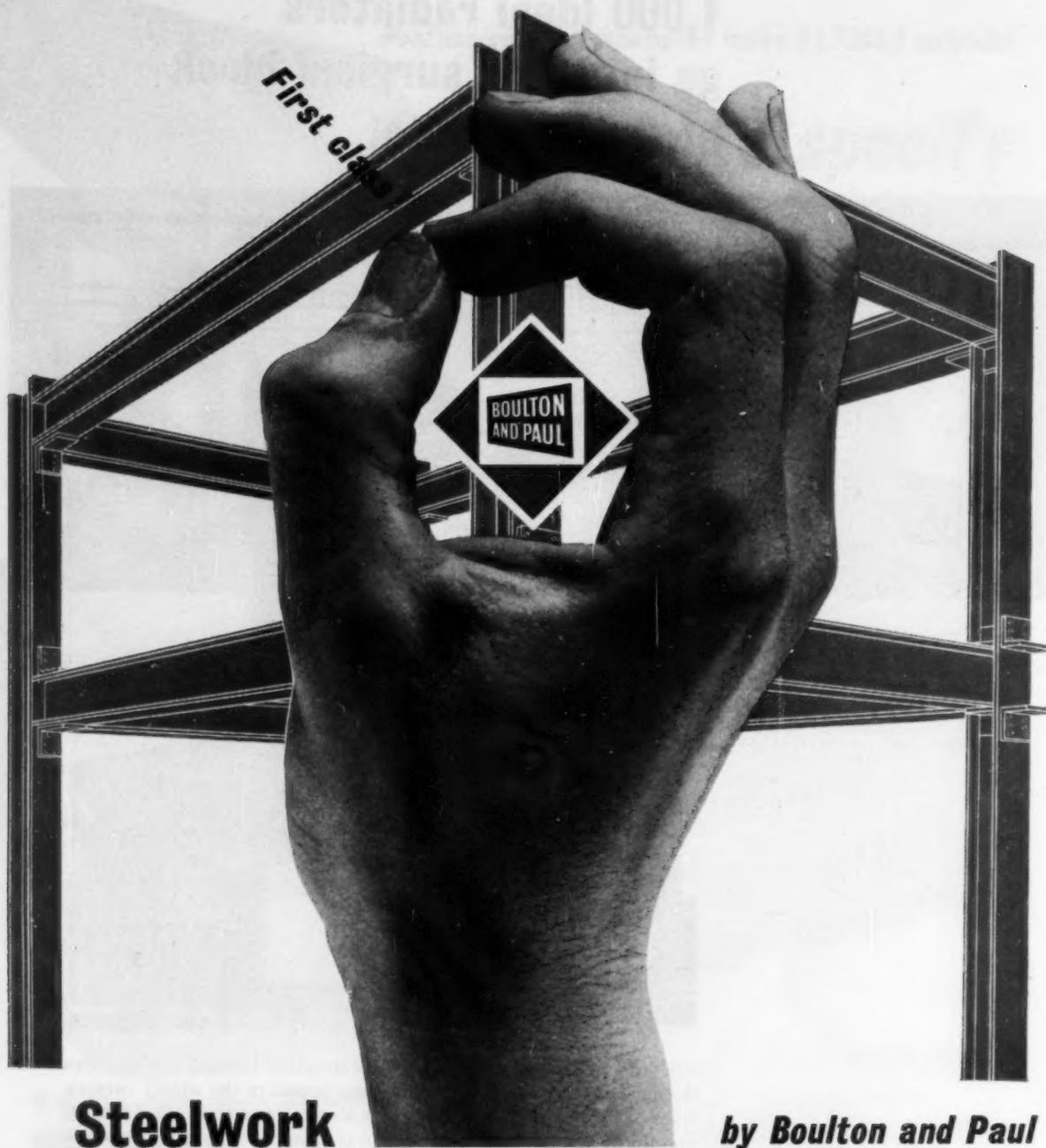
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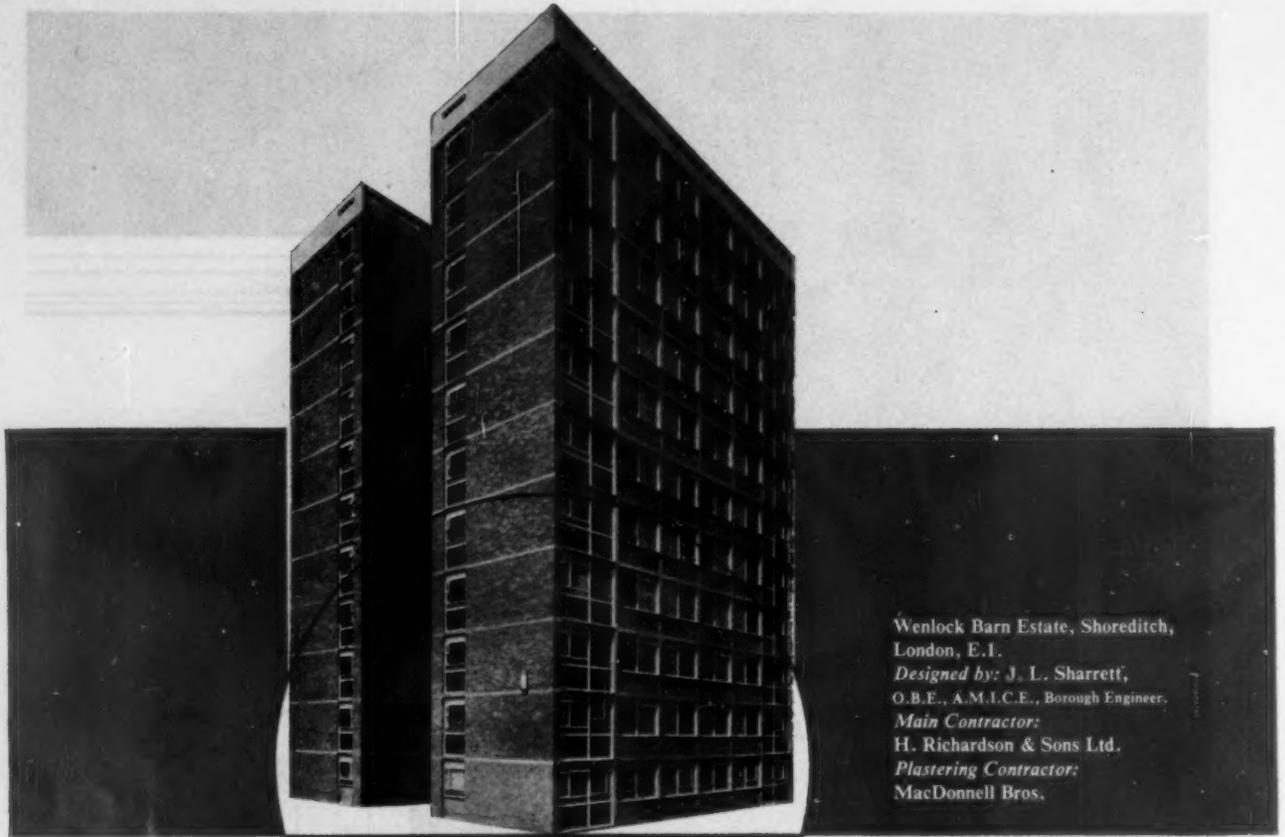
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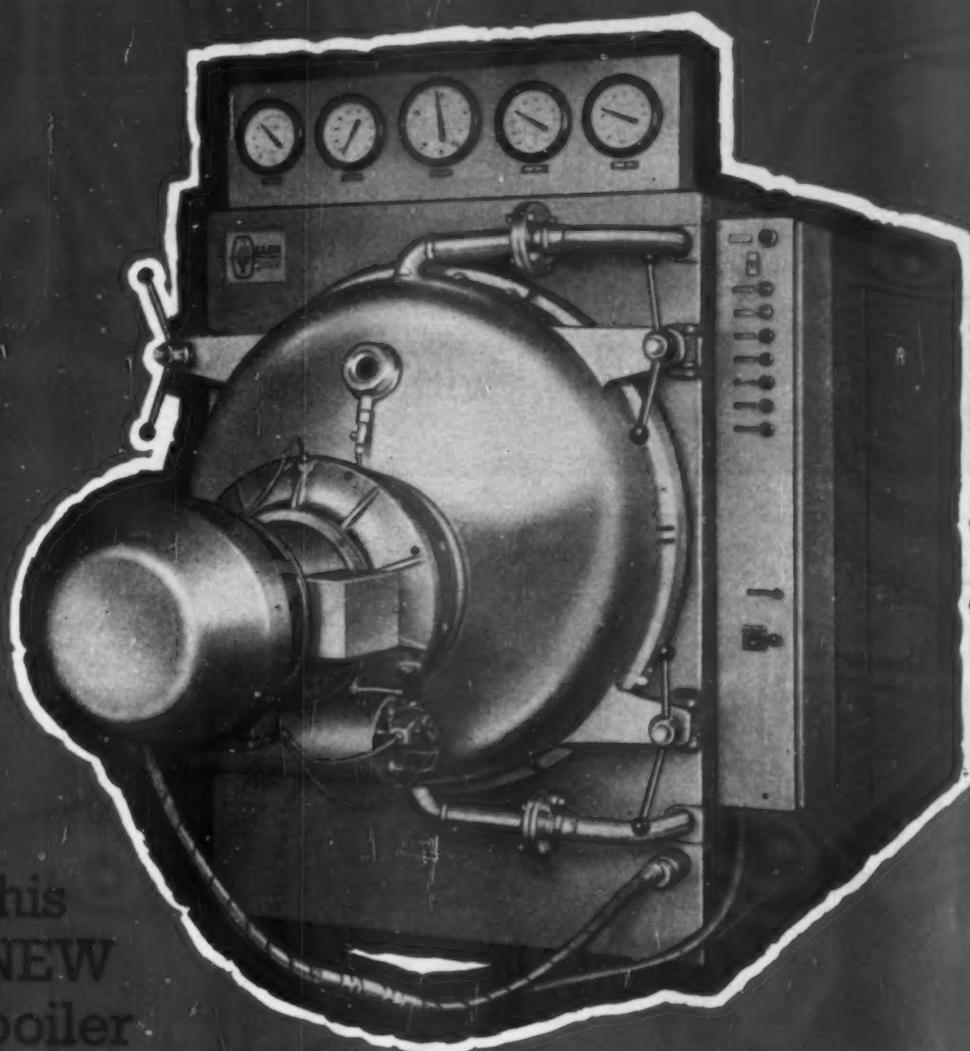
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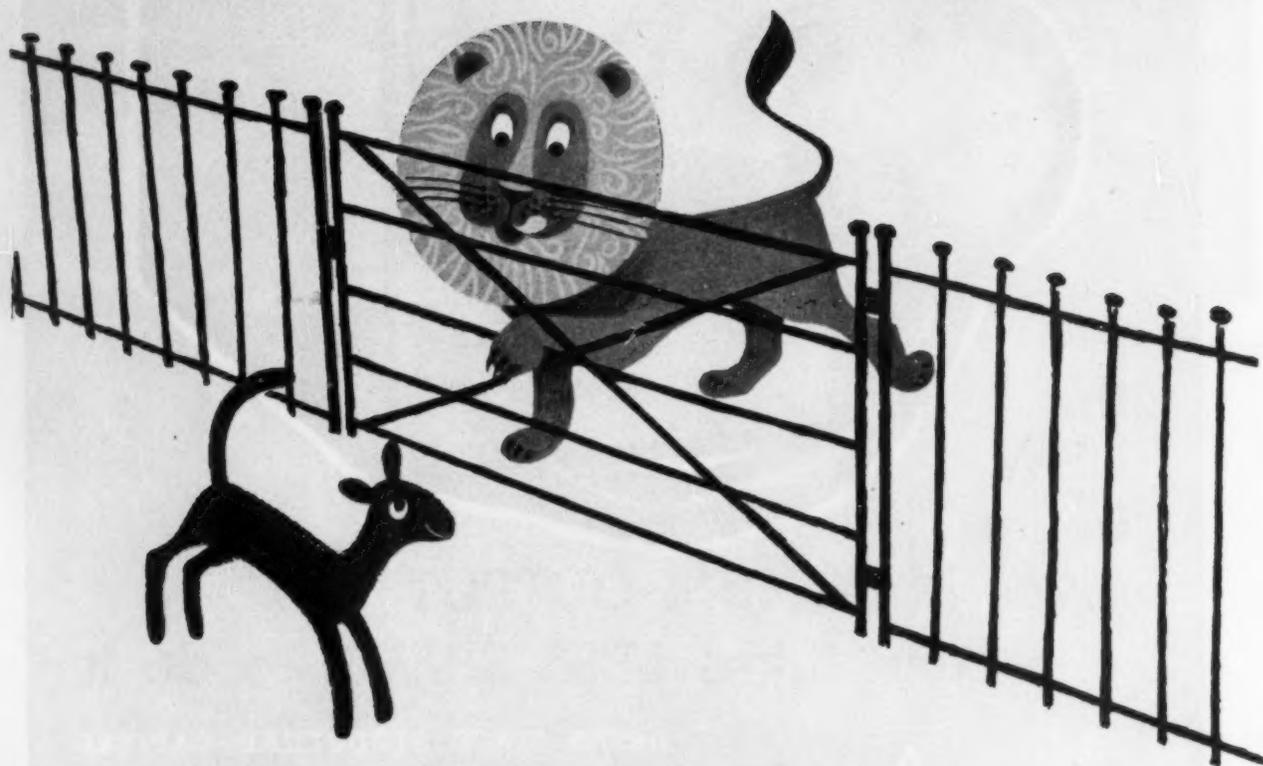
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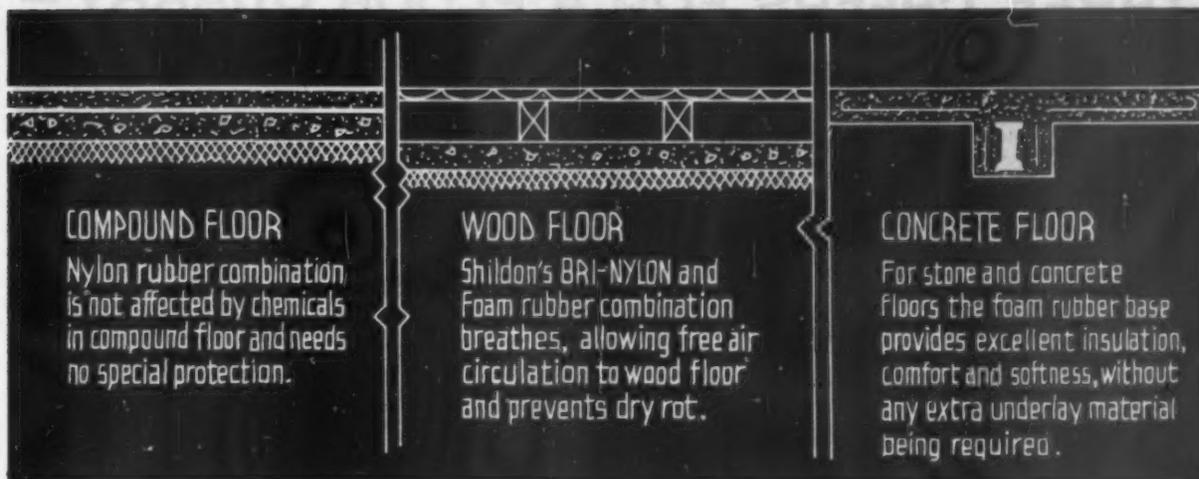
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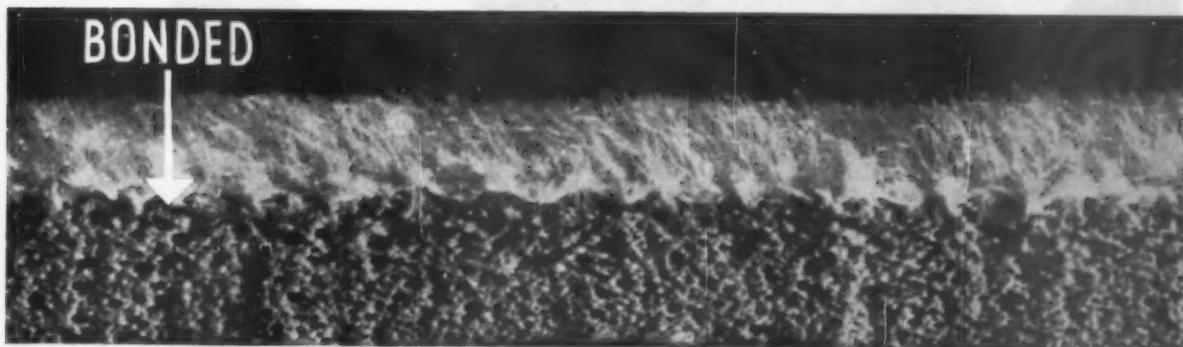
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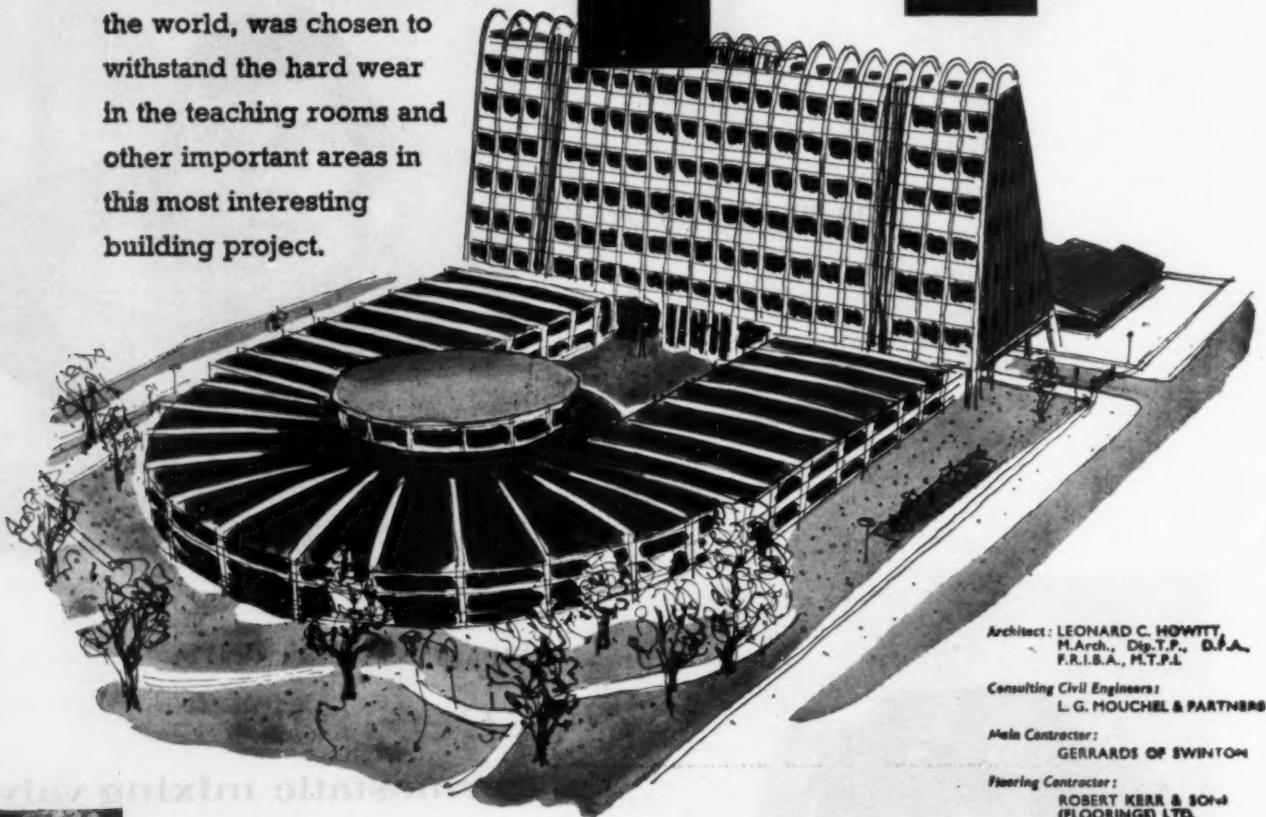
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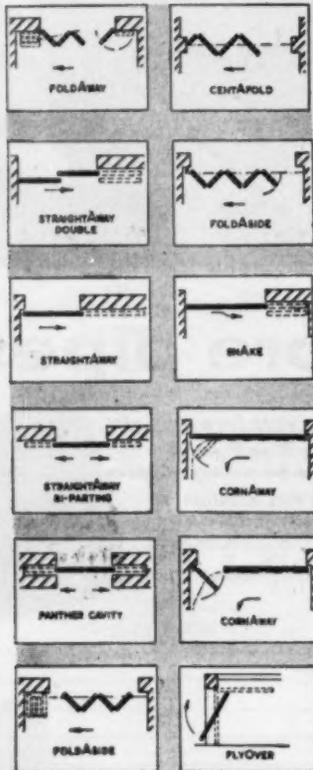
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for Bristol's most modern housing scheme

The 400 flats of the Redcliffe Precinct development are an impressive new landmark in Bristol, standing at the very heart of a district which has been planned as the city's newest smoke-controlled area. The flats are provided with central heating and constant hot water from a central boilerhouse—and the fuel chosen to fire the boilers is *coal*. But the chimney which traditionally marks the location of a boilerhouse is hidden from the Redcliffe skyline. You'll see no smoke clouds drifting on the wind. For the six modern boilers which heat 6,000 gallons of water a day for the Redcliffe flats produce no smoke, although they have been burning 300 tons of coal a year, and will burn much more as the development reaches completion. The National Coal Board is proud of the fact that coal, in competition with other fuels, was chosen for heating purposes in this major housing project. Mr. D. F. Pexton, the Board's Divisional Marketing Director, looks upon Redcliffe as a graphic illustration of how coal—properly burned with modern equipment—is proving itself to be the most economical and efficient fuel for present-day needs.

CLEAN AIR

"Smoke and grime are no longer an inevitable outcome of burning coal," he states. "The days of burning any type of coal any old how, without thought for the



Waring and Francombe Houses, recently completed, together with Underdown House, form the largest single block in the 400-flats first stage of the Redcliffe development.

power wasted or the smoke produced, are gone. A lot of progress has been made since then in methods of burning, and power engineers now know that the right kind of coal used with the right kind of equipment produces maximum efficiency, maximum value for money—and does not pollute the atmosphere.”

R. W. Gregory and Partners of Manchester acted as Heating Consultants for the scheme, and the Redcliffe boilerhouse is equipped with ‘Suxe’ burners, which are specially designed to burn the cheaper grades of anthracite. This is a naturally smokeless fuel, but all modern furnaces—from the huge chain grate stokers used in large industrial plants to the small installations burning a few hundredweights a week for flat or office heating—can burn bituminous coals without producing smoke. By controlling draughts and regulating combustion rates all the smoky gases given off by burning coal are consumed in the furnace.

This control is frequently fully automatic—as with the Redcliffe boilerhouse, which virtually runs itself. The burners are regulated by a thermostat which operates according to the temperature of the outside air. The colder the temperature out in the open, the more heat the burners produce, and vice versa, thus assuring the tenants of the Redcliffe flats of comfortable living conditions whatever the weather. The burners also bank themselves down automatically at night and open themselves up again in the morning.

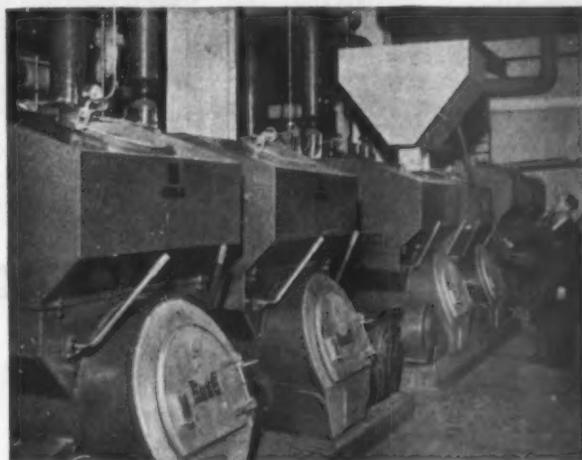
Coal is fed into the boilers by gravity, and one daily filling of the feed hoppers provides sufficient fuel for a whole day's operation. The filling is also done automatically by means of an electrically-driven travelling loader, with push-button controls, which has been specially designed for this boilerhouse. The coal is, in fact, ‘untouched by human hand’ from the time that it is mechanically cut from the coal face until it is burned on the firebeds.

NO LABOUR TROUBLES

The boilerhouse, which will eventually provide a central heating system for the whole of the first stage of the Redcliffe development, is located in the basement of Canynge House. Four boilers were originally installed here, two more having since been added to meet peak demands when the scheme is completed. Hot water for domestic purposes and central heating in the newly-completed and separate 170-flat block is pumped by underground pipes from Canynge House. Further



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This modern heating and hot water system makes a minimum demand on the time of the caretaker and his assistant who are responsible for its operation. A few minutes each day has been sufficient to keep the boilers running at peak efficiency without further supervision and it is not anticipated that boiler operation will be appreciably more arduous even when all 400 flats are connected.

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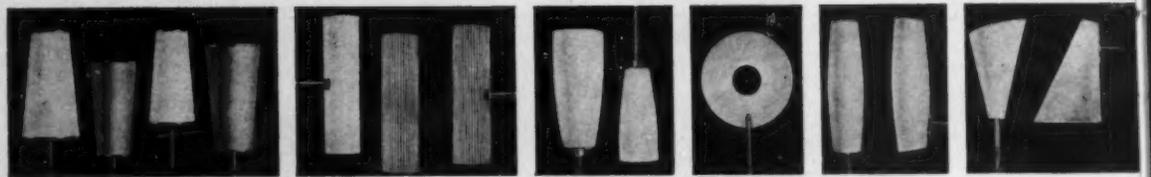


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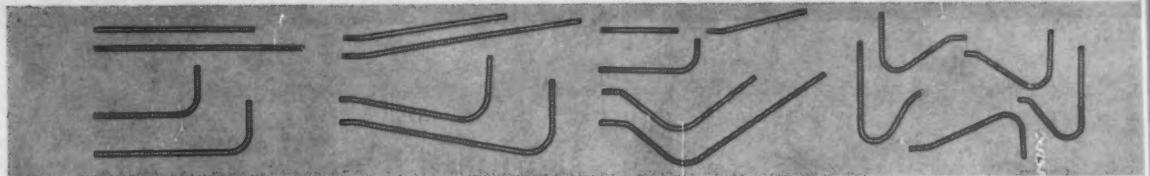
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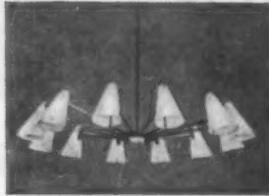
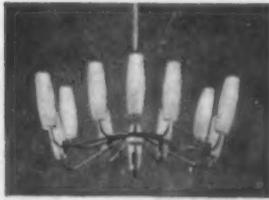
The six types of attachments. Each attachment consists of diffuser, carrier and lamp holder assembly



Types of arms available for use with pendant and ceiling fittings



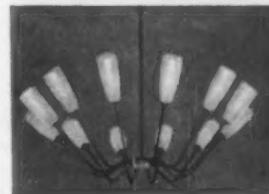
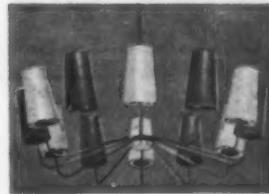
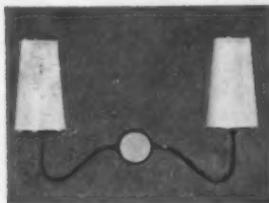
a selection from hundreds of possible arrangements



into hundreds of different designs

Here is the answer, the elegant, *economic* answer to countless lighting needs. Variform interchangeable units—a comparatively small number of carefully planned components that assemble in many different arrangements to provide an almost endless choice of design.

Entirely new in conception, and outstandingly well made from durable materials, versatile Variform lighting units are fully described and illustrated in a comprehensive brochure and price guide, available on request.

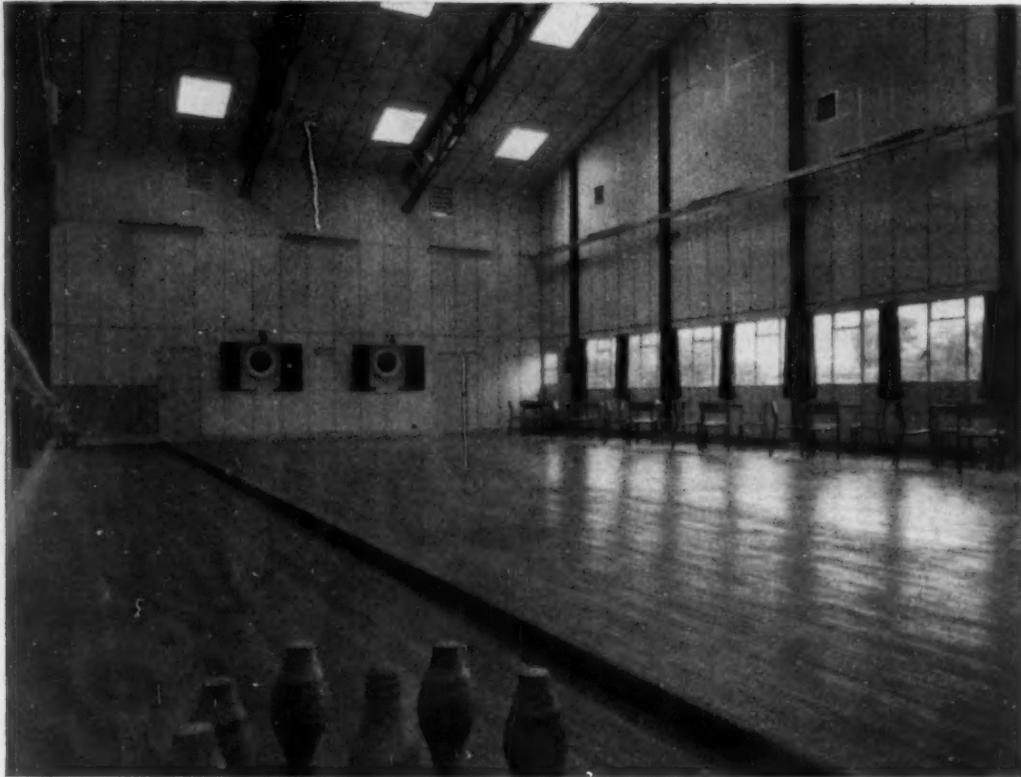


INTERCHANGEABLE

COSELEY



one hundred foot clear span



1000

SEND FOR OUR ILLUSTRATED BROCHURE
WITH FULL WORKING DETAILS

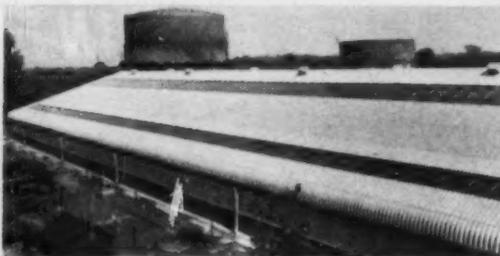
COSELEY BUILDINGS LTD.

8-12 LANESFIELD, WOLVERHAMPTON, ENGLAND

Tel: BILSTON 41927 (10 lines)

London Office: Adelphi, Adam St., W.C.2: Tel: WHI 5228/9

- ABOVE Gable end view of 100ft. span building at Dunball, Somerset, for Messrs. J. Bibby & Sons Ltd., Liverpool.
- CENTRE Club room interior of building at Dunball. Occupies 37ft. 6in. of the length; storage section (162ft. 6in.) behind.
- BELOW Impressive view of the roof of a 100ft. span building at Tamworth. Picture by courtesy of Messrs. E. B. Hamel & Son Ltd.
- Other spans from 30ft. upwards; crane bays, saw tooth roof designs.



100ft. clear span buildings by Coseley

SWEDISH PERSTORP DATA SHEET 2

PHYSICAL TOUGHNESS

These tests were performed in a laboratory in accordance with the international requirements of the National Electrical Manufacturers Association, U.S.A.

EXPOSURE 16 HOURS

Benzine	0	Coffee	0
Water	0	Mustard	0
Alcohol 96%	0	Sodiumbisulphite	0
Amyl Acetate	0	Shoe Polish	0
Acetone	0	Wax	0
Carbontetrachloride	0	Loganberry Juice	0
Hot Spray	0	Ink	1
Household Soap	0	Iodine 1% in spirit	1
Fat Alcohol	0	Ammonia 10%	0
Sodiumtriphosphate	0	Urea 6.8%	0
Olive Oil	0	Phenol 5%	0
Citric Acid 10%	0	Hydrogendioxide	0

KEY 0 No effect. 1 Slight effect noticeable in reflected light.
 2 Slightly etched. 3 Heavily etched, pattern damaged.

Besides these compulsory tests, tests with the following were made.

Hydrochloric acid conc.	65 hrs 1-2
Sulphuric acid conc.	65 hrs 3
Sulphuric acid 55%	65 hrs 1
Hydrofluoric acid conc.	65 hrs 0-2
Cresylic acid	65 hrs 0
Caustic soda lye 20%	169 hrs 0
Ammonium sulphite	75 hrs 0
Acetic Acid conc.	65 hrs 0
Sodium chloride 10%	65 hrs 0
Sodium sulphate	65 hrs 0
Sodium acetate	65 hrs 0
Sod. sulphide 10%	65 hrs 0
Nitric acid conc.	65 hrs 2
Pot. Iodide 10%	65 hrs 0
Pot. Iodate 10%	65 hrs 0
Pot. ferrocyanide 10%	65 hrs 0
Heat 266°F.	0
Sodium Nitrate 10%	65 hrs 0

22 Magnificent Colours

Lacquer Red	PP 19
Scarlet Red	PP 38G
Flame	PP 318G
Magnolia	PP 308G
Canary Yellow	PP 39G
Primrose Tint	PP 301G
Bamboo	PP 319G
Cream	PP 31G
Green	PP 27
Medium Green	PP 37G
Apple Green	PP 47
Green Tint	PP 307G
Royal Blue	PP 34G
Light Blue	PP 24G
Deep pastel Blue	PP 314G
Blue Tint	PP 304G
Black	PP 15G
Gunmetal	PP 312G
Grey	PP 22G
Grey Tint	PP 302
White	PP 20G
Snow White	PP 30G

10 Wood Grains

Light Oak	PP 131
Silver Sycamore	PP 112G
Swedish Pine	PP 121G
Dark Mahogany	PP 115G
Limed Mahogany	PP 117G
Bleached Mahogany	PP 111G
Birds Eye Maple	PP 151G
Dark Walnut	PP 165G
Light Walnut	PP 161G
Quarter Cut Walnut	PP 265G

36 Pleasing Patterns

TRACERY

Red	PP 228
Yellow	PP 229
Green	PP 227
Blue	PP 223
Grey	PP 222
Buff	PP 221

LINEN

Dark Green	PP 57
Green	PP 56
Blue	PP 54
Grey	PP 52
Beige	PP 51

MYTH

Black	PP 75G
---------------	--------

STIPPLETON

Red	PP 278G
Grey	PP 272G

BABYLON

Black on Red	PP 368
Black on Yellow	PP 369
Black on White	PP 360
Green	PP 356
Blue	PP 354
Beige	PP 351G

M DESIGN

Beige	PP 61
Grey	PP 62

LABYRINTH

Red	PP 308G
Black on White	PP 300G

TWEED

Red	PP 388G
Bamboo	PP 389G
Green	PP 387G
Blue	PP 384G
Buff	PP 381G
Grey	PP 382G

BOOMERANG

Red	PP 218
Tan	PP 216
Green	PP 217
Blue	PP 214
Charcoal	PP 215
Grey	PP 212

A WORD OF WARNING Though all decorative laminates will withstand rough treatment, they will not stand abuse and misuse. It is wise to specify a medium coloured broken pattern on surfaces that are likely to get abused, particularly working surfaces such as canteen serving counters, public bars, seaside restaurants, self-service cafes etc. We do not recommend plain or dark colours for this type of surface.

Sheet sizes

STANDARD SHEET SIZE—Satin Finish: 9'0" x 4'11"

Other sizes subject to order:
 9'0" x 2'0" — 8'2 1/2" x 4'1 1/4" — 8'2 1/2" x 2'0 1/2" — 7'0 1/2" x 4'1 1/4"
 7'0" x 3'0 1/2" — and in a limited range 9'0 1/2" x 2'9"

The standard thickness of Perstorp is 1/8". Available in panel size 9'0 1/2" x 4'1 1/4" only and subject to order:—
 (a) Glossy finish range (b) A special cigarette proof (CP) grade for installations subject to severe abuse from cigarettes.

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 London, N.1.
 Geo. E. Gray Ltd.,
 Jolnant House, Eastern Avenue,
 Ilford, Essex.
 Heaton Tabb & Co. Ltd.,
 Cobbold Road, N.W.10.

West Country & South Wales

Channel Plastics Ltd.,
 Flowers Hill,
 Brislington, Bristol, 4.

Midlands Area & East Anglia
 Rudders & Payne Ltd.,
 Chester Street,
 Aston, Birmingham, 6.

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A. J. Wares Ltd.,
 King Street, South Shields.

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Heaton Tabb & Co. Ltd.,
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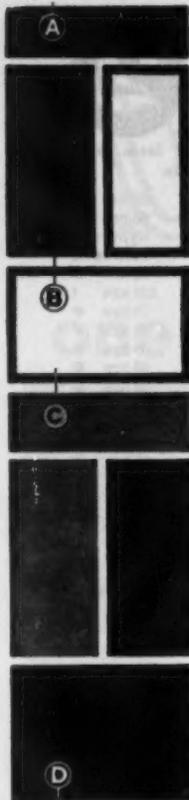


CUT OUT THIS PAGE AND PLACE IT ON FILE

Swedish Perstorp Data Sheet 3 gives you information about:

How to work Perstorp, Specifying Backing and Glues, Edging, Fixing Perstorp to Walls.

* If you missed Data Sheet 1, write to your nearest Perstorp Distributor.



BEACON WALLCLAD

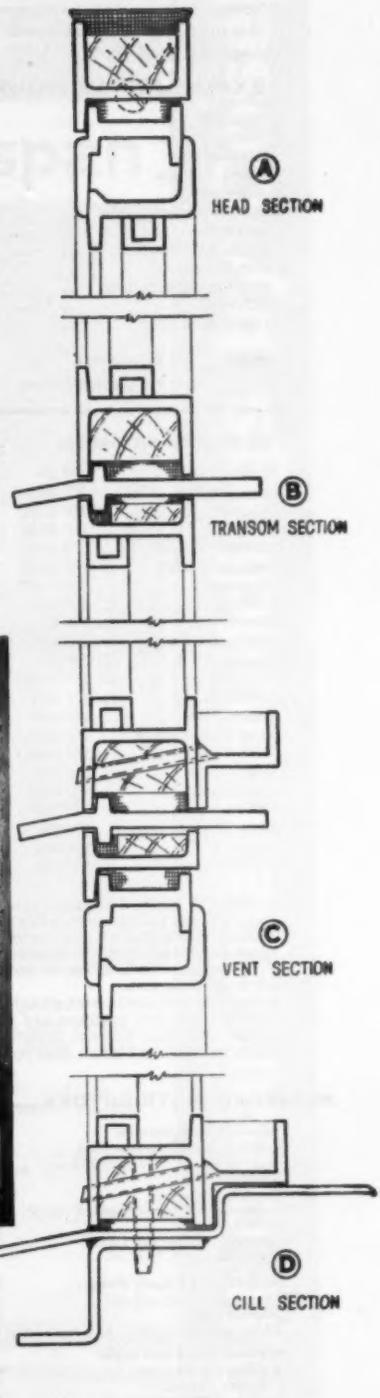
Simple yet versatile, this form of curtain walling, extreme in application, easy to assemble, fulfils the rigorous conditions of exterior weatherproofing. WALLCLAD is flexible, strong and straightforward, and can be applied to any sound structure.

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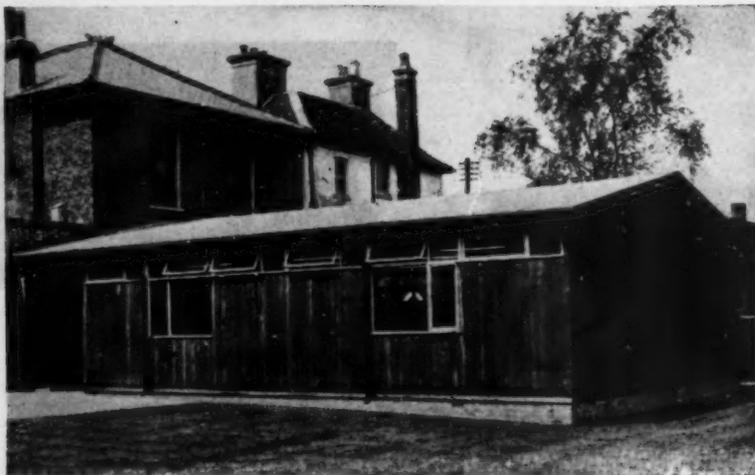
Hospitals

Offices

Canteens

Showrooms

Estate Offices



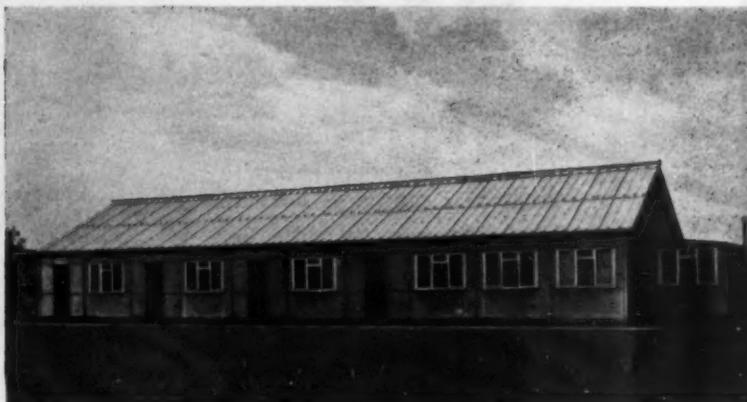
EXTENSION TO CENTRAL LIBRARY, SIDCUP, KENT.

Photograph by courtesy of The Chislehurst & Sidcup U.D.C.



DINING HALL FOR THE SACRED HEART CONVENT SCHOOL, HITCHIN, HERTS.

Photograph by courtesy of The Reverend Mother.



SPORTS PAVILION.

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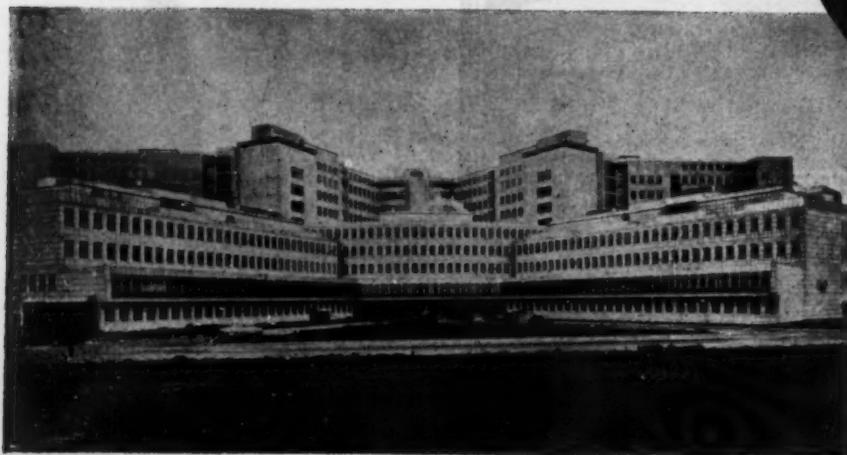
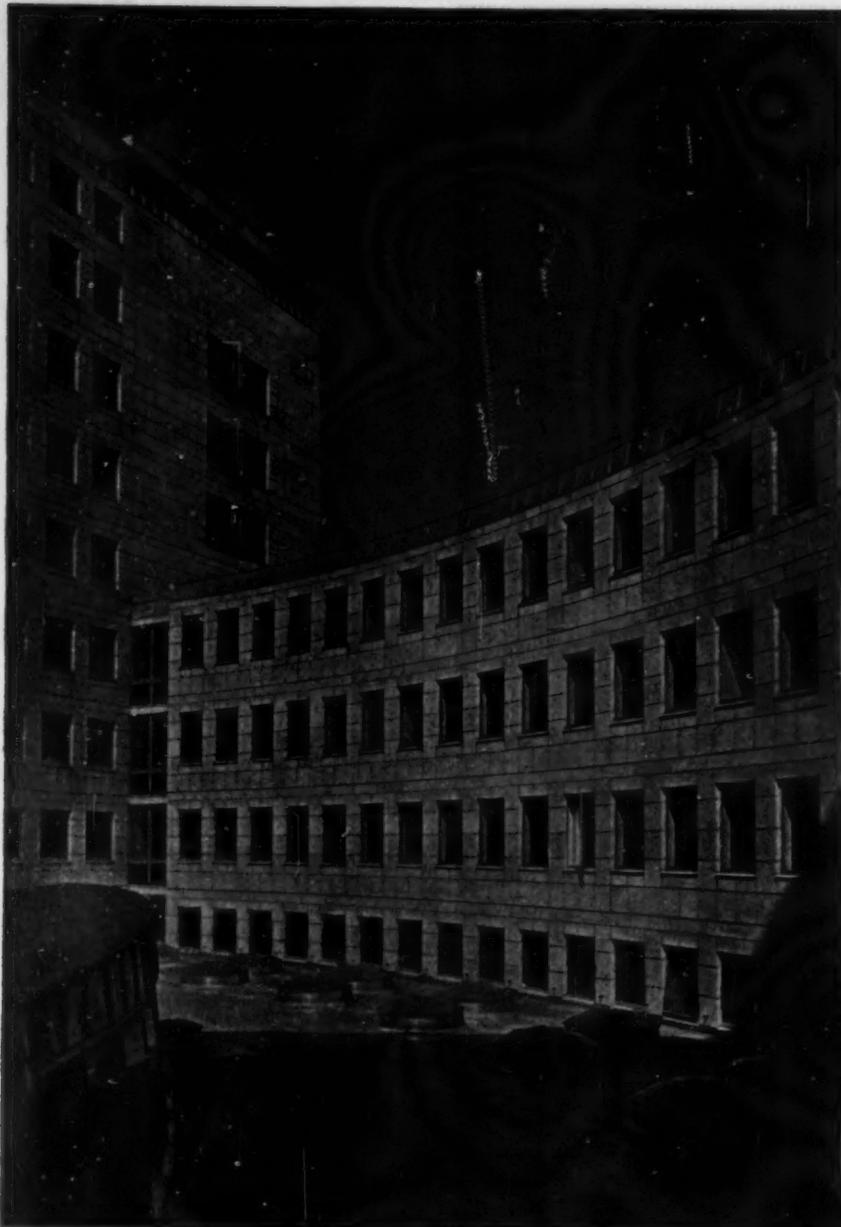
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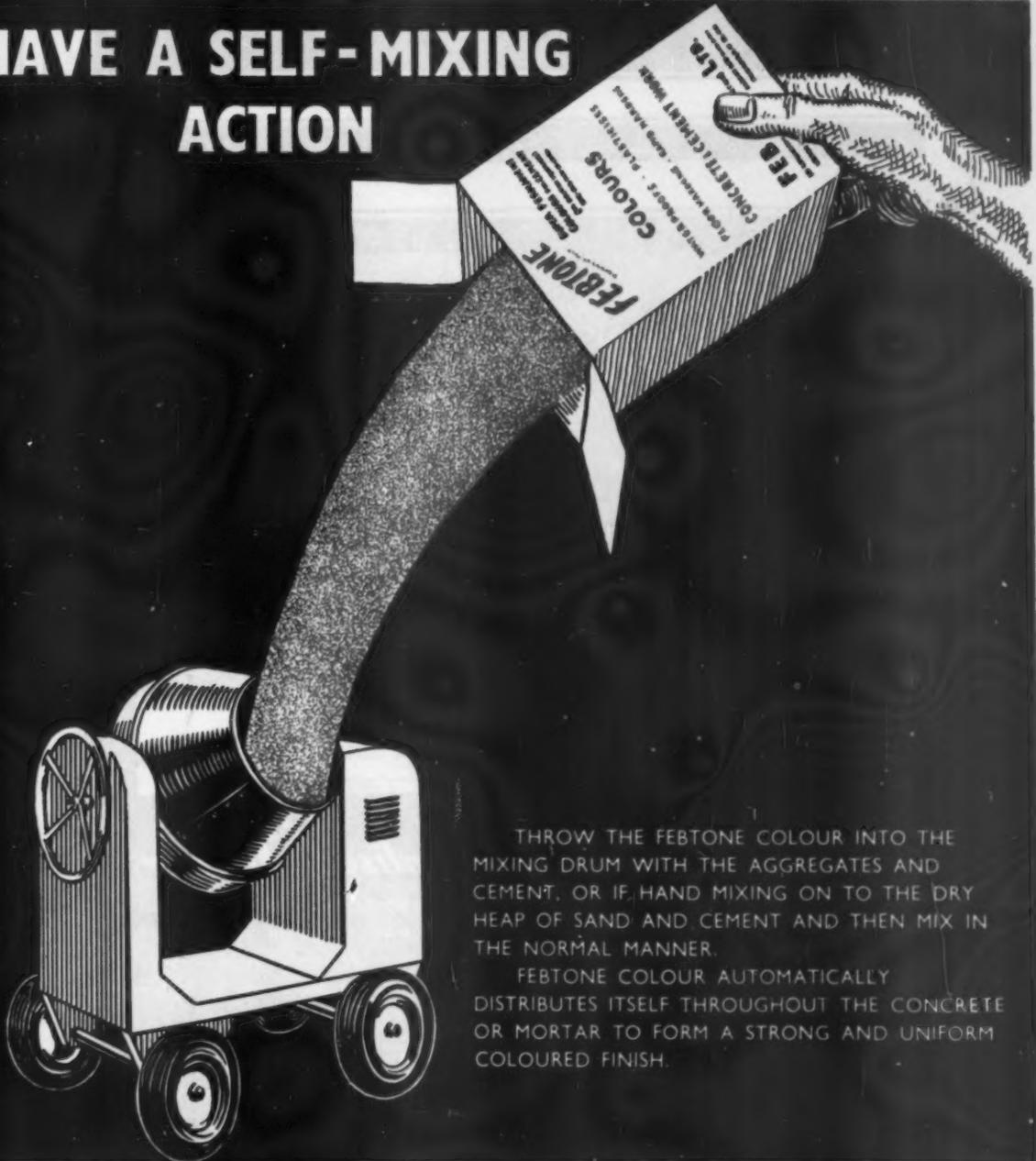
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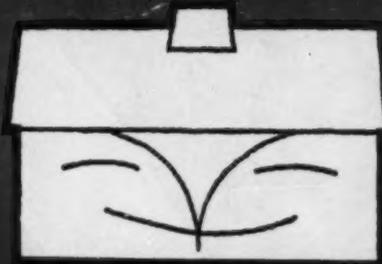


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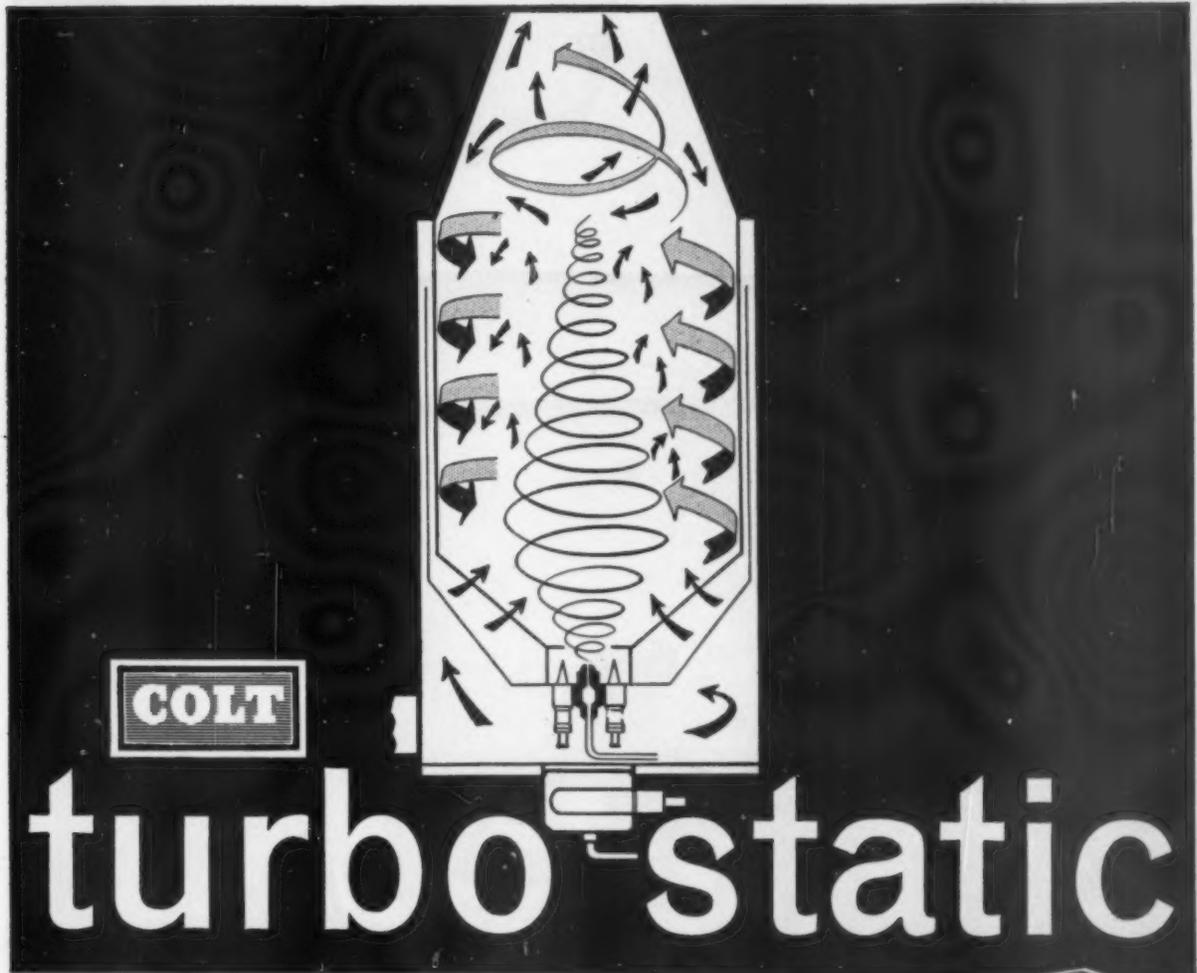
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Durability
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BRICK**

CORONATION COURT, SPARROW
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Architect: R. Bradbury, PHD, FRIBA,
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The new Colt Turbo-Static range of heaters are a triumph for Colt engineers, incorporating a new and advanced combustion unit design and setting new standards of oil-fired industrial heating efficiency. Based on jet engine principles, the vortex-action combustion unit makes the Turbo-Static the most efficient and economical oil heater on the market today. It sells at a price far below any comparable industrial heater. Colt Turbo-Static heaters are available in two sizes—400,000 and 250,000 B.Th.U's/hr. Each provides the following advantages.

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- **Simple two switch control.**





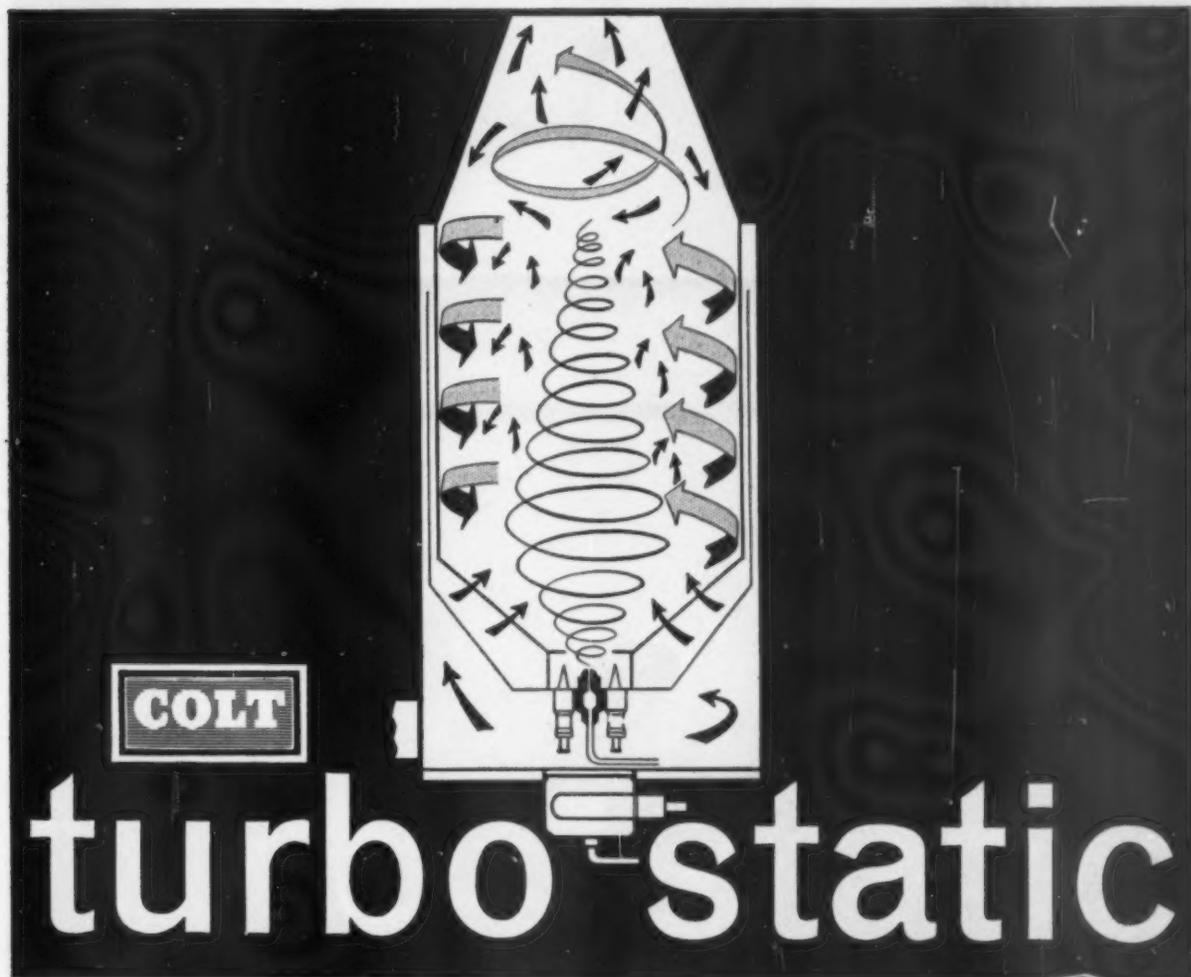
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**BUILD IN
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Architect: R. Bradbury, F.H.D., F.R.I.B.A.,
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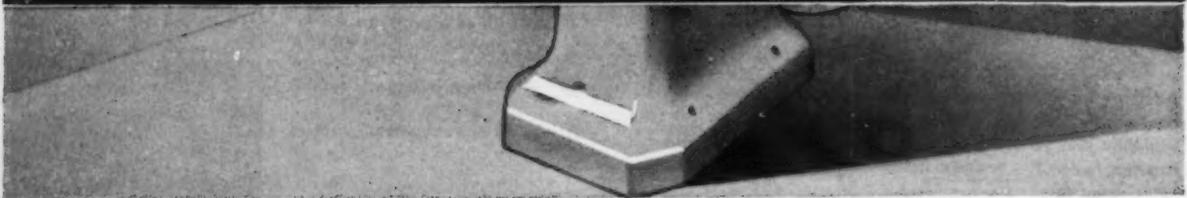


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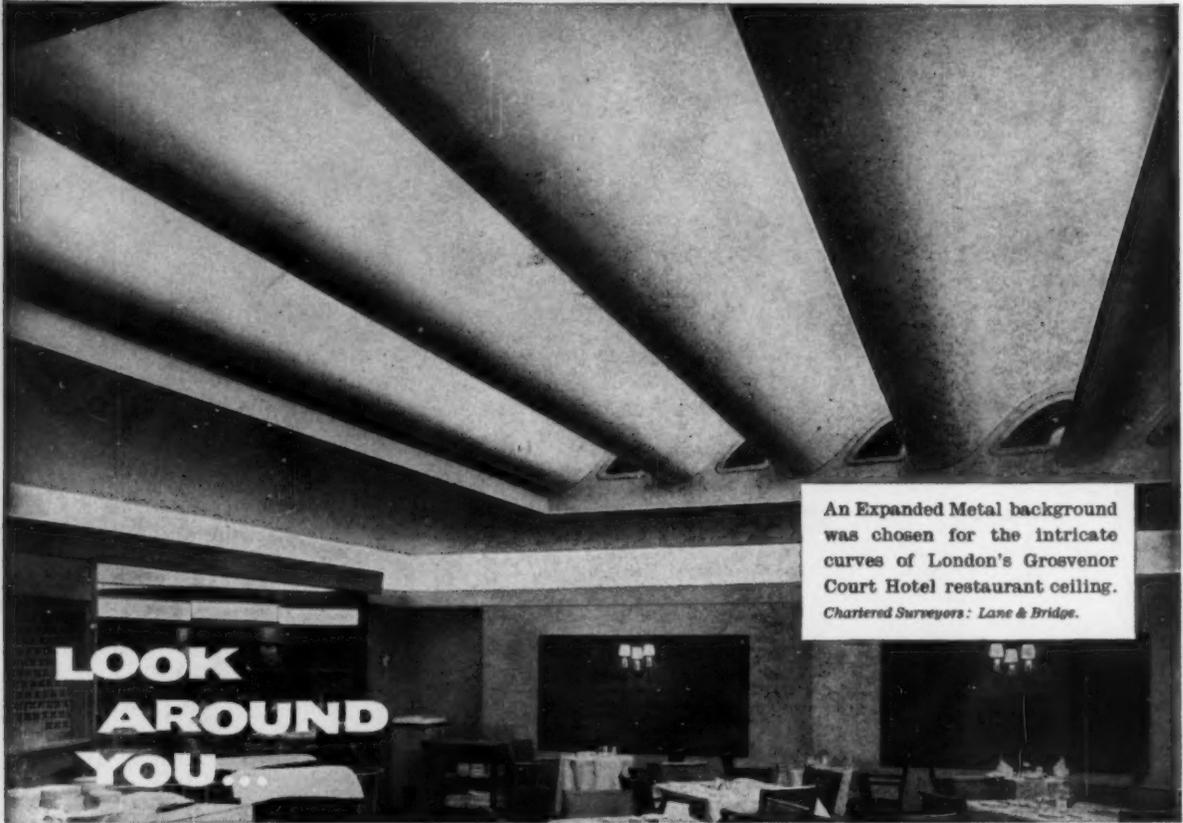
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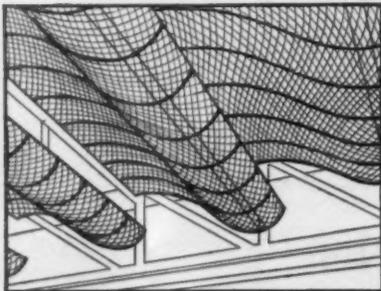
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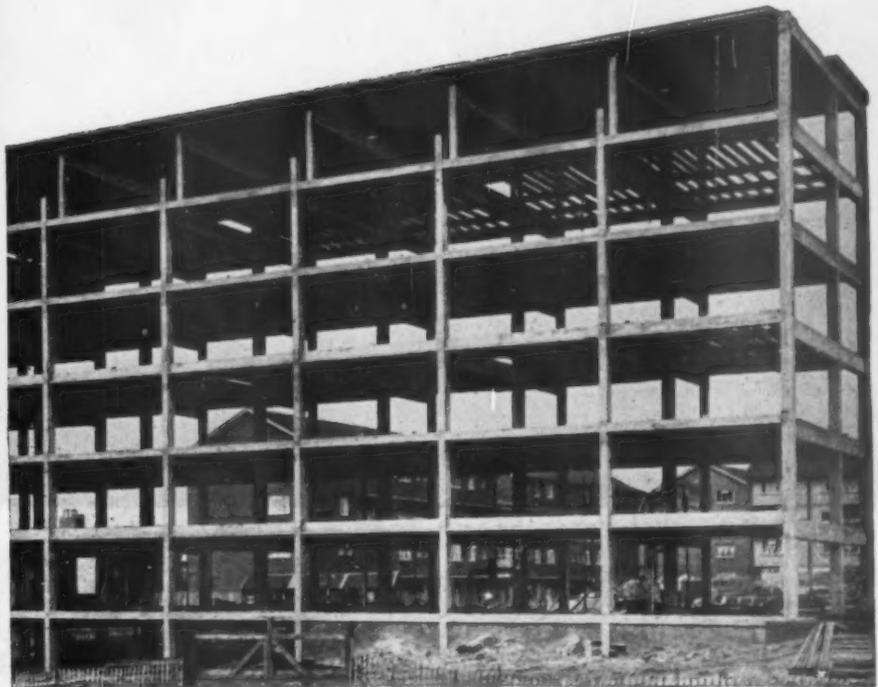
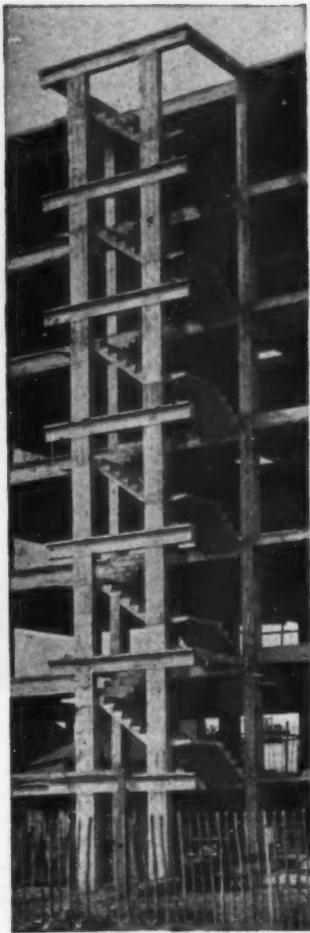
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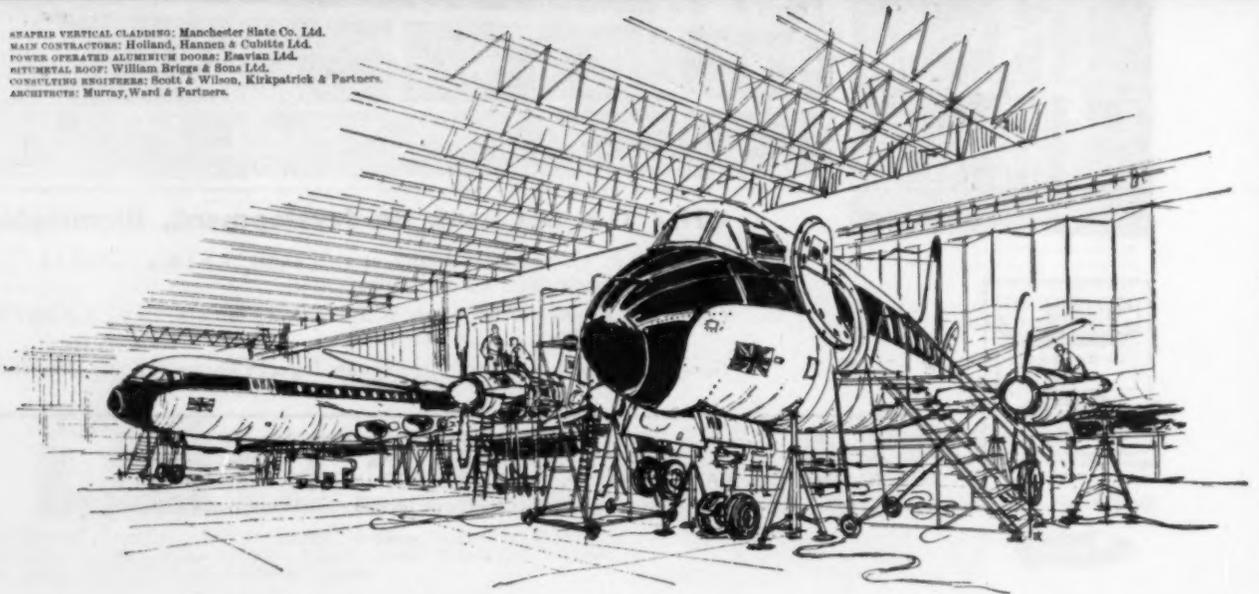
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...and behind the name

Noral



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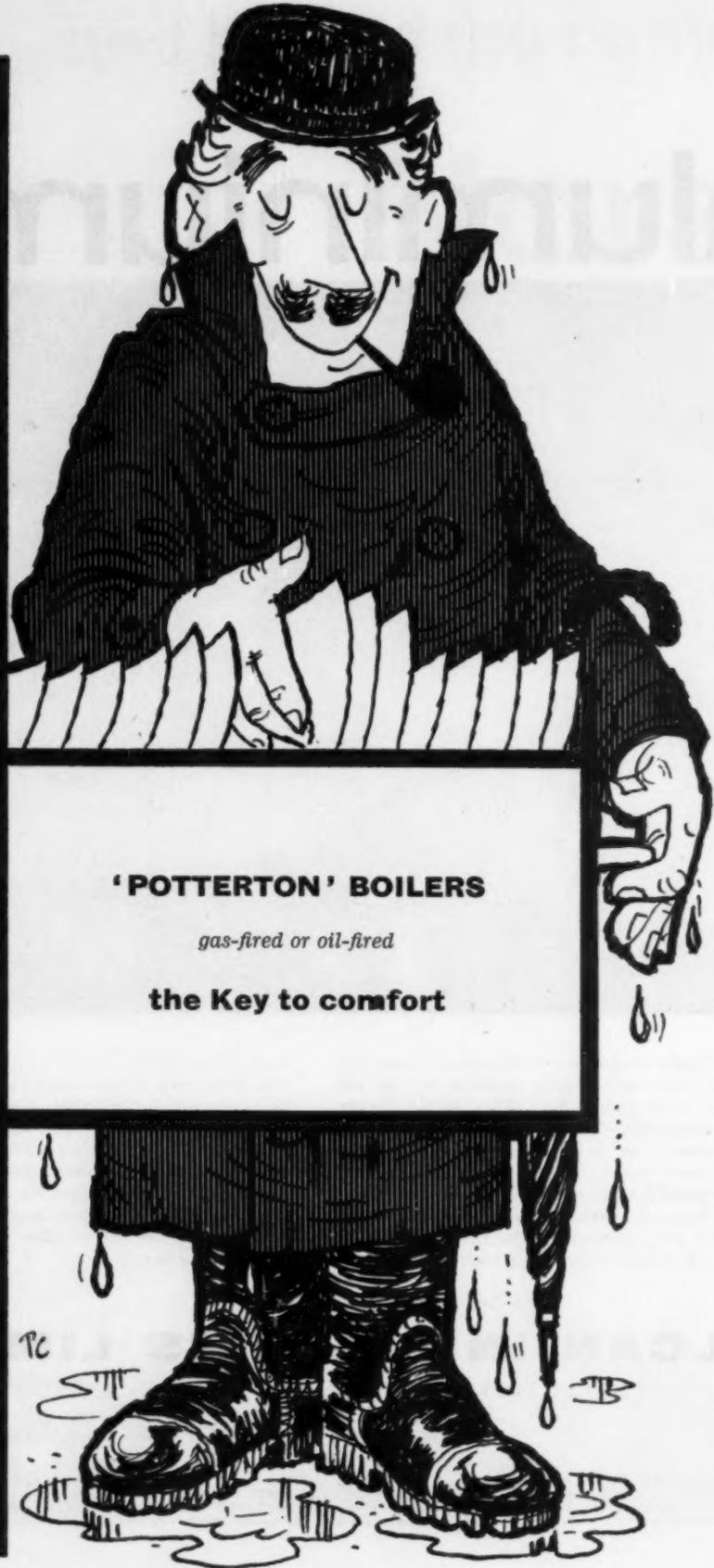
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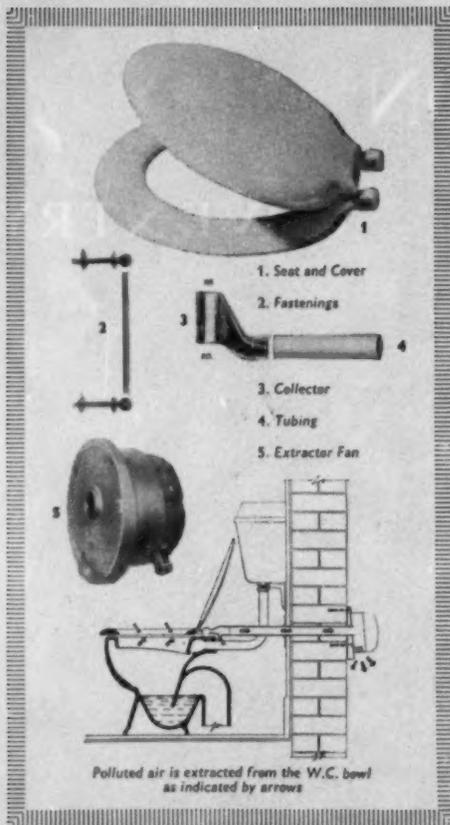
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Bacteria are invariably present in air polluted by the use and flushing of a W.C., and the danger is strikingly explained in an article published in *The Lancet* recently, which states:

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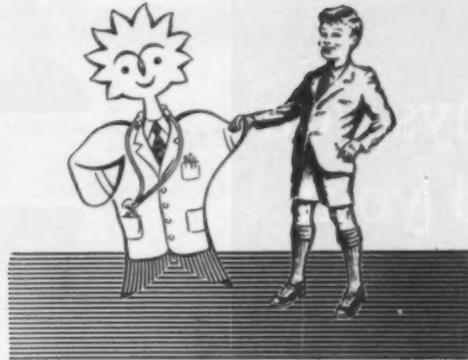


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* plus 2/- to 6/- a week maintenance cost.

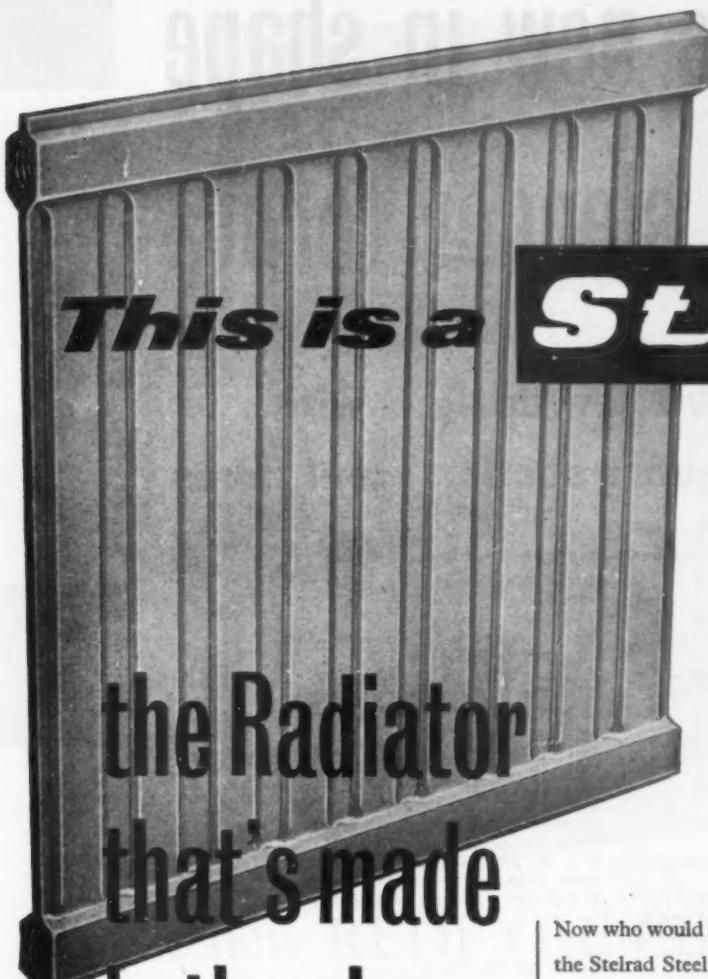
Write for **FREE** booklet on Central Heating and list of other technical publications to the Coal Utilisation Council, 3 Upper Belgrave Street, London, SW1. Also available 'Central Heating for Houses', a complete 120-page illustrated survey of all the various systems available, from the open-fire-and-back-boiler to the small pipe system. Copies 2/6d each.

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there is —
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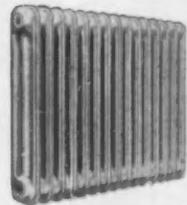
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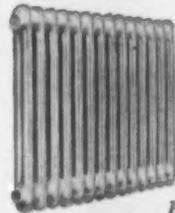
Double Wall



Angle-Wall



3-Column



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2-Column

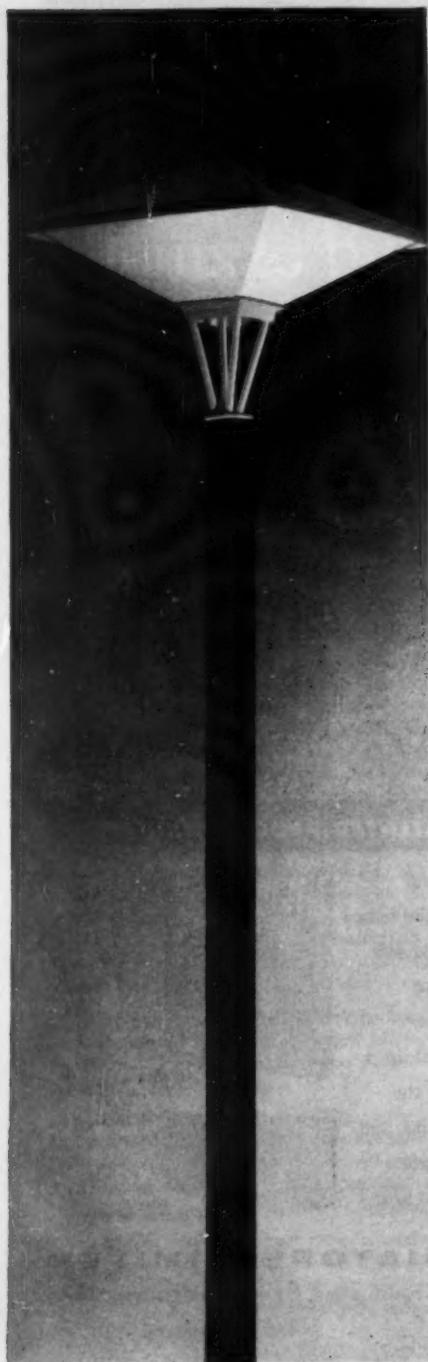
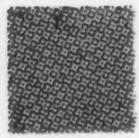


Window seat type

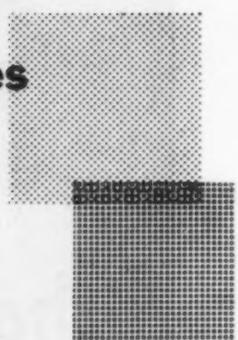
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Area Lanterns new in shape and tube of slender form



Two new designs with square section steel tubes



E 6820. 200w.

Area Lantern with square section steel tube.

Canopy: Coral "Perspex" (I.C.I. Red 463) 24" square.
Diffuser: White opal "Perspex".
Frame Assembly: Steel, phosphated and enamelled Oyster Grey B.S. 4-047.
Lampholder: E.S. porcelain type for 200w. lamp.
Steel Tube: 2.79" ext. x 10g. square section; 12 ft. overall, galvanised and enamelled black.
Cutout: Single Pole and Neutral, insulated type.
Wiring: 23/.0076" Twin circular P.V.C. insulated and sheathed 250v flexible wired from lampholder with sufficient length for connection to cutout.
Access to cutout: 6" x 2½" slot 1 ft. from ground with cover plate and rubber gasket.
Cable entry: 6" x 2" slot 1 ft. from base plate.
Overall height above ground: 12 ft.

Designed by Peter Bell, M.S.I.A.

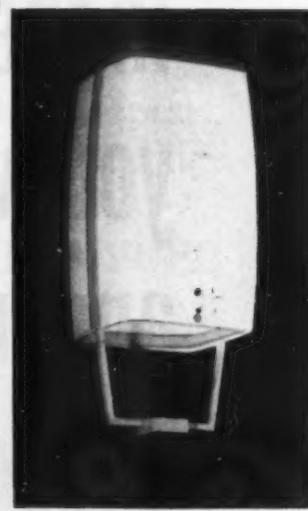


E 6810. 200w

Area Lantern with square section steel tube.

Canopy: Coral "Perspex" (I.C.I. Red 463) 11" square.
Diffuser: White opal "Perspex".
Frame Assembly: Steel, phosphated and enamelled Oyster Grey B.S. 4-047.
Lampholder: E.S. porcelain type of 200w lamp.
Steel Tube: 2.79" ext. x 10g. square section; 12 ft. overall, galvanised and enamelled black.
Cutout: Single Pole and Neutral, insulated type.
Wiring: 23/.0076" Twin circular P.V.C. insulated and sheathed 250v flexible wired from lampholder with sufficient length for connection to cutout.
Access to cutout: 6" x 2½" slot 1 ft. from ground with cover plate and rubber gasket.
Cable entry: 6" x 2" slot 1 ft. from base plate.
Overall height above ground: 12 ft. 6 ins.

Designed by Peter Bell, M.S.I.A.



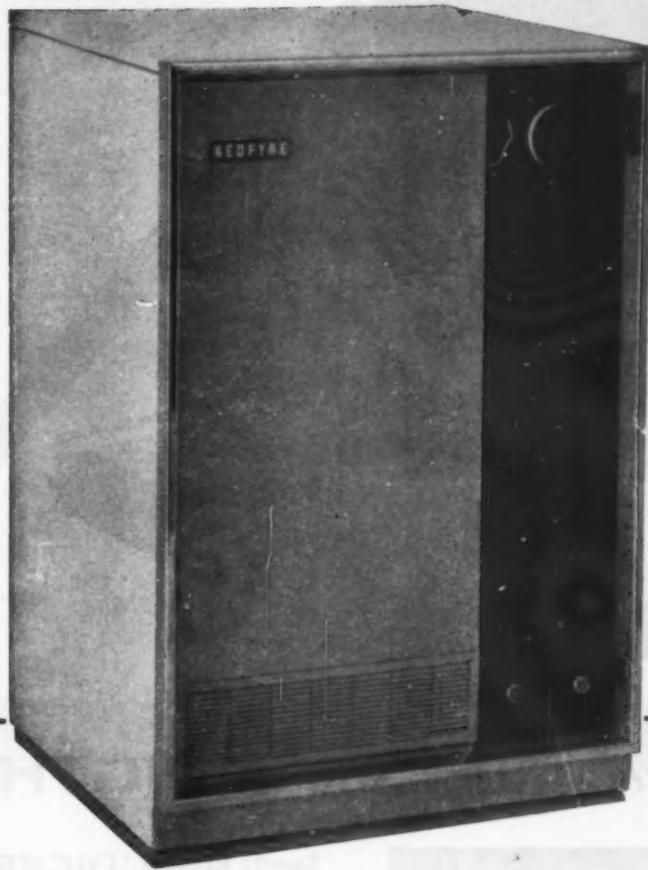
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The new Redfyre Centramatic 50 can provide full central heating and ample domestic hot water for a three or four bedroom house on as little as 25/6's worth of fuel a week averaged over the year. It can do this partly because it is thermostatically controlled, and partly because of its unique electric ignition system which completely cuts out wasteful idling.

The Centramatic 50 is designed to fit perfectly into a modern kitchen. It has the right dimensions (36" high x 21" deep) and an attractive variety of 3-tone colour schemes. It is fully insulated, and does not rely on

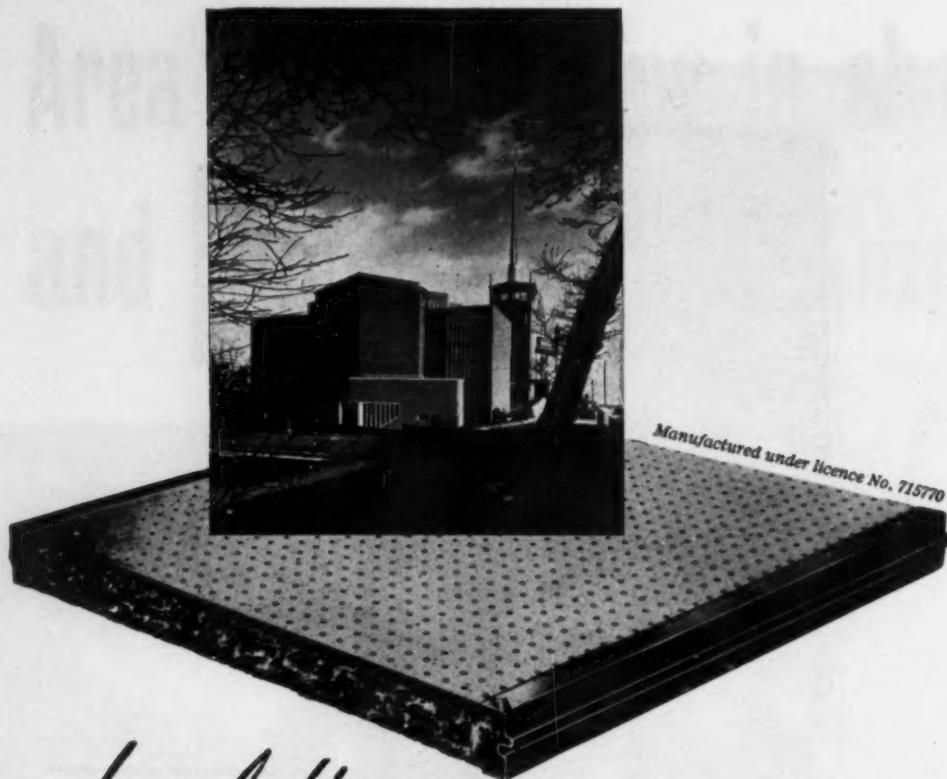
chimney draught for efficient combustion (although it needs a chimney flue in which to exhaust).

The Centramatic 50 comes as a packaged unit. It requires no specialised installation techniques. And, of course, being totally enclosed, permanently installed and fed with oil from outside the house, it is always perfectly safe.

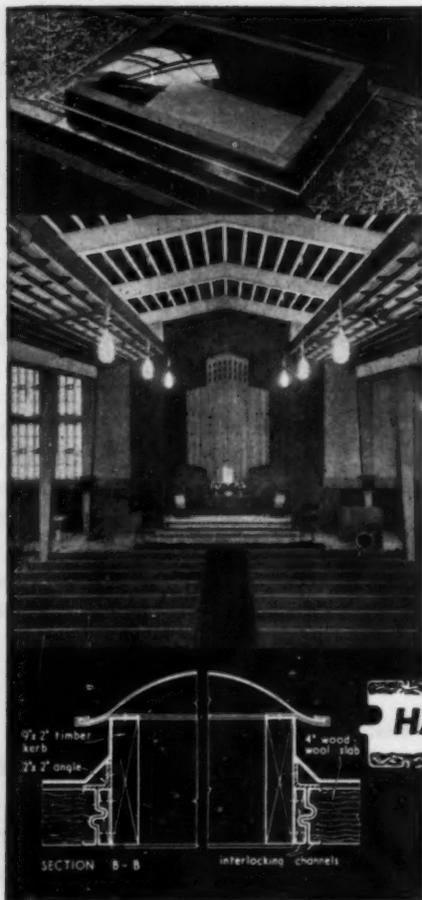
The Redfyre Centramatic 50 is suitable for heating systems requiring up to 50,000 B.T.U.'s per hour and costs £128 retail. There is also a larger version, the Redfyre Centramatic 80, which has an hourly output of 80,000 B.T.U.'s and costs £149 retail.

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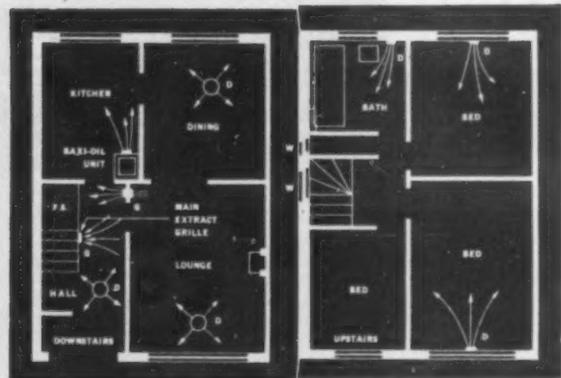
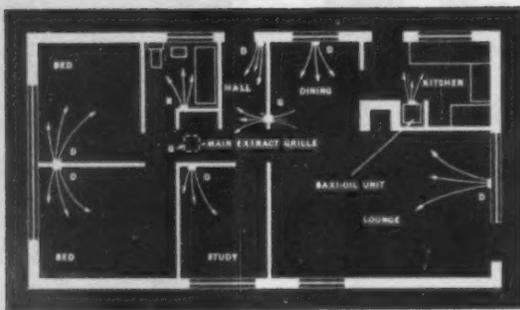
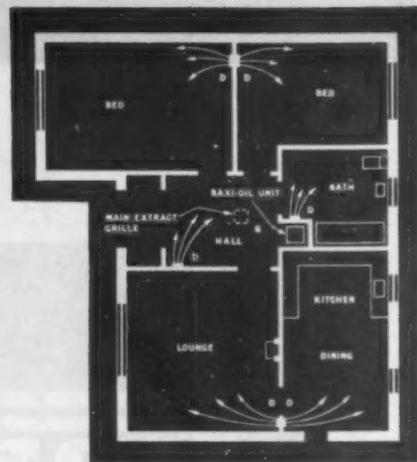
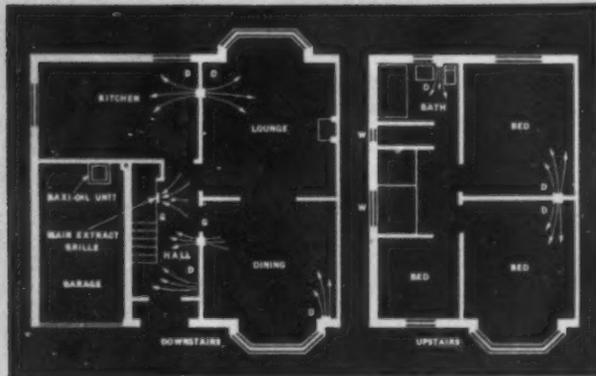
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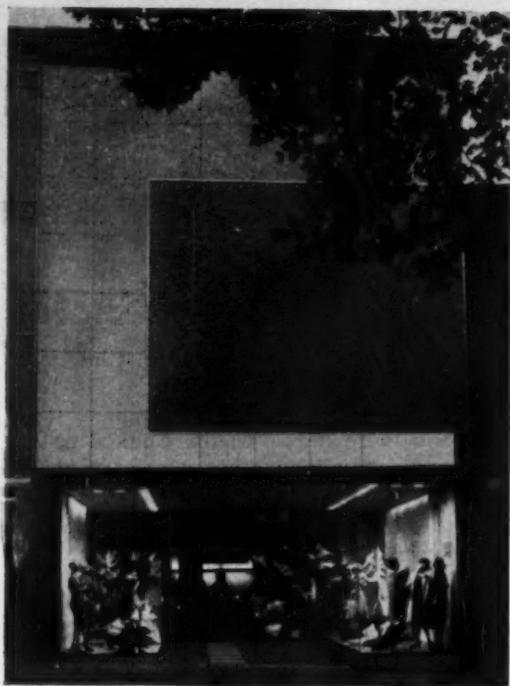
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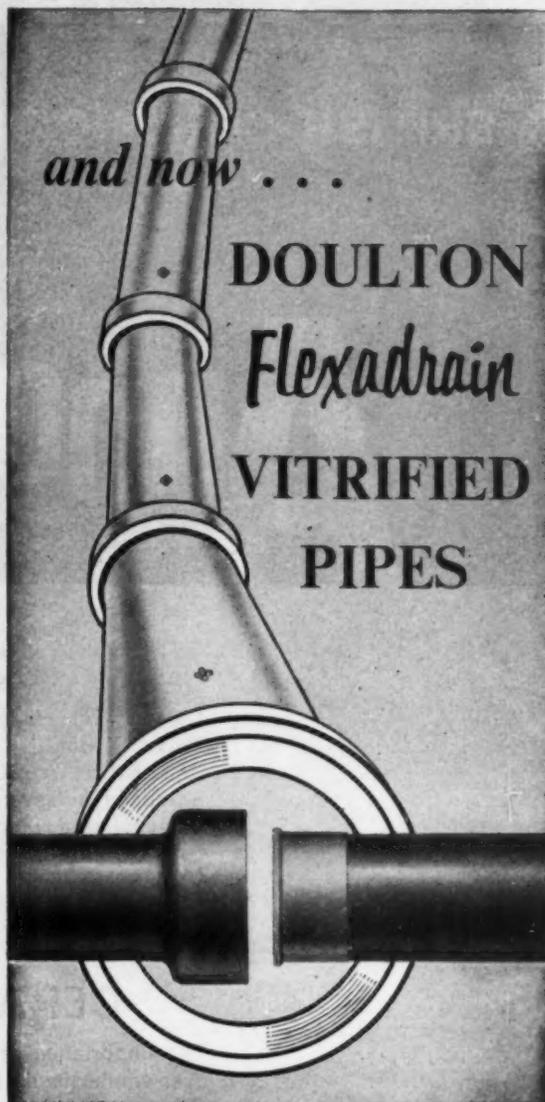
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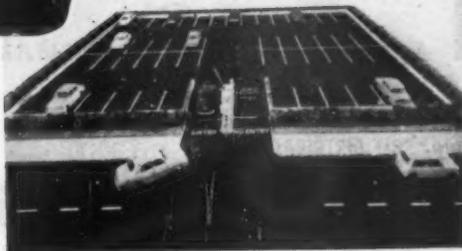
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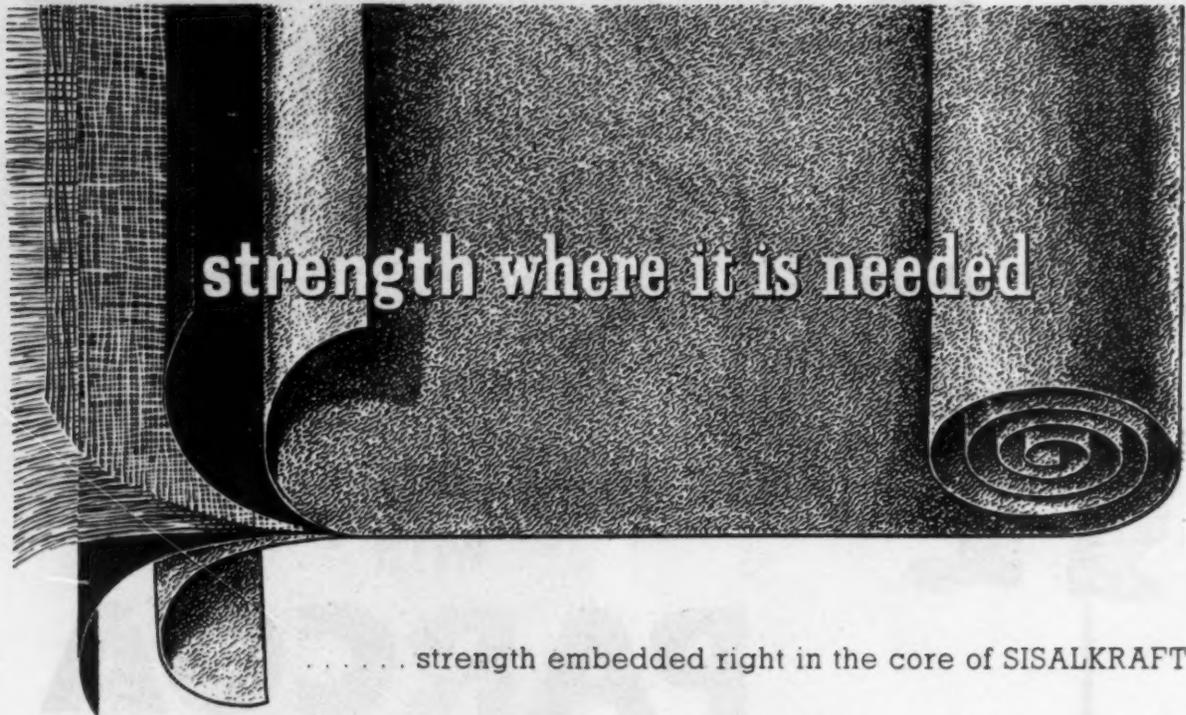
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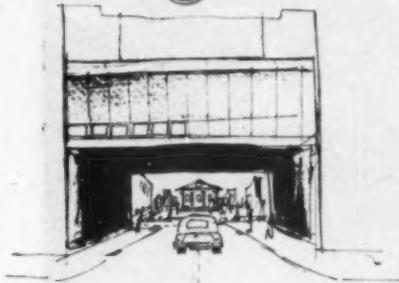
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MEMORANDUM FROM HEAD OFFICE

Reference: 4032

KINGS CROSS MARKETING CENTRE

Minor alteration to the Covent Garden Market Bill will enable the Government to choose an alternative site and adopt Mr. Glover's scheme.

The prolonged analysis and detailed design have now been described to all M.P.'s and various trade interests in and around Covent Garden and are meeting with the acclaim they deserve on all sides.

Amendment to the Bill is probable. I can confirm that the promised £6,000,000 will be available. This will more than cover the construction and all services. (This is additional to the £28,000,000 for projects put in hand since our inauguration in June, of course.)

We shall treat this project as usual. If the Client (in this case, Client may include Trade interests as well as the Market Authority) wishes to employ his own Consultants and Architects, our Consultants will collaborate with them in strict accordance with established professional standards of conduct.

I intend seeking your approval shortly to make a public announcement concerning our consortium of ten major engineering companies and the financial backing we can call upon for large and small industrialists who cannot spare the capital for necessary expansion. There must be many more manufacturers who wish to modernise and expand and who need our facilities.

I anticipate no difficulty in securing finance for the complete rebuilding of the Covent Garden area in accordance with Mr. Glover's scheme, if required.

(Sgd) John P. Milford Reid
Managing Director

The Industrial Development Group is a new consortium of ten well-known engineering companies, formed to build factories and commercial buildings as a 'packaged deal', and to raise funds for such projects where insufficient capital is available. The group adheres to accepted professional standards and never cuts out the Clients' own Consultants and Architects.

* Charles W. Glover,
M.I. Mech. E.,
M.I. Struct. E.,
M.Cons. E., F.P.W.I.,
M.A.S., M.I.W., Chief
Consulting Engineer and
Architect, Industrial Development Group Limited.

25th November, 1960

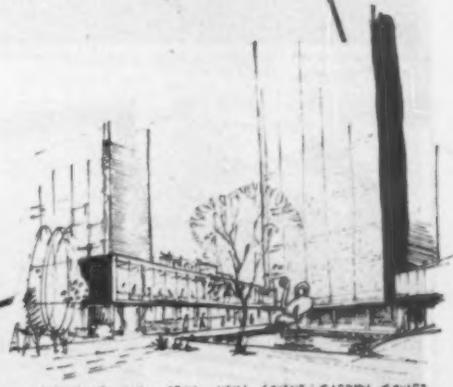
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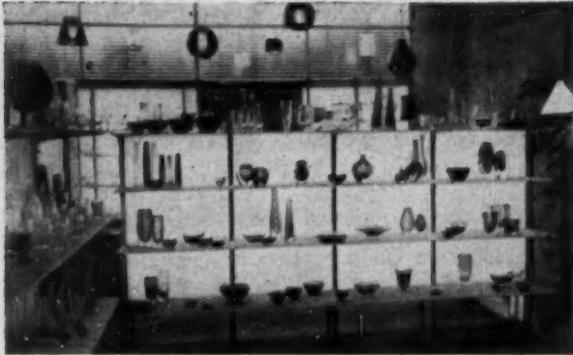
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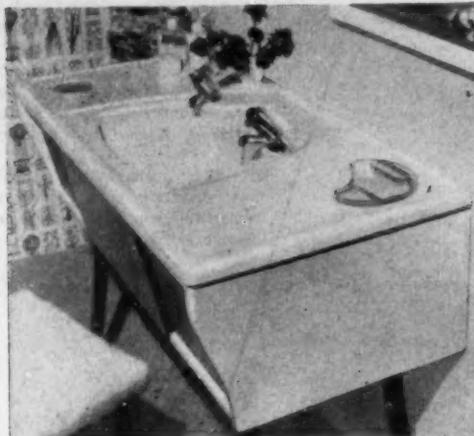




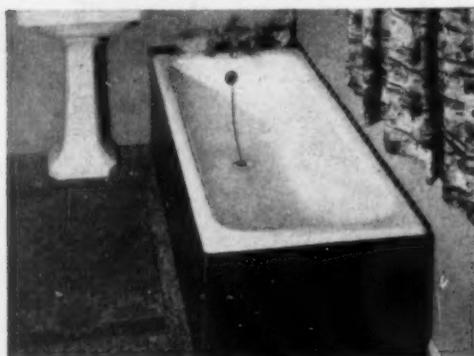
An opal 'Perspex' display stand specially designed by R. Stennet-Willson for J. Wuidart & Co. Ltd., London.



Modular ceiling lighting fittings with opal 'Perspex' diffusing panels made by the General Electric Company Ltd. and installed at the Midland Bank Ltd., High Holborn branch.



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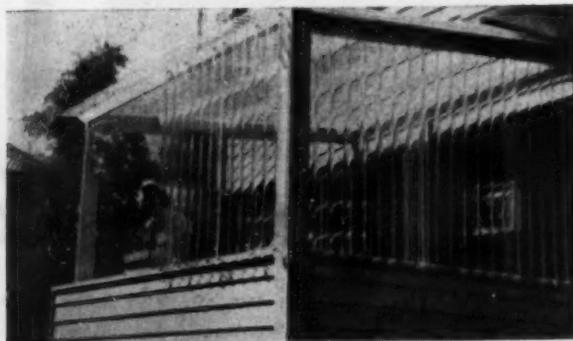
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P.810



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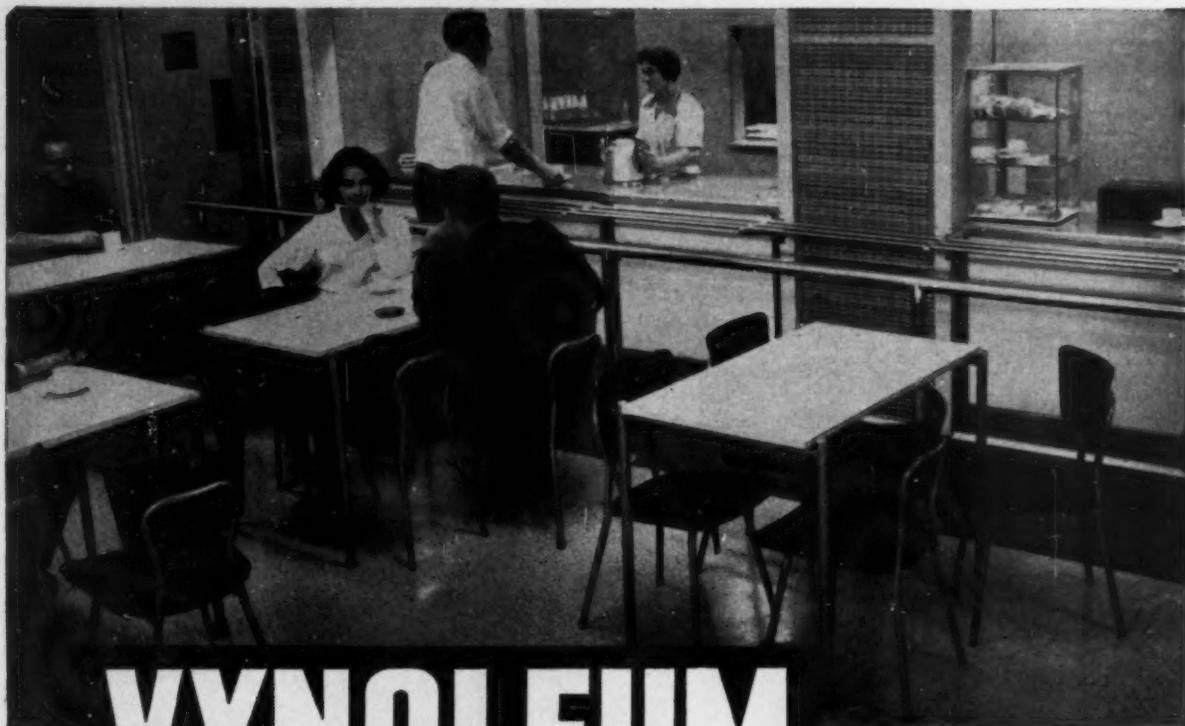
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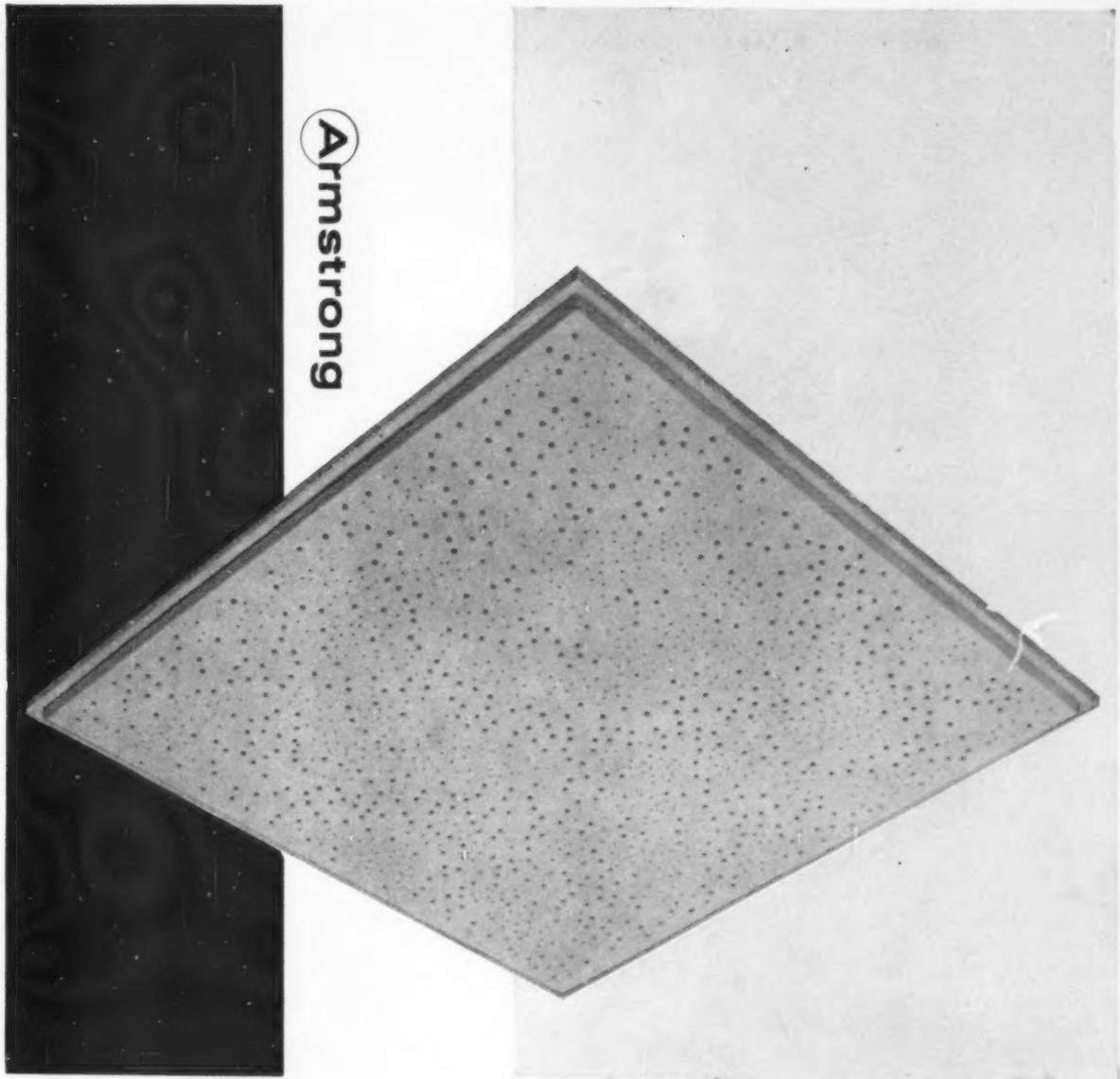
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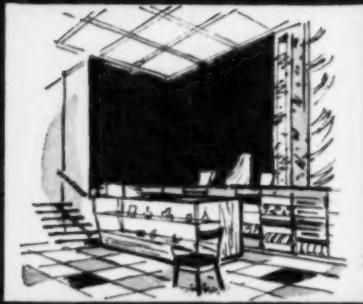
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AT.23



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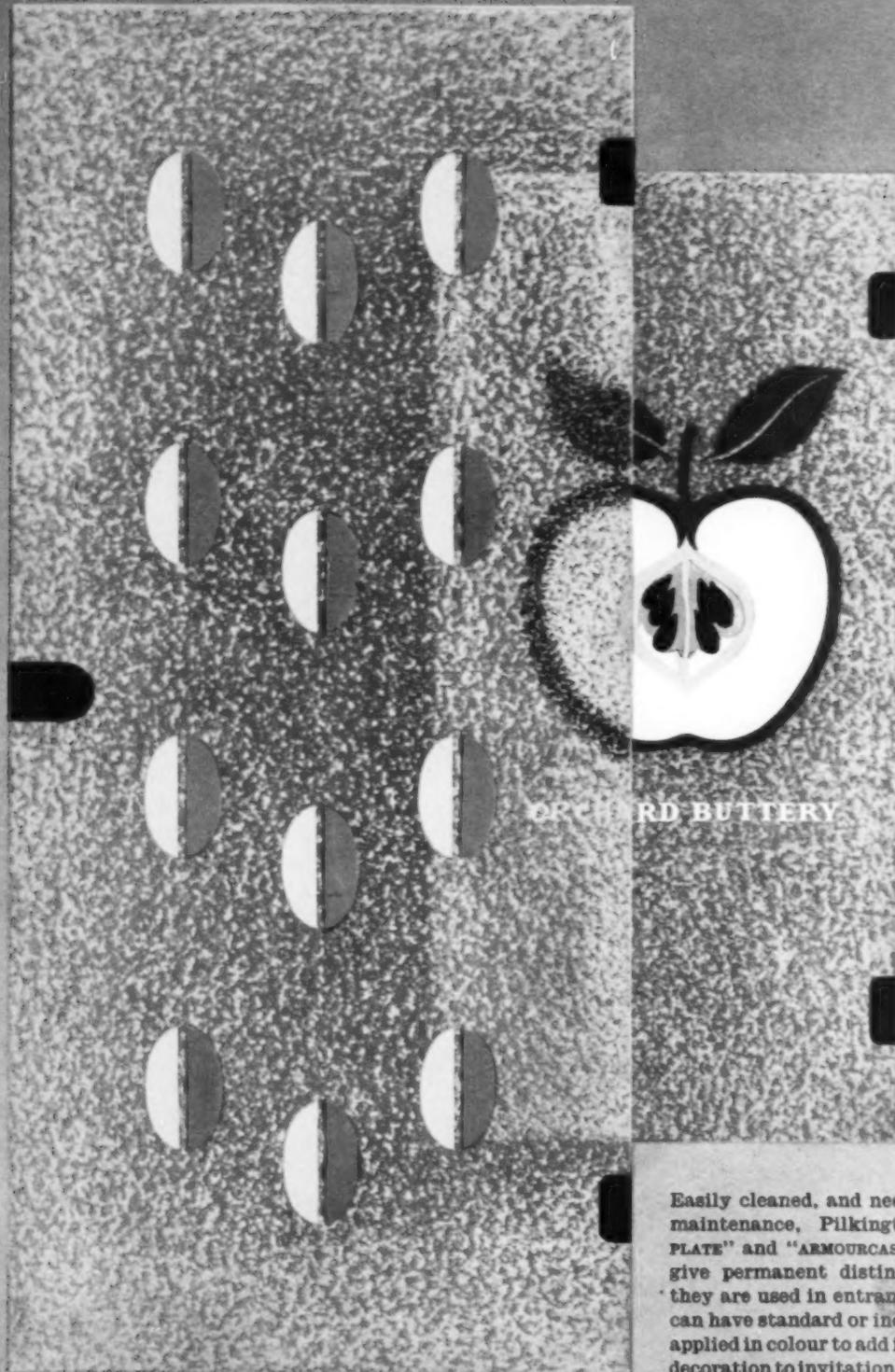
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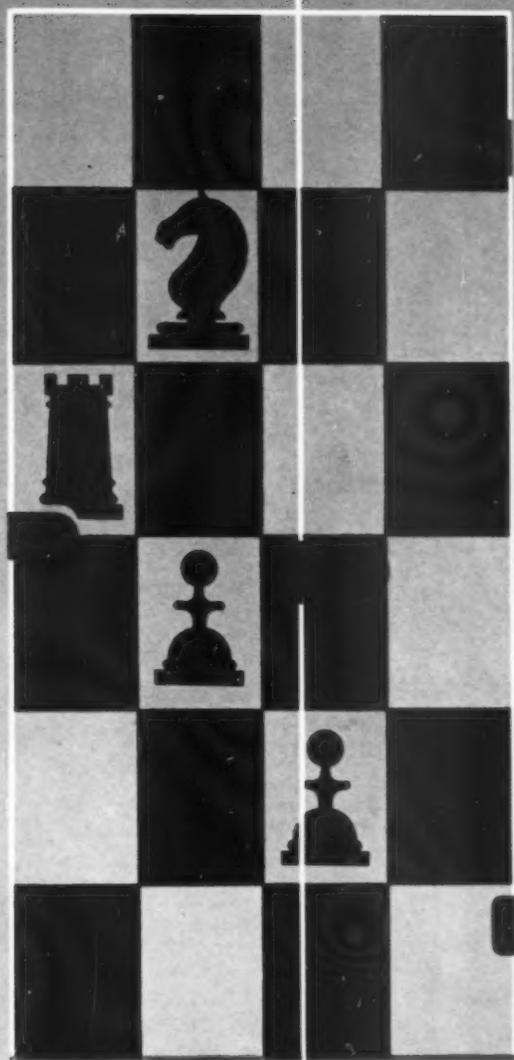
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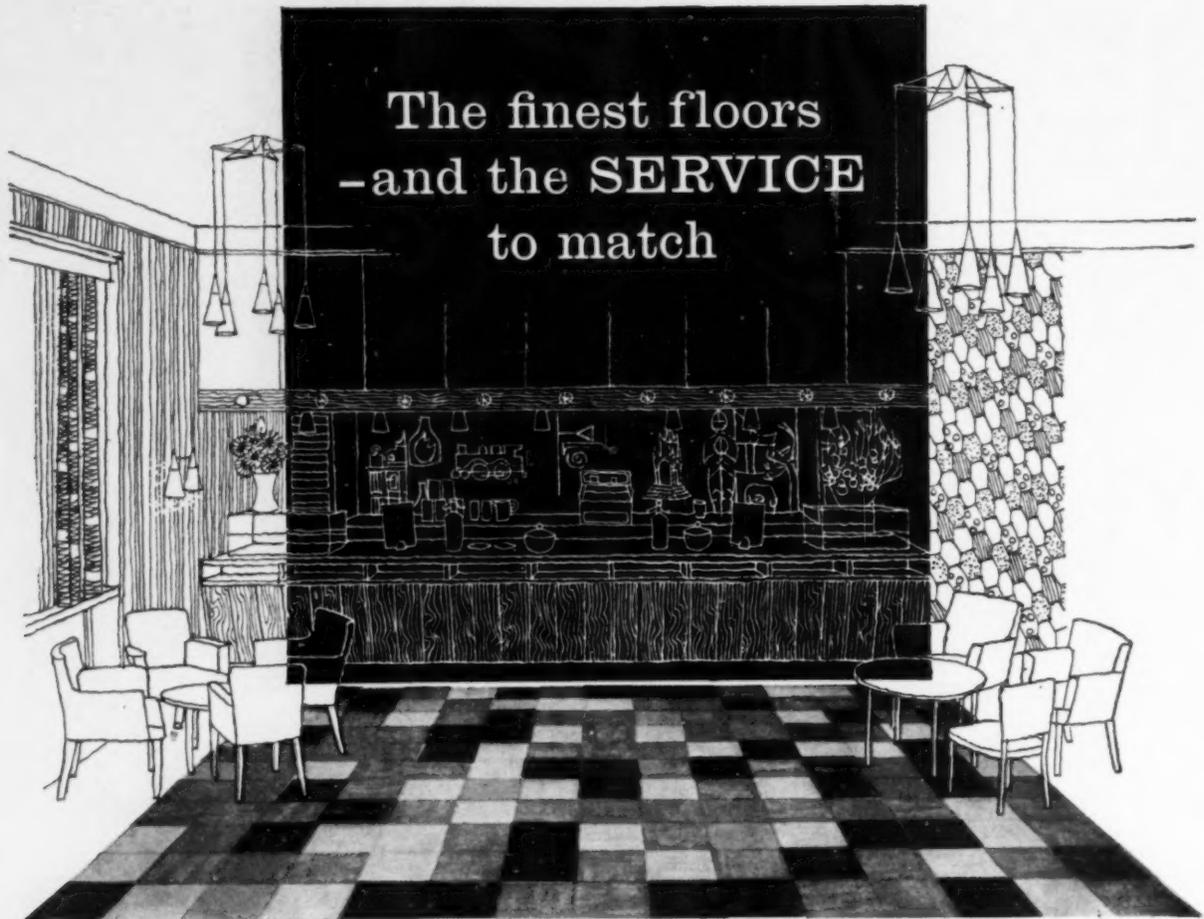


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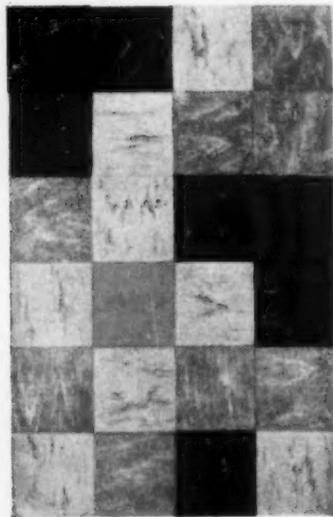
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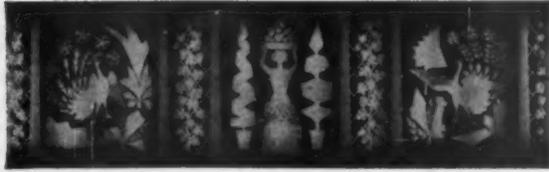
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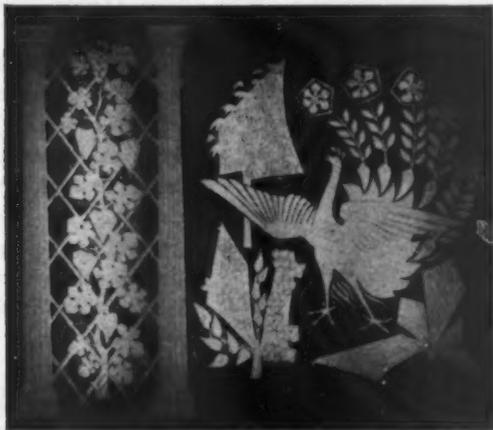
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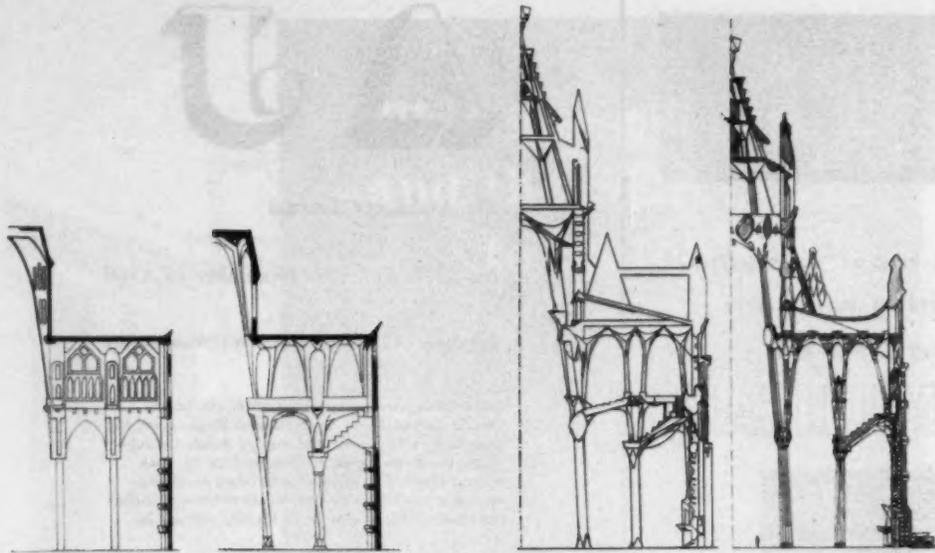
NOT QUITE ARCHITECTURE

Old Man Without A Lantern

As the cleaners wheeled our beds back in a row and Sister's voice could be heard outside and the paper boy hopped from patient to patient, Mr. Moon loitered near my bed looking lost, indeterminate and desperately anxious not to be a bother to anybody, not even to me any more. He was ready for his ride—dressing-gown, muffler, blanket rolled round lower half—and apprehensive to the last as if he might be left behind. He was a kindly, timid old man with craftsman's hands, a fine mop of white hair and troubled brown eyes. When a lantern man came through for the draughts board, carrying his lantern with its long rubber connecting pipe making a blatant loop, they talked together about their disorders. A nurse hurried in.
"Quick, it's here, the ambulance! Run along, Mr. Moon!"

Words startled him. But this nurse turned his pother into a children's game, hustling him out as if a thimble were to be hidden in the ward. He liked that. In fact he was off to Sheffield for his daily treatment in the big machine at St. Mark's. I wrote to Sister: *It's none of my business but Mr. Moon keeps saying, "They may not be telling me the truth. I don't know—they don't always tell you the truth, do they?" What am I to say? I said, "If they don't tell you the truth you can be sure they tell your next of kin the truth." Did I say right?*

Arborescent Architecture



Was Antoni Gaudí a pioneer of the modern movement or an outsider? On page 852 Nikolaus Pevsner defends his description of Gaudí as an outsider when he reviews Sweeney and Sert's just published book on him. As architects of today become more and more aberrant they will feel the need to study the remarkable work of this rogue architect which is so splendidly illustrated (in colour as well as black and white) in this book. The fact that Gaudí designed his buildings upside down by means of articulated wire models in order to discover logical structural forms for them is a measure of his enterprise and sense of experiment. The difficulty of communicating the resulting design in any graphic form to his builder suggests the limitation of his approach. Another of his innovations, according to his helper, Architect Domenech Sugranyes, is his development of Gothic construction. At the top of this page are some cross sections of his design for the church of the Sagrada Família in the New Town of Barcelona, which show the evolution of the design as his theories progressed from buttressed arch to tilted columns on the line of the force. Sugranyes describes the last as a "treecolumn," i.e., a column supporting an independent load of hyperboloid vaulted roof; its a fair description judging from the model of the cathedral shown left.

*Antoni Gaudí: Sweeney/Sert, Architectural Press, 73s. 6d.

The ward quietened and I fell asleep. I dreamed I woke up, the Surgeon saying, "That's the stuff for them if you're only going down for a darnin' repair," and then the gentle carving and no pain and the bed floating through the covered bridgeway into the large ward inhabited by all old lantern men who tolled their lanterns for the white meat of my abdomen and feasted on it.

*

Back now Mr. Moon busied himself delivering toilet requisites from the Sheffield W.V.S., untangling monies, laying the table, taking his pills and then loitering again, looking too apologetic.

"How goes it?" I said. I felt embarrassed. His bed was next to mine.

"Trouble," he said. Following his op a year ago they recently wanted him back as an outpatient but he couldn't afford it. Also the treatment in the big machine was exacting; sometimes he was in pain after and at nights couldn't sleep. He wasn't even allowed baths in case the positioning marks on his hips got washed off. Now they might be moving him to Sheffield and he couldn't stop his family visiting tonight. Even if they finished up at Sheffield they'd not be let in. The hours were different.

"Can you ring up?"

"Who?"

"Not home? Somebody. Neighbours perhaps."

"Could I, how? I don't see how. No, I wouldn't like to trouble the neighbours."

*

Finally he telephoned a relative, found an armchair and sat gazing sombrely into the gas fire. Sister swept in. "What's the matter, Pop? Are you worried about something? Is there something on your mind?" Officially breezy and comforting she spoke from behind him, bending over the back of his chair, leaning on her hands and speaking over the top of his white head. He mumbled that they never tell you anything and so forth. She listened. He did not attempt to look her in the face.

*

Her clear, respected voice rang out, "If you don't ask you won't be told; it's assumed you're a coward and don't wish to be told. You have warts on your bladder, Pop. They're not serious but untreated they'll become serious. If all goes well you should be out in three weeks, Pop, is that all right? Tomorrow you're moving to a bed in St. Mark's where you'll be much better off."

*

Mr. Moon did not say anything. She waited and he still did not say anything. She gave me a glance and that was all. She was a great ward Sister. Except for complaining to me next day about pain in the night and flour-and-water pills to fool him to sleep, Mr. Moon now kept very, very quiet about himself.

ROBIN MUDIE

The Editors

BUILDING CENTRE MARK II

THREE years ago we watched the foundation of the first English regional Building Centre at Bristol with interest and sympathy, but with some misgiving. Could an area with as relatively modest a building output sustain a Building Centre? Would not the average client (this was a very metropolitan argument) prefer to board the Merchant Venturer and come to London?

This, we must remember, is a boom period and it is still too early to say whether the Bristol Building Centre will prove a lasting commercial success. But it is certainly a social and professional success; and it may well be that when hard times come, its fund of goodwill and the variety of interests which it is attracting to its cause, will make up for what is thought by some to be an insufficient catchment area. For Bristol has shown that the great pull which a regional centre has over the London Building Centre is that it has a better chance of gathering into its orbit related interests which in London are firmly established apart. Thus it was a masterstroke of the Bristol organisers to obtain a replica of the Design Centre's photographic index, for by this means the Bristolian can get under one roof an essential service which the Londoner can only get by going first to Store Street and then to the Haymarket. The news that the Bristol Centre is planning a new and much larger building suggests that this process can go on and that the centre may in time draw in the professional institutions, the trade associations and—who knows?—perhaps even the Technical Information Service of MOW. By this means the regions might find themselves with the beginnings of unified building information before London has even started seriously to talk about it.

Times are changing. The problem of a Building Centre is always "how to get the manufacturer in?" At the time when the London Building Centre was founded you could only get him in on his own terms, by coaxing; and the miracle was that the London Building Centre was founded at all. Today the attitude of architects, clients, builders and of manufacturers too, is more critical and enlightened and the ultimate criterion of a Centre's success is "how useful can the centre be?" The architects behind the Bristol venture are to be congratulated on having found a formula which is several rungs up the ladder of usefulness.

PICCADILLY FREEZE-UP

Whenever the question arises why a local authority should not invest in the redevelopment of its own central area, borrowing the money and reaping the profit that the new development will bring, we are told that this cannot be done because the local authority cannot take risks with the rate-payers' money.

The private developer, on the other hand, deserves to make unlimited profits out of undertaking such schemes, because, noble fellow, he has taken risks.

Which makes Mr. Jack Cotton's complaints about the "freezing" of the Monico site, and his loss of £3,000 a week over delays in the final decision on Piccadilly somewhat out of place: "taking a risk" surely means taking a risk that just this sort of thing may happen. Anyone who aims to develop a site in such a situation, at what we must no longer call "the heart of the Empire," must expect the risk that too much public interest may delay his schemes—and will certainly expect to make commensurate profits out of them if and when they come off.

So far from being inconsiderate of Mr. Cotton and his shareholders' losses, Mr. Edmonds, of the LCC's town planning committee, has revealed that the Council had actually offered to acquire the site, with the backing, both moral and financial, of the Minister for doing so. Mr. Cotton refused to sell unless he got the option to develop it once plans were approved. Only when in the course of negotiations Mr. Cotton demanded full coverage for his risks, on the threat of reletting the site for 21 years, thus holding up the redevelopment of the Piccadilly area, did Mr. Edmonds remind him that the Council has powers of compulsory purchase.

For the site to be acquired by the LCC, giving the possibility either of direct development by the Council or of a competition to be organised, is the obvious, sensible solution, offering the greatest future benefits to Londoners through the comprehensive development of the whole area, and we hope it will now go through, if possible with, but if necessary without, the concurrence of Mr. Cotton.



INTERNATIONAL CLASP?

An Italian delegation which has been looking at CLASP schools has gone home impressed, I am told, by the very human and almost domestic atmosphere of some of the buildings it has seen. The Italians are beginning a big expansion in educational building and are keen to try out new ideas—possibly in the form of a development project in Rome, which could then be used to convince their government that the administrative structure must be changed. At present schools are put up by municipalities which are too small for sensible programming, while funds are provided by the Italian Ministry of Works who control design by a mass of over-rigid regulations. There seems to be a good case for pre-fabrication in Italy, because although there is a lot of unskilled labour, there is a great shortage of craftsmen—and present schools are far too expensive.

The Italians have gone back with the offer of help from MOE and CLASP.

They might, in fact, become honorary overseas members of the latter—a first step towards an international exchange of ideas and experience on all aspects of educational building. The IUA should surely help to establish this sort of liaison for all important building types. It is something worth talking about at next summer's meeting.

A IS FOR ARCHITECT

Architectural parents who are not too embittered to encourage architectural children may like two new illustrated histories of architecture in Britain. Margaret and Alexander Potter's *Houses** is a new edition of a delightful, largely pictorial history, from the castle and mud-hut to Outrage (its last paragraph tells the little ones about *Architectural Review's* Subtopia campaign). With agreeable drawings on every page, including isometrics of typical interiors occupied by typical families, and brief, lightly written text, it would appeal to any intelligent child from about ten upwards, and will undoubtedly be much used as a painting book as well. By the way it has the most informative end papers (illustrating architectural terms) I have ever come across.

H. & R. Leacroft's *Early Architecture in Britain†* is one of Methuen's Outlines, and the sort of book that gives more pleasure in the school library than under the Christmas tree. It starts from the moment when pre-historic man decided that caves were getting old-fashioned and finishes with Jacobean detailing. It is impenetrably serious, well written and packed with information of great use to the writers of essays and passers of examinations, clearly, but not charmingly, illustrated, end has a book list and index.

LOVESOME GIFT

For gardening relatives with a historical sense, *Gardening in Britain*, by Miles Hadfield*, records our garden history since the 14th century "Jentyl Gardener" and offers weeks of happy browsing. Complete silence throughout the Christmas holiday may be counted on.

AUTO SUGGESTIONS

Among the new allied society magazines which are coming on the scene

*John Murray, 25s.
†Methuen, 10s. 6d.
‡Hutchinson, 63s.



John Gerrard's Floating Homes Ltd., is building houses in 70 ft. long canal barges on the Basingstoke Canal, near West Byfleet in Surrey. There are two designs, the de luxe costing £1,750 and the standard £1,350. Each barge contains 420 sq. ft. of living space and accommodation comprises living room, kitchen, bathroom and two bedrooms. Water is stored in a large tank on the roof, electricity is available and a Calor gas system supplies the cooker. The w.c. is an Elsan pump model. The tank for this and the household dustbin are emptied once a week by the local authority at an annual charge of £2. The canal owners charge a

mooring fee of £40 a year and this entitles the barge owner to a strip of canal bank for access and garden. The agreement with the builders requires the hull of each barge to be scraped, caulked and painted every two years and for this a charge of £20 is made. A "floating home" owner is not bound to stay on this canal. If he can arrange a mooring site on any other waterway he can get the builders to tow him there. Should he move, however, he must make his own arrangements for garbage and w.c. effluent disposal. Top: the de luxe model on the canal. Centre: kitchen of the de luxe model. Bottom: the bathroom.

pretty frequently nowadays in all colours, sizes and flavours, is the *NBH Journal*, published by the Northamptonshire, Bedfordshire and Huntingdonshire Association of Architects. If we are due for a Piranesi Revival, the first signs of it are here (ism-historians please note). Where else would you find a portrait of two county architects in sailor suits and bassinets? Where else an editorial that finishes with a quotation from the Bard of Hull, Alan Plater? And where else a breakdown of the profession into seven car-using types, beginning with New Brutalist ("Favours Volkswagen because it looks like beetle and not like car. Would be first in queue for any new car with engine on top . . .") and ending with Penniless Assistant who "can be seen trying to reverse in Ford Thames van without windows."

HOME SWEET HOMICIDE

If you're feeling particularly annoyed by the meticulous, bureaucratic, pettifogging, niggling and scrupulously honest way building regulations are enforced, you may change your mind when you hear that Scipione del Carmine has got 18 years for culpable homicide and Francesco Lombardi has got 15½ years. The first—to refresh your memory—is the builder of the Italian block of flats that collapsed and killed 58 people; the second is the architect. Other people involved also received sentences, including the civil servant who had approved the plans.

ARKITECTURE

Before anyone has got to terms with the caravan problem, a problem that looks just as nasty is upon us—the floating house, built on canal barges. Tired house hunters can now apply for one of the first 300 of these (de luxe or standard), together with short-term mortgage facilities and mooring rights (renewable annually) on part of the 37-mile stretch of the Basingstoke Canal. The builders insist that buyers shall paint their architect-designed homes (by Alan Turner) each year—with a specified paint and colour, but in spite of these good intentions you can see the squalid effect that can be achieved by the tidy-minded in the top picture on this page. Don't let me alarm you, but I hear there is no planning control at all over this sort of development.

ASTRAGAL

LETTERS

Christopher Gotch, A.R.I.B.A.

E. B. Jones

Joan Milne

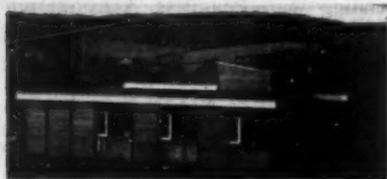
Herbert Thearle, F.R.I.B.A.

Bryan Westwood, F.R.I.B.A.

P. Stephens

Misplaced Zeal at Henley

SIR: Having recently completed a private house at Middle Assenden near Henley, I have had experience of the local zealots.



It took over two years to obtain planning permission for this house, after numerous interviews with the County Planning Officer. This gentleman, charming though he was, had an aversion to architects whom he considered arrogant, and towards modern architecture which he abhorred. One reason for planning refusal was that the design was not of the Chiltern vernacular, and was out of keeping with other buildings around Henley. It was pointed out that the nearest house was John Pipers Farm, and the one beyond, in Buckinghamshire, was Mr. Juda's house designed by Lionel Brett. He was finally convinced after many hours of stimulating discussion, but it took many more months to win over the local town planning committee, not without a threat of appeal. I should like to add that the County Planning Officer, once he was convinced, did his utmost to help, and had it not been for his willingness, consent would never have been obtained.

CHRISTOPHER GOTCH

London, N.W.3.

SIR: Your article on misplaced zeal at Henley has surely reached a new level in juvenile argument. Having preached the need for sanity to the local residents who are protesting against the local flat development, your contributor goes on to produce as evidence in support of his case four photographs, of estate development in the area. These photographs are in each case taken in poor conditions and from the worst possible angle, surely no adult mind can be persuaded as to the correctness of this point of view from such a biased standpoint.

There are most certainly arguments in favour of the flats proposed for Henley but the manner of presentation in your journal

does more harm than good to the intelligent protagonists of this cause.

E. B. JONES

Maidenhead

Surveying Quantity Surveyors

SIR: In one sentence in your issue of November 24, ASTRAGAL married me off and was unfair to quantity surveyors (no connection between the two!). The RICS inquiry into the volume of work in hand by private chartered quantity surveyors will, it is hoped, be a useful additional aid to those concerned in forecasting building activity. The RIBA quarterly inquiry has so far covered new commissions coming to private architects, which represents a very early stage in the building process; and it will be some considerable time before those projects which mature reach the stage of actual building on the ground (as the RIBA inquiry of 1958 into the building timetable showed).

The quantity surveyor is involved at a later stage in the building process, and when the preparation of bills of quantities is begun, the project is likely to reach the building contractor within a reasonably short period. The two series of statistics will never be directly comparable because the scope of work covered by private quantity surveyors is not identical with that of private architects. However, it will be interesting to compare the trends shown by the two series. I might add that the RIBA's Economic Research Department have recently started collecting information from private architects about projects entering the working drawings stage. When this has been established long enough to show a trend, it will provide another series at a different stage in the building timetable—and we shall know a good deal more than we did about the flow of work through the architect's office.

JOAN MILNE

Royal Institute of British Architects

The Less-International Style

SIR: In your November 24th issue you refer to my recent Brains Trust question which provoked such spirited discussion in a session during which Mr. J. M. Richards excelled.

Due to part of the question being omitted the impression given was that I crave for a national architectural style solely to attract tourists. No architect today would wish to be thought so hoary a reactionary.

On the other hand the egg crate or packing case building to which every country is becoming increasingly prone and which for the most part is devoid of even a vestige of characteristic national idiom does give pause.

It would seem, now the battle in Britain for contemporary architecture is well won, our next job is somehow to ensure that the buildings here can avoid this dreary sameness; if it can conform to our national heritage so much the better.

As to the Prof. Arne Jacobsen appointment for the new St. Catherine's College, Oxford, we shall now, on the *quid pro quo* basis, look forward with interest to seeing this reciprocated!

HERBERT THEARLE

Liverpool, 1.

Shopping Centres

SIR: I noted with surprise the fatalistic attitude adopted in your caption to the illustration of the shopping centre on the Croydon Airport site project, in the AJ of 17th November.

While shopping centres of this kind may be appropriate abroad, particularly in America, it seems to me to be quite deplorable that the oases of green between our closely spaced centres of population should be filled in with developments of this kind which inevitably attract an enormous volume of traffic and start new problems.

Shopping, in my view, should be considered as a social activity and should not be isolated from the cinemas, libraries, art galleries and theatres, etc., which exist. Accordingly I hope you will agree that the right place for shops is in the centres of existing towns.

To take the shopping away as a short term action instead of facing the harder problem of rejuvenating the centres of cities appears to be the very negation of good planning.

As such, at recent discussions where the shape of future shopping development has been considered, centres of the kind illustrated have been roundly condemned in principle.

BRYAN WESTWOOD

Shepperton, Middx.

Vacant Almshouses



SIR: The almshouses at St. Germans in East Cornwall must be among the most picturesque in all England. But they have been photographed and published so often that I should not venture to send you a recent (November) snapshot but for one interesting point. The twelve apartments (six "houses" divided into upstairs and downstairs flats) now have only one occupant, and she is 96 years old. Possibly readers have ideas on the likely future of interesting and attractive almshouses (often connected with great country estates) which are no longer needed or much desired in these days of the Welfare State.

P. STEPHENS

Minehead, Som.

NEWS

COMPETITION RESULT

County Council Offices at Dumbarton

The result has been announced of the competition for County Council offices at Dumbarton. The winning design, which receives a premium of £1,500, was submitted jointly by J. Armstrong Lane, Duncan S. Bremner and J. Alan Bristow. The five remaining schemes which reached the second stage of the competition, and which are each awarded £400, were submitted by A. J. Deed, W. Norman Hunter, James H. Fisher, Lancelot H. Ross and Lindsay, and W. A. Clarke in association with Charles B. Pearson and Son. The assessors were F. R. Wylie, FRIBA, of Glasgow, Professor J. E. Napper, FRIBA, of Newcastle upon Tyne, and James Mottram, ARIBA, of Edinburgh. We hope to publish the winning design in a subsequent issue, together with the assessors' report.

ROYAL SOCIETY OF ARTS

Tall Buildings

On December 6 Sir Thomas Bennett spoke on "The Architect's Approach to Engineering in Tall Buildings" to a meeting organised jointly by the RSA and the Institution of Plant Engineers which was held at the RSA, Lord John Hope, the Minister of Works, was in the chair.

Sir Thomas was unable to speak in great detail on any one aspect of his subject, but had good points to make on many of them. He was of the opinion that we are being quickly drawn towards the American concept of a tall building; that is, one which is "thick" on plan, fully air conditioned, with a central service core and the central parts artificially lit. His reason for this belief was based partly on the fact that this plan is more economical in space than the English "thin" plan, partly on the fact that it has proved exceedingly difficult to ventilate the top floors of a tall building by natural means: if you open a window wide there is a blast of air which scatters papers, if you open it narrowly there is a loud whistling. Air conditioning will certainly be needed in some rooms (e.g. the boardroom in an office block) and to provide tolerable conditions in summer in high office areas facing south and west so there is an argument for providing it for the whole from the beginning. One effect of this would be to alter floor heights. Of recent years we have reduced the floor height of office buildings from 10 ft. 3 in., floor to floor, to 10 ft.; but, if we introduce full air conditioning, we will have to increase this to 10 ft. 6 in. or 11 ft. The cost of plant will be greatly increased: if heating alone costs 5s. per sq. ft., heating and ventilation raises this figure to 10s.-15s. and full air conditioning to 20s.-25s. On the other hand, the adoption of full air conditioning will make thermal insulation

easier, and double glazing can be counted on to reduce its present high running cost by 20 to 25 per cent.

Structural problems

Sir Thomas spoke of the structural difficulties of building to great heights. He pointed out that our knowledge of the design of foundations for buildings above 200 ft. was incomplete and that the risk of differential settlement is considerable if one part of the structure is carried up to much greater heights than the remainder. Again, the great vertical dimension has brought with it a need for greater accuracy: floors must be worked to a tolerance of $\frac{1}{4}$ -in.— $\frac{1}{8}$ -in. As an example of the importance of this, he quoted the case of stone or granite claddings which must have a bearing on the structural frame at least at each floor level: inaccuracies would make this difficult. Lift installation practice also has been altered by these greater heights. In the past lift-engineers have insisted on a clean shaft and lift house before they could fix the guides; but with a tall building it is essential that the guides should begin from the bottom long before work is started on the lift house at the top.

Sir Thomas spoke of the great technical advances which have been made with concrete and which have made it an alternative for steel on high buildings; but he pointed out that, whereas the innumerable joints of a steel frame can accommodate movement, the monolithic concrete structure requires expansion joints and no one has yet found a completely weatherproof method of constructing these.

The increased use of heavy equipment in offices makes it essential to design for loadings which will accommodate it at least on every other floor in office buildings and preferably on all floors.

Lifts

On lifts he made the point that you should never have more than four lifts in a row, for otherwise a person waiting will not be able to step into the furthest lift unless the waiting time is made unduly long. Ideally, rush hour waiting time calculations should be based on a 20-second wait, a 40-second wait being just beyond the acceptable limit. The "building emptying" time should be not more than 20 minutes.

He gave the following guidance on lift speed and on the number of floors to be served by a bank of lifts:

Number of floors	Number of lift banks	Speed in ft./min of top bank
Up to 12	1	300/500
Up to 20	2	700
Up to 30	3	1,000
Up to 50	4	1,200

Service and Plumbing Installations

Gas and electricity supplies cause no difficulty in tall buildings. With electricity, savings can be made in the size of main cables if the authority can be persuaded to carry the main up the building and to use a sub-station transformer for breaking down to usual voltages.

Lightning conductors can be a nuisance, both on the skyline and on the façade. Reasonable protection can be obtained by carrying the conductors in tubes inside the building.

Water supply creates some problems. Booster pumps will have to be used and savings can be made in these if the water authority will permit advantage to be taken of existing pressure in the main. No cold water drop should be greater than 100 ft. which means providing either cold water storage or break tanks at every tenth floor. High buildings make the calculation of the diversity factor for soil and waste pipes more hazardous. For this reason and to avoid the possibility of back pressure, it is wise not to include the wastes from the two bottom storeys in the main stack.

The decision to use full air conditioning involves a large amount of equipment and this is usually placed at the top. Hot water systems, however, are subject to the same pressure difficulties as cold and one way to evade these is to place all heating equipment half way up. One other factor which counts against placing this equipment high up is the difficulty of hoisting heavy, bulky items into position (particularly when it has to be renewed at the end of its useful life).

DEVELOPERS' COMPETITION

The Rocks, Sydney

The Government of New South Wales has invited schemes, plus financial offers, for the redevelopment of The Rocks, Sydney, a 17-acre site fronting Sydney harbour, and directly facing the promontory on which the new Opera House is being built, where the land has been estimated as worth £4,250,000 an acre. This must be the first open competition for developers—though the number who could make an offer must be strictly limited.

A previous Government proposal to develop this wonderful site as warehouses provoked such an outcry that the government reconsidered the question and has now invited development schemes from anyone capable of financing them in an incredibly glossy brochure (available from 56, Strand, London, W.C.2) which fully illustrates the site for development, briefs the competing developers on the government's requirements and lays down its financial conditions.

The proposal is that development be largely residential, at a density of 300 per acre, with some hotels and offices, precinct planning, parking for one car per dwelling, while competitors are free to decide whether to rebuild the present 300,000 sq. ft. of bond stores on the site or move them elsewhere. The form of the financial offer seems to mean that the competitor may buy the whole site, or lease it off to other people to develop, and the Government is apparently willing to help the developer to acquire sites by compulsory purchase where necessary.

The schemes are to be assessed by—"the

appropriate authorities", under the following headings: "(I) The financial offer to the Government; (II) The long term value of the scheme and its economic soundness; (III) The staging or programming proposed in conjunction therewith; (IV) The financial

and technical researches available to the person submitting the scheme." The brochure states, however, that "The Government, while realising the need to exploit the economic advantages of the site, is nevertheless anxious to see any rebuilding

carried out to the highest standards of today's design and planning techniques." Offers were invited by September 30 this year, final date for questions is December 31, and the closing date for receipt of offers (including schemes) is August 31, 1961.

GAUDÍ—Pioneer or Outsider?

On page 1 of their long-expected book* Messrs. Sweeney and Sert quote my *Pioneers* in the edition of 1949 as the most characteristic specimen of the current lack of appreciation of Gaudí. They add a note saying that I have changed my mind. But they were still unable to quote from the Pelican edition of my *Pioneers*, because this came out only a month or two before their book. As far as I did change my mind, this was due to the impact of seeing Gaudí's work for the first time in 1952. The effect of this was the recognition of his genius.

But being a man of dazzling genius does not make him a pioneer of the style of the twentieth century. Messrs. Sweeney and Sert call him precisely that, on their very last page: "a great pioneer of modern architecture." I had said "an outsider." Who is right depends less on Gaudí than on one's conception of modern architecture.

Messrs. S. & S. have unquestionably the passion of the day in their favour. In the new *Masters of World Architecture* series Gropius is out and Gaudí is in. Between 1950 and 1955 seven books on Gaudí came out in Barcelona and one at Milan, and in one of them Le Corbusier in a foreword hurried to establish the priority which he is always so eager to claim and insisted on having discovered Gaudí for himself in 1928—ten years before he entered the perilous Gaudí path with the *Maisons Jaoul*.

Messrs. S. & S.'s book, although published only now, was begun in 1946. It is an excellent book in many ways, excellent throughout in its illustrations, including photographs of bones and shells, excellent on Viollet-le-Duc (although not actually pointing out that Viollet recommended the very tilted columns which Gaudí used), excellent on Ruskin who insisted—wrong-headedly, I naturally believe—that the architect, unless he is a sculptor or a painter, is merely a builder, excellent on Gaudí as a "hard" in the sense in which Lethaby used the word for Butterfield and Webb, and excellent on Gaudí's structural experimenting.

But it is the nature of this very experimenting which ties him to the nineteenth century. He was in fact a builder, in the best sense of the term, a man unhappy in the office and happy only on the site, a man who could convey his meaning only in models, never in drawings and preferably on the actual scaffolding. His hyperbolic paraboloids and his helicoids are not calculated like Nervi's and Candela's, they are pragmatically worked out. They are wonderfully ingenious, but Messrs. S. & S. are right when they say (p. 58) that he "provoked technical difficulties for the sake of possible new inventions and solutions." That is the very opposite of Nervi. Hence Messrs.



Flying buttresses were merely crutches to Gaudí, so he hung loads on wires from the ceiling and translated the resulting near-parabolic curves into tilted column structures such as this unfinished chapel in the Parca Güell.

S. & S. are not right, I think, in presenting the process of Gaudí's creation as from structure to material, from material to form (p. 104). This way of presenting him is connected with their pressing urge to make him a pioneer of the style of the twentieth century. And so one is back at the crucial question what the style of the twentieth century is.

Messrs. S. & S. go further than anyone else so far who has appeared with a claim to historical validity in simply removing the great events of 1900-1940 from the scene. The style created by Wright, Loos, Hoffmann, Behrens, Gropius, the style of Le Corbusier up to the thirties and of Mies up to today is "a house cleaning." To be happy in it is to be "satisfied with very little" and so on.

No—that surely won't do. But will my conception of 1949, of Gaudí as an outsider though prophetic of the Expressionism of 1920 do? That is, is the line Gaudí-Poelzig-Mendelsohn-de Klerk-Ronchamp the line of the twentieth century and the line from Wright, Loos, Gropius to Lever, Pirelli, Roehampton a puritan aberration, or are there two lines running parallel, one always rising where the other is falling? It would be an attractive compromise, if one could

believe it. But I for one don't. Sculptor-painters doing architecture are very well for churches and can be wonderful whether at Sagrada Familia or Virgen Milagrosa or Ronchamp, but when it comes to Law Courts or Cambridge colleges or science blocks of universities, then Heaven preserve us. So to me, without hesitation, there is one style of the twentieth century, there are thrilling magicians, outsiders, rogues, and there are, of course, the imitators.

Messrs. S. & S. quote what I wrote in 1949. It will be interesting to quote them in 1971. For they are as a matter of fact at the end of their book themselves a little frightened of the geni they decided in 1946 to conjure up. After all they have written and illustrated it is a surprise to find them say on their last pages that "Gaudí does not really belong to this century," being "an outgrowth of nineteenth-century thinking," and that his "buildings are something that cannot and should not be imitated today." What we now want is someone to tell us why the crypt of the chapel of Santa Coloma de Cervelló looks so much like Candela and whether the works of the frenzied builder of 1898 and the engineer of 1950-60 belong together or not.

NIKOLAUS PEVSNER

**Antoni Gaudí*, by James Johnson Sweeney and Josep Lluís Sert (Architectural Press, 73s. 6d.).

YERBURY FOUNDATION

Design and Speed of Construction

The effect of design on the speed of construction was the subject of two papers given at the RIBA on November 21, the first by A. Raymond Mais, a structural engineer and managing director of a large firm of civil engineering and building contractors, and the second by Philip Bennett, an architect. Both speakers referred to the economic construction time of a building, but neither was very precise in definition.

Mr. Mais claimed that every building has its economic construction time and that to fall behind it or accelerate beyond it will involve higher costs. But if scant definition of the economic construction time was given, no definition was given of fast construction time beyond the fairly obvious implication that it was any time less than the economic time. This is unsatisfactory. There is too much woolly-mindedness about standards of speed of erection, and the speakers rendered a dis-service by failing to acknowledge the fact that the economic construction time can be the fastest time of construction if the building is designed with this object in mind and an intelligent programme is worked out in advance to achieve it.

A number of good points, however, were made by both speakers. Mr. Mais did say that speed of construction starts on the architect's drawing board, but that some form of early consultation with a contractor was likely to have a beneficial effect. By implication the negotiated contract has a distinct advantage in this respect. He warned about the package deal saying it will gain in popularity "... unless there is an improvement in the co-operation between the professions and the industry working as a team. . . ." He underlined the usual engineer's advice to architects to avoid a mixture of structural systems on any one project and to standardise beam and column sections to economise in form-work.

On this last point Mr. Bennett was quick to point out that with the present system of bills of quantities and architect's drawings the only person to benefit from such foresight was the contractor. Mr. Bennett sounded some warnings against fast construction. He suggested that if the contract time is reduced at the expense of beauty or function the gain, spread over a 70 to 100 years' life of a building is not worthwhile. Fine tolerances were not easy to achieve, he said: no matter how quickly a building is put up completion is determined by the lift engineer, who needs six to eight months after the lift motor room is watertight. He argued that the lift engineer could go a long way to improving his own techniques (more of the electrical wiring done off-site) and thus speed construction.

Mr. Mais seemed unduly prejudiced against pile foundations: he was sceptical of the advantages of off-site prefabrication of concrete members in terms of speed of erection, and submitted that "... a multi-storey

building with a steel frame complete with its floors and concrete casings will take a month or two longer to complete than a similar building with a reinforced concrete frame."

Mr. Bennett appeared to suggest that the slower the speed of erection, the cheaper the job and that, all cheap contracts were slow. He disagreed with the provisions of the Code of Selective Tendering in that time should not be a matter of competition in tendering. In fairness to Mr. Bennett, his point was this: every contract has an optimum price; this optimum price is the lowest price received in competitive tender when the architect has stated, in inviting tenders, that time is unimportant.

PUBLIC WORKS CONGRESS

Professional Co-op for House Building?

A "professional co-operative" consisting of architects, engineers, surveyors and salesmen, to meet "the challenge of new methods in house building construction" was suggested by Horace E. Gilby, Hertford RDC's engineer and surveyor, at the session of the Public Works and Municipal Congress held under the auspices of the Royal Society of Health.

For over 40 years, he said, architects had been predicting radical changes in the methods, materials and precepts of house construction, but the prophesied revolution had not taken place.

Two important questions needed answering, said Mr. Gilby: 1. Was the challenge of new methods being taken up or did architects and builders want to take the easy, traditional way out? and 2. Were the present forms of house building construction ultimate, or did they represent a halt in development caused by design laziness, traditional prejudices or perhaps lack of capital?

At present there was little to stimulate building societies or local authorities to encourage new methods, new designs or the use of new materials, which were looked upon as "suspect," because there was not sufficient experience to judge between the good risk and the bad. Building by-laws also favoured traditional methods. He believed it would help the architect in overcoming the "inertia" of other groups if a professional co-operative were created, which could include both design ability and "salesmanship of a high order."

HARVARD LECTURES

Three Professors

Harvard University has this year appointed three Charles Eliot Norton Professors, the first time that this professorship has been shared. They are Felix Candela, R. Buckminster Fuller, and Pier Luigi Nervi. Candela will lecture from mid-November to Christmas 1961, Buckminster Fuller from February to March 1962, and Nervi from April to mid-May.

CPRW

Williams-Ellis Returns

Clough Williams-Ellis has been appointed chairman of the Council for the Preservation of Rural Wales in succession to the late Dr. Alwyn Lloyd. Mr. Williams-Ellis served the Council in this capacity for 20 years before the appointment of Dr. Alwyn Lloyd. The Annual General Meeting went on to discuss "Land Use in Wales," when Sir Clayton Russon made a strong plea for better control of caravan siting in beautiful countryside. "I believe that the greatest single tragedy in land misuse in recent years has been caused by the coming of the caravan," he said. "There is hardly a single beauty spot in the Principality that is not marred by an ulcerated outcrop of a caravan camp. We cannot and must not deny the rights of the individual who prefers to live or spend his holidays in a caravan, but when the grouping of these unsightly vehicles in the mass offends the pleasure of the vast majority who do not subscribe to the caravan way of life, then surely the time has arrived when some drastic action should be taken to ensure that caravan camps are sited in places where they do not conflict with the landscape or intrude upon the pleasure of others." Even the scanty regulations that exist are not being used effectively, he said.

ARCUK

Maintenance Scholarships

The Architects' Registration Council of the United Kingdom is offering maintenance scholarships in architecture for award in June 1961, which will be renewable from year to year until the student has finished school training.

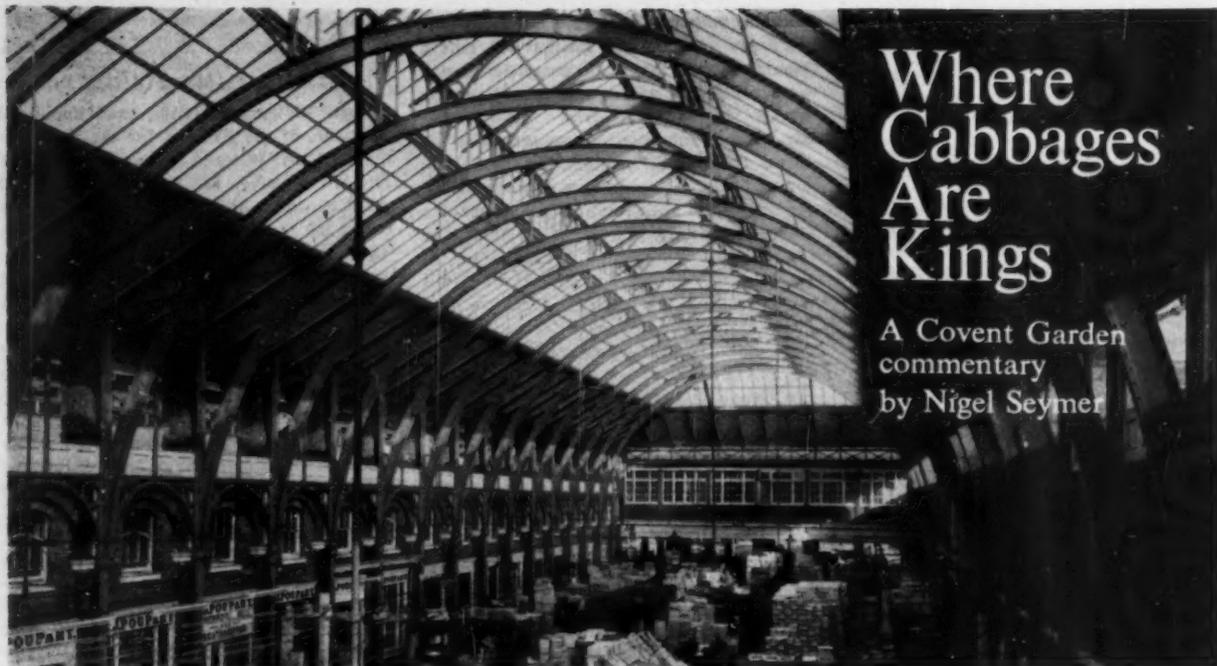
They will be available for students of British nationality who could not otherwise afford to attend architectural schools approved by the Council. Before submitting applications to ARCUK, students must find out from their local education authority whether they can get financial assistance from that source, otherwise their applications will not be considered. Closing date for applications is January 31, 1961.

The scholarships will be available both for students who have begun their training and for would-be students, and will not be granted to any student who is under 17 years of age on October 1 of the year in which the examination is taken. Details and application forms are obtainable from the Secretary to the Board of Architectural Education, ARCUK, 68 Portland Place, London, W.1.

DSIR

Builder's Appointment

Mr. Harold McCue, chairman of Taylor Woodrow (Building Exports) Ltd., has been appointed a member of the Building Research Board of the Department of Scientific and Industrial Research.



Where Cabbages Are Kings

A Covent Garden commentary by Nigel Seymer

It is 290 years since the Earl of Bedford was granted the right to hold a market on the Piazza at Covent Garden for the sale "of all manner of fruits, flowers, roots and herbs, whatsoever" every day except Sundays and Christmas Day. It is 17 years since the Abercrombie County of London Plan was published. Its author regarded the central markets as non-conforming uses of the rankest sort, and proposed that they should all be moved out of central London. He also proposed that the main North-South arterial route, of which Waterloo Bridge was to form part, should pass slap

through the Covent Garden area (there was to be a vast roundabout where the Piazza is) before diving into a tunnel under the Bloomsbury precinct.

But Covent Garden Market is still there, sprawling over about 30 acres—and probably generating more justifiable bad language to the acre than any other area of London. And the way things are going it seems likely to stay in the area for a long time to come—though it will, no doubt, be tidied up a good deal when the Covent Garden Market Bill, now on its way through an unenthusiastic House of Commons, becomes law, bringing into existence a Covent Garden Market Authority.

The market in its present form is hideously inconvenient. There is no parking space save in the streets around the market; and all the available space in these streets is filled each morning by lorries waiting their turn to load or unload at the wholesalers' premises. All collection vehicles are normally loaded by porters who bring the produce to them



Traffic block, with the Floral Hall and the Royal Opera House behind



St. Paul's stands knee-deep in crates



by trolley and barrow from warehouses and stands all over the market—no easy task on narrow, crowded pavements and busy roads half blocked with parked lorries and moving traffic. Gradients of up to one in four make it necessary for two or three men to handle a loaded barrow. Average waiting times every day are: four to five hours for delivery vehicles; three to three and a half hours for retailer's collection vehicles; and six to eight hours, at peak

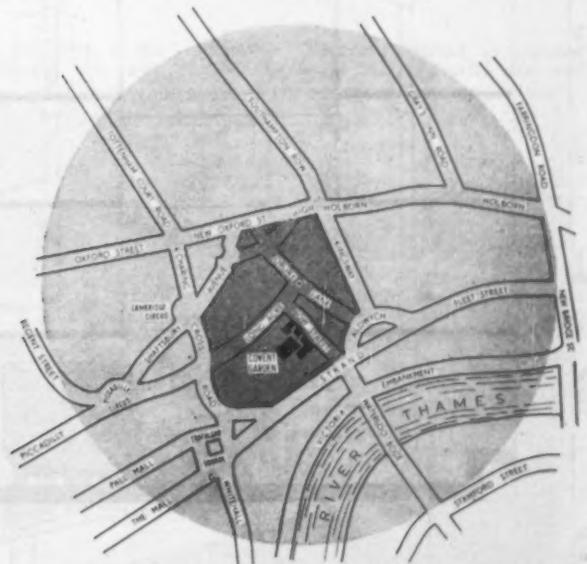
periods, for British Railways' lorries loading up to supply provincial wholesalers.

With all these inefficiencies it seems surprising that Covent Garden retains its drawing power. But it does—and seems likely to continue to do so. The Runciman Committee accepted the need for its continued existence—although they did propose the creation of a new market for fruit and vegetables in North-West London, to supplement Covent Garden. And so does the present Government—although they think there should be an "annexe" some distance away for the storage of all the empty boxes which worry the fire brigade so much (the Authority, when it comes into being, will not, however, be bound to use the site already acquired for this purpose).

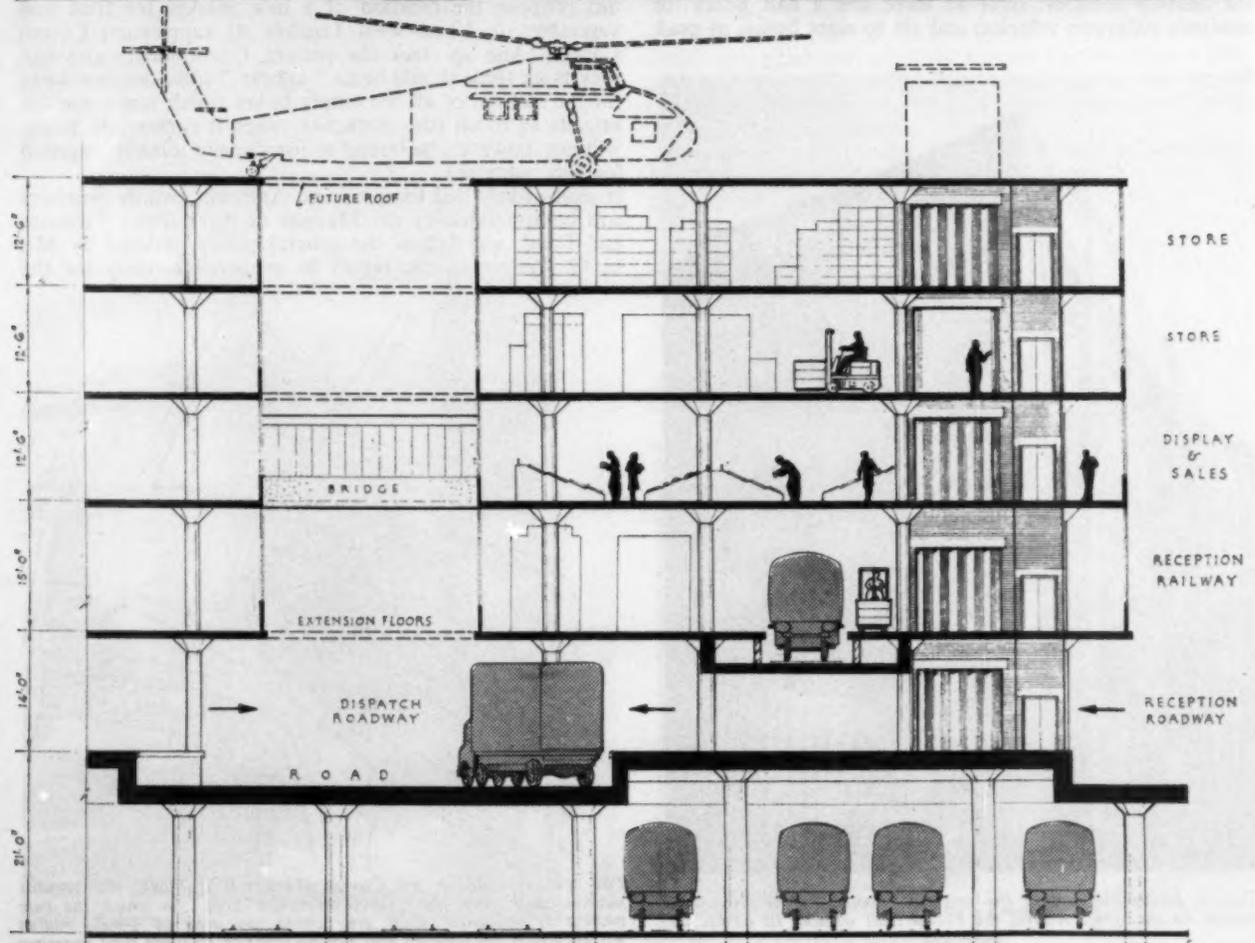
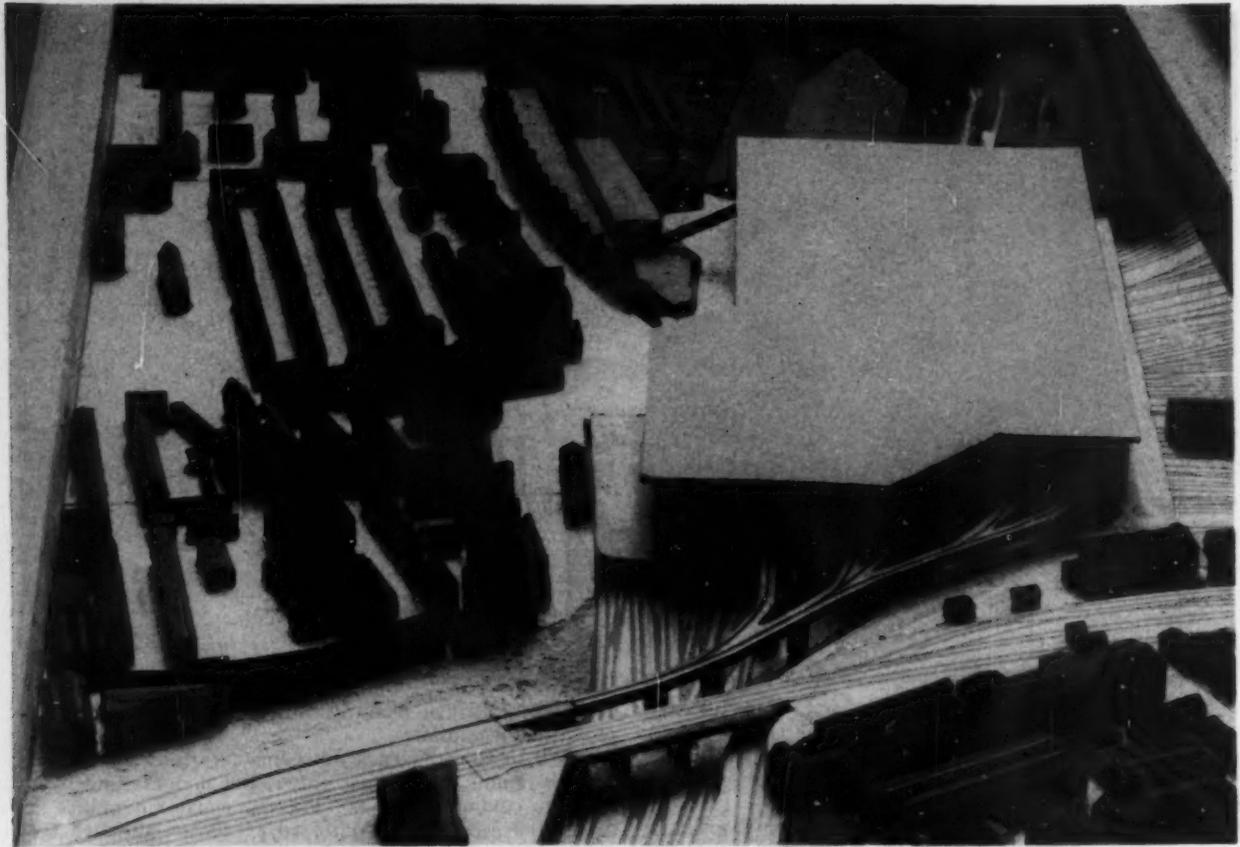
It seems likely that the proposed Authority, whose members will be appointed by the Minister of Agriculture, Fisheries and Food, will follow the general policy outlined by Mr. L. G. Collyer in the report he prepared recently for the



Top, a general view with the original market on the right, half-hidden by shedding. Above, the Floral Hall without its dome. See page 858



The area covered by the Covent Garden Bill: black, the present market; dark grey, the "Covent Garden Area" in which the new market is proposed; light grey circle, an area of 1/4-mile radius within which wholesalers will not be allowed to open new premises



←

Model and section of C.W. Glover and Partners' scheme over King's Cross goods yard

London Fruit and Vegetable Trades Federation. He maintains that the functions of the market, including storage of empty boxes, could quite well be concentrated in a six-storey building covering six and a half acres (275,000 sq. ft.); and he thinks that a site can be found to the north of Long Acre. Once it is built the present market area could, of course, be redeveloped for other purposes. In well-informed circles there is talk of turning the overcrowded piazza back into an agreeable, open square, with trees and seats, dominated by the Royal Opera and St. Paul's Church. The Floral Hall, it is said, though unlikely to be restored to its original grandeur, will probably be snapped up by the Royal Opera House for rehearsals and scenery storage. The existing Bill gives the Authority power to do this.

In the new, multi-storey market delivery vehicles would unload in the basement, up to 150 at a time; the ground floor would be used for display and sales; the next two floors for storage and for loading on to collection vehicles; the next floor for storage only; and the top two floors for offices, canteen, etc., and storing boxes. There would be ramp access to the basement and first and second floors, and plenty of lifts between all floors.

A basically similar type of building to house the entire market has been proposed by C. W. Glover & Partners, Consulting Engineers and Architects (all the partners are engineers, but the associates include two architects, L. L. Lipski and J. N. Chalkley), but their proposed site is above the goods yard north of King's Cross. Both schemes would have parking space for about 700 lorries; and the Glover building would have five or six storeys, totalling either 2,107,000 or 2,542,000 sq. ft. (compared with 1,925,000 in the Collyer building).

But there are important differences. In Glover's building, road vehicles would have access only to the ground floor. On the first floor there would be rail sidings, enabling produce to be unloaded from rail wagons right inside the building. At present about 20 per cent of the produce handled at Covent Garden reaches London by rail—most of it imported via such ports as Southampton, Harwich and Dover—so that one handling of some of this produce

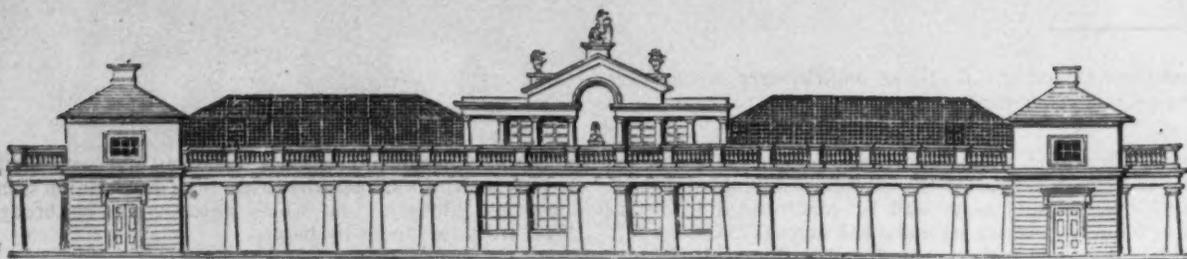
might be eliminated. There is a direct rail link with Southampton at King's Cross. Moreover, the Grand Union Canal runs right alongside, on which goods could be brought direct from the docks by barge.

It is said that, in fact, whatever advantages there might be theoretically, the likelihood of British Railways' agreeing to lease their air space for a multistorey building over the lines is too remote to be worth considering. There are also rumours of another Bill which would enable the British Transport Commission to enter into profitable arrangements as ground landlord. Supporters of the Glover scheme claim that a rent of £100,000 a year could be paid to British Railways, and space still let to market tenants at less than they pay now for exceedingly sub-standard accommodation. However, a decision to keep the market in the Covent Garden area (but rehoused in a compact building not on the present site) would not really be too objectionable from the traffic point of view. With the market reorganised nearly all the lorries serving it could be clear of the area by 8 a.m., before the main traffic of the day starts. And the area as a whole could still be imaginatively redeveloped. However, the present somewhat patchwork Bill passed its Second Reading in the House of Commons last week and now goes to a select committee. Whether the fact that it provoked a small revolt of Conservative MPs, who wanted something more drastic, and seemed anxious to develop the Covent Garden area on entirely different lines, for business, residence and multi-storey car-parks, for instance, will cause the committee to have another look at the Glover Plan seems doubtful. The fact that the Minister of Agriculture clung to, in moving the Second Reading, was that the congestion at Covent Garden is not so much due to large traffic flow, but to the hours of waiting time spent there by the 3,250 vehicles that use the market every day. He saw the market becoming much more a sample market, with the annexe at City Road providing the storage space. But the Labour MP for that area pointed out that the proposed site for the annexe at the junction of City Road and Old Street is itself the third busiest traffic junction in London.

Retrospect

The prospect of seeing Covent Garden's piazza cleared of crates and lorries makes it worth recalling what it used to look like before the market overflowed and took possession: **The New Market**, as designed by Mr. Fowler in 1827, a general view, and





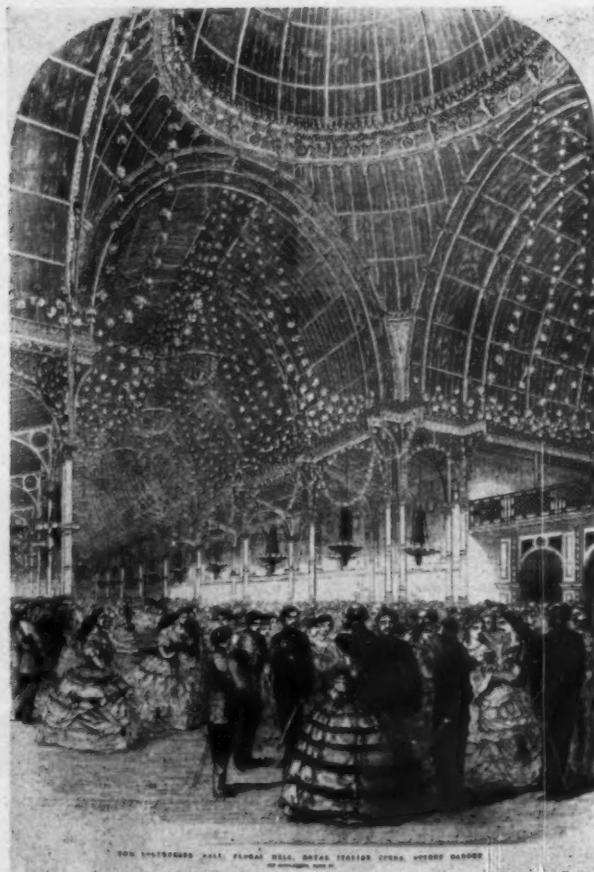
the east façade. A model of the new market was exhibited "to all those interested in the market" and fully described in the *Gardeners' Magazine* and the *Mirror* of those days. Four north-south terraces of shops, colonnaded in front, each with a cellar beneath and small room above were linked at the east end by a further colonnade with staircases leading up to a terrace and

conservatory where plants and "garden ornaments" were exhibited, and where Mr. Fowler designed a "handsome fountain of Devonshire marble." The *Mirror* commented "Exterior to the buildings is a space sufficiently wide to allow a row of carts and wagons to arrange themselves, side by side, the horses' heads pointing from the building, without interrupting carriages passing

along the street." Even then there was a parking problem, for "the chief objection to the plan was the occupation of so much space by the colonnades." The internal courtyards have subsequently been roofed over with quite-fine-glazed-iron vaults and the colonnades obscured with patent glazed lean-to roofs.



From *The Builder*, March 1860

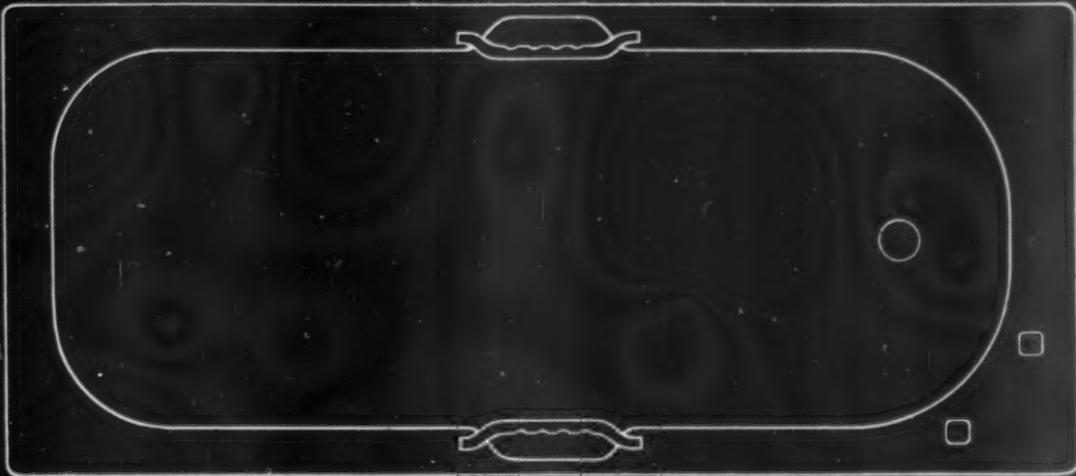


From the *Illustrated London News*, March 1860

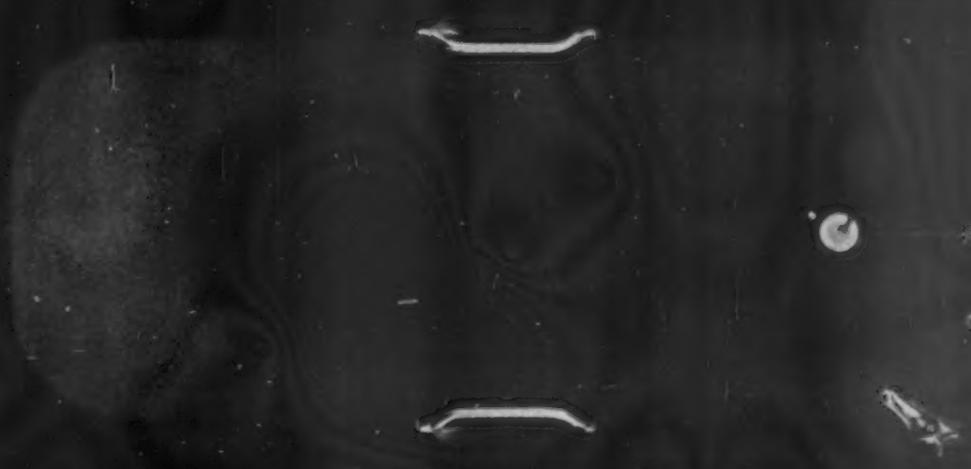
The Floral Hall, now part of the market, was designed by E. M. Barry, alongside the Royal Opera House, and directly linked with it, in 1860, when it was intended to be "the largest and most comprehensive place of public entertainment in the Metropolis,"

and its glass and ironwork arch and dome inspired *The Builder* to record its opening, with a ball for the Royal Volunteers, in verse ("On Wednesday night, in the Floral Hall, the Volunteers mustered, both little and tall" . . .). The admired roof was dis-

mantled after being damaged by fire two years ago, because it was too difficult—or perhaps just too expensive?—to reglaze. Cleared of crates and cabbages, it may now become a badly needed storage annexe for the opera.

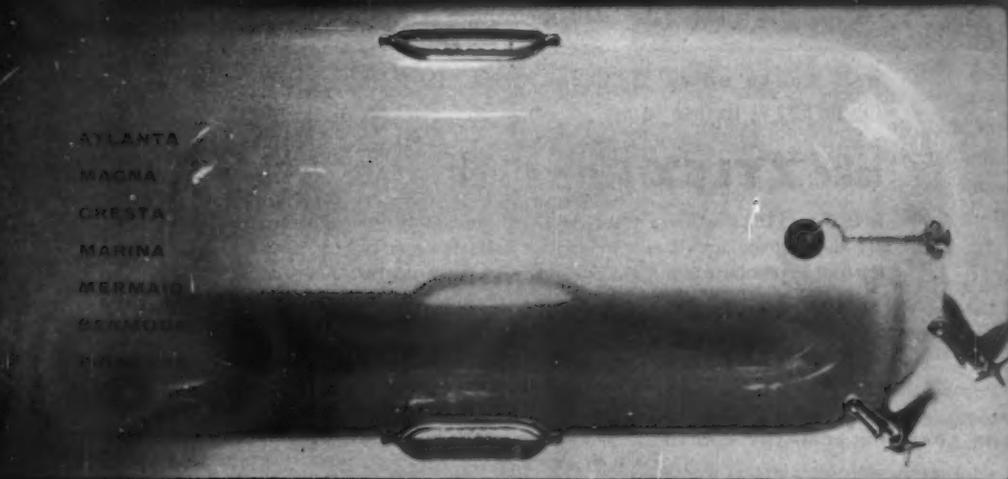


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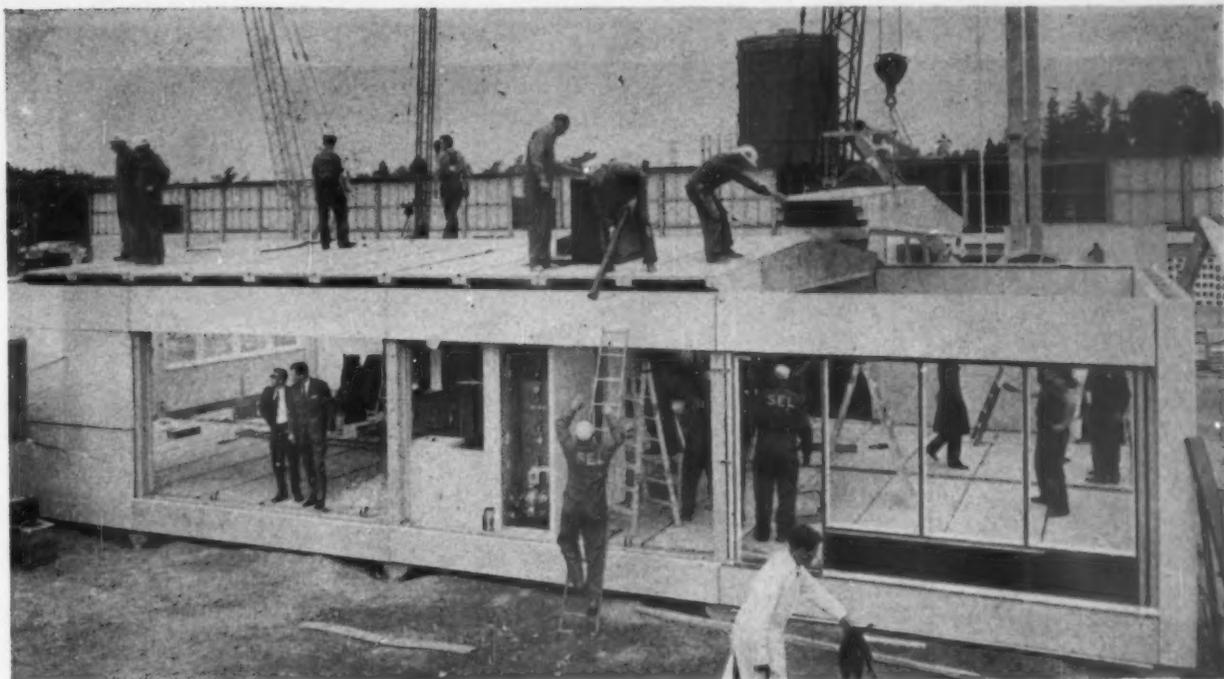
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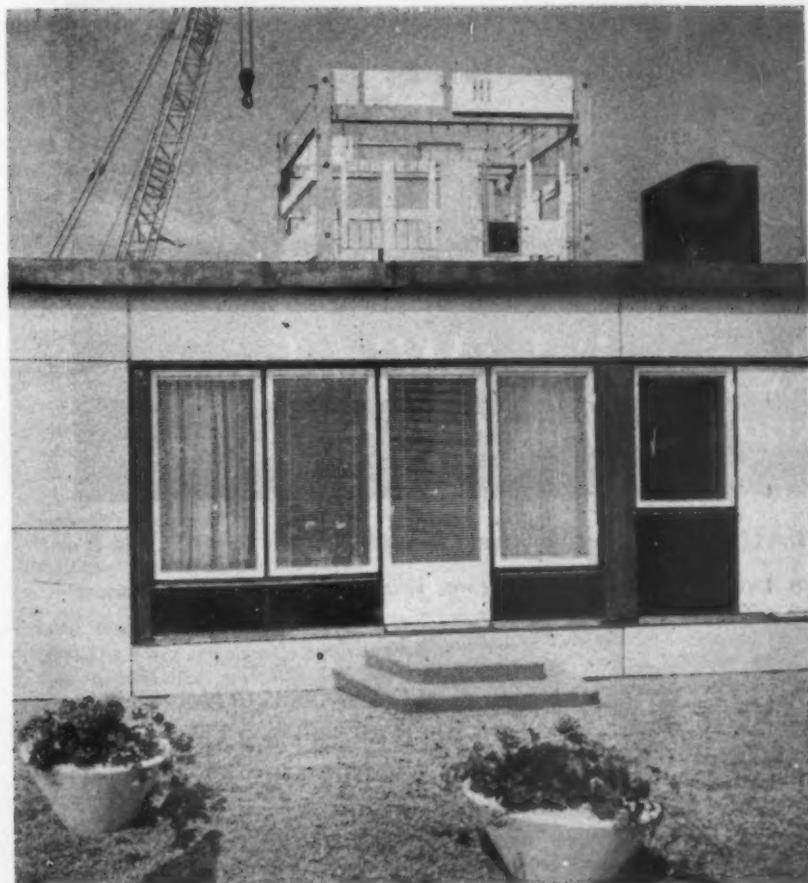


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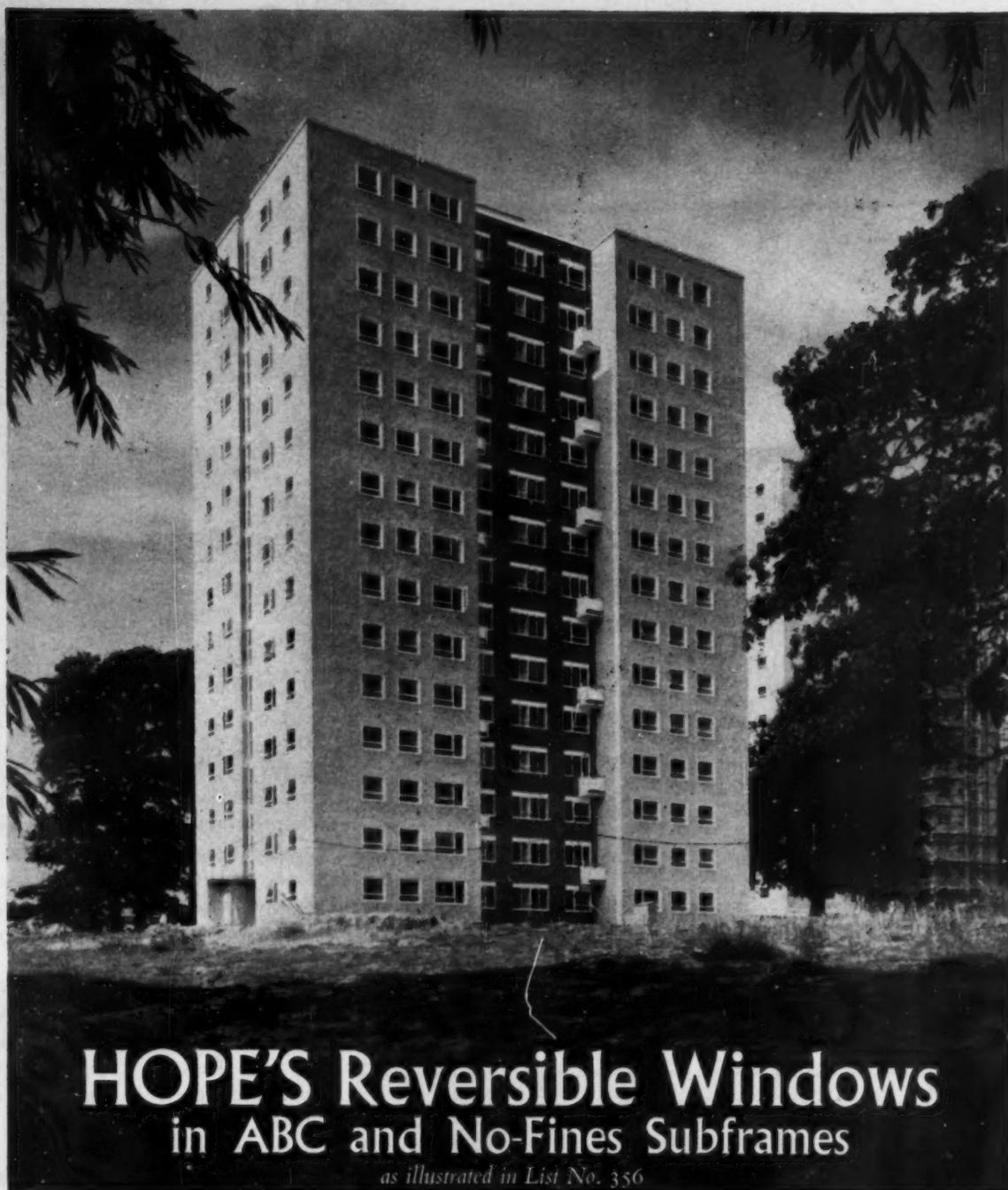
ZARI



Prefabricated Housing in Sweden



These two views are part of a photographic record of the demonstration erection by AB Skanska Cementgjuteriet of a four-bedroom house in one working day, using the EB system of prefabricated concrete elements. This system is not specifically designed for single-storey dwellings, but is intended also for use with all types of building, either alone or in combination with conventional structures and materials. Basically a series of structural elements, it is also being developed to include various types of panels for external cladding and internal partitions, including lightweight concrete and timber. In the case of housing the speed of erection also depends upon the use of a pre-assembled service core, comprising the functional elements of kitchen, bathroom, w.c., heating chamber and a large part of the electrics. Above: the house during assembly of the roof, using 24-ft.-long roof elements which are complete with their thermal insulation and ceiling finish. On the left: a detail of the completed house, with its external cladding of precast concrete units and timber windows.



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THE INDUSTRY

This week Brian Grant describes insurance against woodworm, a new range of litter bins, connections for pitch fibre pipes, and a small fire alarm.

Insurance Against Woodworm

It is now possible to insure roofs against attack by woodworm at premiums which seem remarkably low. The system operated by the Gallwey Protim service is very simple: a survey fee of 1½ gns. is charged and if the roof is discovered to be free of beetle it can then be insured for up to nine years at an annual premium varying from 35s. to 42s. for roofs from 30 to 75 sq. yds. in area, with special rates for larger areas. Roofs already attacked must be treated to the company's satisfaction before insurance can start. The insurance covers regular inspections, free treatment of any woodworm attack, and an indemnity for loss or damage by woodworm attack up to a total of £10,000 in any one year. This sounds very much the sort of thing householders would like to have, as well as the owners of larger buildings. Other parts of any building can be surveyed as well as the roof, but the insurances apply to roofs only. (Gallwey Protim Service, P.O. Box 3, Fieldhouse Lane, Marlow, Bucks.)

Litter Bins

Hopes have just announced a range of litter bins suitable for mounting on lighting standards, walls, and free standing types to be bolted to concrete bases. The outer casings are in either vitreous enamelled cast iron or concrete, and both types have removable galvanised wire mesh basket linings. All the designs are simple and straightforward, and the vitreous enamel is available in five standard colours, and other colours to order, while the concrete finish

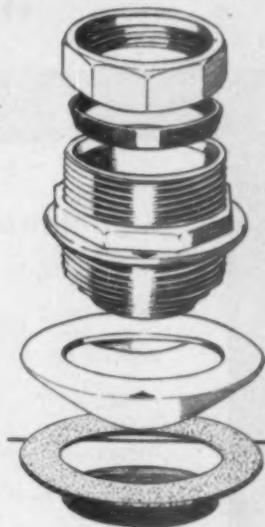
is a smooth grey using a granite base aggregate, though other aggregates can be used to tone with almost any variety of stonework. These designs seem to be good and tough, with a minimum thickness of ¼ in. for the cast iron and 1½ in. for concrete, and are a great improvement on the light sheet metal or plastic bins often flimsily clipped to lamp posts and inviting sabotage from the lunatic fringe. The designer is Kenneth Grange, F.S.I.A. (Henry Hope & Sons, Ltd., Smethwick, Birmingham.)

Connections for Pitch Fibre Pipe

The Key-Conex Tapertite connector has been designed to simplify waste connections to 4-inch pitch fibre stacks. It is possible to make 1½ and 1¼ in. connections anywhere in the stack, before or after installation, as there is no fitting from inside the pipe. A hole of the required diameter is made in the stack with a tank cutter, and the fitting, which has a 5-degree taper and deep-cut threads, is screwed into the hole until an arrow on the nut matches a similar arrow on the saddle, which is curved to fit the 4 in. pipe wall. When the arrows are in line, the end of the shank is flush with the inner wall of the pipe, and there is no internal projection. The waste is then connected in the usual way with the compression ring assembly. Special pipe fittings are therefore not required, and alterations can be made without any difficulty. Further sizes of connector are being developed. (The Key Engineering Co., Ltd., Larkfield, near Maidstone, Kent.)

Fire Alarms

The photograph on the right shows the Fire Cry-er alarm which measures only 6 by 3 in. and costs 79s. 6d. It is a completely self-contained unit, needing no mains supply, and gives a warning audible at distances up to 1,000 ft. when the temperature rises to somewhere between 135° and 140° F., a figure low enough to allow steps to be taken before any fire has had a chance to spread. Installation is no problem as the alarm is merely hung up in areas needing protection. (Fire Cry-er Ltd., Jack Bridge Mill, Colden, Hebden Bridge, Yorks.)



Key-Conex Tapertite connector



Fire Cry-er alarm (½ f.s.)

COLOUR

the logical use of colour in building no. 6

highlights:

The importance of selection of colours according to an orderly plan in consideration of decoration of buildings, either within or without, is now generally recognised, but the use of adjacent colours, more particularly broken in design by the judicious use of highlights, is only being gradually used systematically in this country.

Human vision and the human eye is adapted, by many years of evolution, to daylight and in the great majority of cases any decorative scheme is seen against a backcloth of white daylight. The influence of this white light upon general schemes of decoration is often neglected or at least forgotten. Such daylight helps to dilute and blend the various colours of a decorative scheme, and by utilising this principle — that is the introduction of highlights into a decorative scheme — it can be raised from mediocrity to a reasonable standard.

Highlights can be introduced by the judicious use of very light colours in small areas upon window frames and doors and forming a mosaic pattern of strong colours outlined by white lines. In this way the general appearance of a decorative scheme can be made attractive and harmonious.

Goodlass, Wall & Co. Ltd., Corn Exchange, Liverpool 2 or 179/185 Gt. Portland St., London W1

COLOUR

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.

(97)

725-5

10.200 design: building types SCHOOL SCIENCE LABS.

The Design and Equipment of Science Laboratories. Published by Councils and Education Press Ltd. Price 2s.

This admirable booklet is concerned solely with school laboratories and follows the general lines of that published in 1956 by the Industrial Fund for the Advancement of Scientific Education in Schools.

However, facilities for the teaching of science in maintained secondary schools are expanding rapidly, about 1,000 new laboratories being added each year.

This booklet brings together a series of articles, commissioned earlier in 1960, by *Education*, by three experienced science masters, and should undoubtedly assist at conferences between architect, education officer, headmaster and science master.

Articles on the Planning of New Laboratories and Chemical Laboratories are contributed by Charles Holt; and on Biological Laboratories by R. H. Dyball.

E. W. Tapper's article on Physics Laboratories starts at the right place—with the pupil at the bench and the article continues on practical and well-tried lines.

A plea is entered for adequate wall space for storage cupboards and the avoidance of totally glass-walled laboratories; it is one that many laboratory workers whether in school or research laboratories will heartily endorse.

A number of typical laboratory layouts are given throughout the booklet.

There is a short but useful bibliography. The publication will repay detailed study by all interested in the planning of school science laboratories.

A

624-07-014-2

18.219 construction: theory

WELDED STEELWORK DESIGN

The use of welding in steel building structures. British Constructional Steelwork Association, 1960. 3s. 6d.

This brochure, Publication No. 14, is a revision of No. 6 of 1952 required by the revision of B.S. 449 in 1959.

The 1952 brochure was prepared by a committee of the BCSA and has been brought into line with the revisions in B.S. 449, 1959, by Bernard Godfrey.

The brochure has the original format and opinion and only the text and illustrations have required revision. Apart from the general considerations and economics there are six sections which deal with fillet and butt welds and their use in typical structural details, the design of a welded plate girder, crane girder and built up stanchion, general notes on the practicability of welding and notes on drawing office procedure. One of the costlier aspects of the fully rigid structure is the site weld carried out under more difficult conditions and therefore more suspect and requiring more test and supervision. This has been overcome in recent years by the compromise with the high strength bolted connection and in the re-writing of this brochure attention might have been directed to this form of construction used with welding to provide the fully rigid structure. It is appreciated that another BCSA brochure relates to the details of welded joints and we would recommend BCSA to reissue this in the near future.

18.218

Information Centre item with this number Examples of Structural Steel Design to conform with the requirements of B.S. 449: 1959 published by BCSA, was described in the JOURNAL of November 24, 1960, as a free distribution. In fact it costs 3s. 6d.

A

699-84

22.98 sound insulation and acoustics

CODE OF PRACTICE

British Standard Code of Practice, CP3, Chapter III (1960); Sound Insulation and Noise Reduction. British Standards Institution. 20s.

Codes of practice are often felt to be the brimstone and treacle of technical literature; the adventurous regard them as unwelcome strait-lacing, while experienced grandmothers look upon them as tuition in egg-sucking. These underlying thoughts must create a certain amount of alarm and dependency in the committees which deliberate on codes, but considering the complexity of the subject of this one, it reaches a high standard of usefulness.

The information is divided into seven sections and six appendices. Section 1 deals with planning against noise and covers the town and country planning aspects including some mention of noise in tropical countries. The next six sections deal with the requirements for nominated building types, starting with dwellings and concluding with a selection of miscellaneous buildings. This last section omits a number of specialist buildings, such as studios, airports, motels,

multi-floor garages and boarding kennels about which something might have been said, but does cover the bulk of the subject. A criticism which might be levelled at this main part of the document is that standards are not always explicitly defined. This may be the result of insufficient background research, and shows that there is still much scope for activity in this field.

The first appendix is on general principles. Whether this information is suitable for a code, as opposed to a text-book, is debatable, but at least it is well written, easy to follow and accurate. Appendices B and D give practical information on construction, including valuable tables on the performance of many of the usual wall and floor constructions. The subject of overall insulation, taking into account the effect of low insulation paths such as windows, doors, cracks, etc., is very well covered.

Appendix C gives the insulation grades originally proposed by the B.R.S. for dwellings. The adoption of these proposals by the B.S.I. means that local authorities have now a means of making sound insulation standards obligatory by the simple process of invoking the relevant parts of the code in their byelaws. It will be interesting to see how much use is made of this power.

The legal aspect of noise is covered in Appendix F. This is a valuable guide to a tortuous subject and should help to fill a noticeable gap in the literature available at present.

The subject of aircraft noise is dealt with in a separate appendix and in a subscript to Appendix F. In the appendix the fluid situation prevents more than vague generalities being stated. The legal aspect, for example, is carefully hedged round. We have, unfortunately, not heard the last of this matter.

This publication is certainly a good pound's worth for any practising architect.

(56)

697

23.233 heating and ventilation DOMESTIC HEATING

Domestic Heating. Edited by W. F. B. Shaw. Published by the Temple Press Ltd. 21s.

This book is meant for the layman, not for the architect; but for this reason the architect too can understand it. The editor, W. F. B. Shaw, is of the Warren Springs Laboratory of DSIR and he contributes four out of the ten articles. Two more are contributed by J. B. Dick of BRS and the remainder are by very authoritative people from the gas, electric, oil, and solid fuel industries. It is well written and by people who unquestionably know what they are talking about. Scrupulous answers are given to perhaps about a third of the questions the architect may wish to ask about heating, which is about as much as can be expected in a book which is general in scope. Good value for money and excellent background reading.



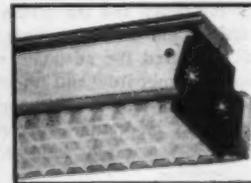
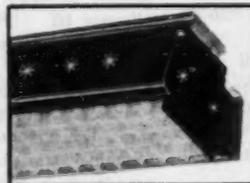
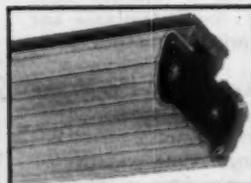
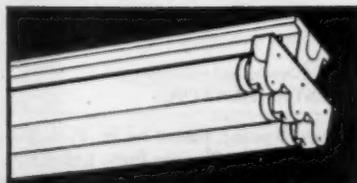
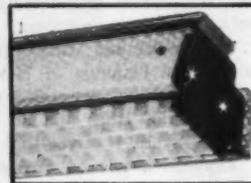
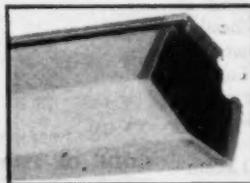
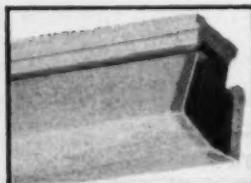
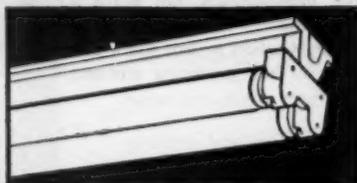
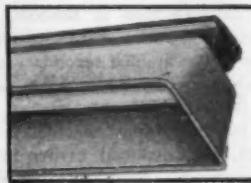
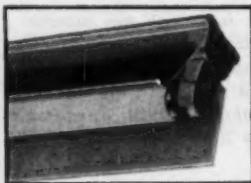
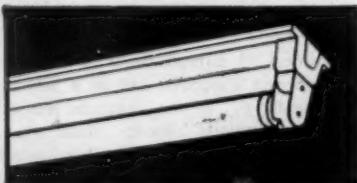
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4 PLANNING: URBAN AND RURAL

Car Parking in Cumbernauld

Now that car ownership is increasing so fast, it is evident that the provision of enough car parking space is one of the factors which will decide the commercial success of a shopping centre. In this article Geoffrey Copcutt, a member of the Architect's Department at Cumbernauld New Town, recounts the method used to size Cumbernauld's parking facilities

It would appear almost impossible to assess accurately the volume of regional shoppers. The attraction will depend on the commercial success in comparison with surrounding centres in 20, 30 or 40 years' time. If traffic movement is still impeded in the centre of Glasgow, many people from the suburbs might shop in Cumbernauld. But by then Glasgow could have a new motorised centre with adequate parking provision. Other shopping centres in the region will not stand still in the next 30 years. Inevitably then the prediction of car parking provision is perhaps the most hazardous of any component in a transport system. While it can be assumed with some confidence that each employee will travel to his place of employment each morning and home again each evening, for a given number of days a week throughout the year, by certain means of locomotion to certain destinations, it cannot be so readily assumed that each shopper (even if his number be susceptible to prediction) will travel to a particular shop, on a given day, at a predetermined time, in a known accumulation, to park for a constant period. The problem would suggest that it may best be met by abstaining from action. Unfortunately by the time the number of car spaces required is made manifest, central area space in Cumbernauld is likely to have been committed. At the same time it is unreasonable to plan roads and buildings around a vast facility of unknown dimensions. It is proposed therefore that the central area be planned to accommodate an argued minimum and that provision be made for expansion.

Methods of Calculating Numbers of Parking Places—

At present there would appear to be no universally applicable approach to this problem, with the exception of the imperfect Area Ratio method, i.e., the ratio between the gross area of parking space and the

gross floor area of retail space. Its application is simple and its results readily grasped, but its value depends entirely on the judgment with which the particular ratio is selected. In a period of extreme growth in traffic and fundamental changes in shopping habits it is difficult to adduce evidence supporting one of the preferred ratios rather than another. It can only be said with any pretensions to objectivity that by this method the ratio is likely to lie within the range of 1:1 to 4:1 since current American practice with advanced car-owning characteristics successfully employs this range. Translated into area for Cumbernauld this would give 10 to 40 acres for gross parking area or say 1,500 to 6,000 car spaces, depending on the technique of parking and size of car. As it is highly probable that British motor car developments will follow the American pattern, and as the American ratio of parking to retail area has steadily increased, if this method is used, then for Britain in 20 years' time the necessary area might be above 2:1. Using this "rule-of-thumb" space would need to be provided to take about 3,000 cars. This is not a very satisfactory basis on which to plan and it therefore becomes necessary to examine any other methods available.

Ideally car-parking requirements should be coupled with the anticipated sales of the centre in order to preserve a relationship between costs and returns. Such a system termed the Unit Sales Method has been used, again in planning American regional shopping centres. Here the "average unit sale" is multiplied by the average number of customers per car, times the minimum car turnover per space. The product, equal to the minimum sales per day per parking stall (for those customers arriving by car) is increased in inverse proportion to the percentage of customers assumed to arrive by car to compensate for "walk-in

technical section

trade," then multiplied by the number of selling days in a year to produce the minimum annual sales for each parking stall. The required number of stalls can then be ascertained by dividing this figure into the total estimated turnover for the whole centre. This calculation should take some account of seasonal peaks when average sales per car will be greater. To operate this technique successfully it is necessary to survey shopping habits at parallel establishments. In practice this could mean conducting surveys on the first phases of the central area itself to ascertain car usage at Cumbernauld.

Unfortunately in common with the Area Ratio method, the Unit Sales method, to be practised with any accuracy, requires statistical resources not yet available in this country. On investigation neither traders organisations nor developers were, for example, able to assist in estimating unit sales; similarly no satisfactory studies of shopping habits have been undertaken to predict either parking stall turnover or the average number of customers per car. From observation, current shopping habits in this country are, of course, very different from those in the United States. However as living standards rise, habits in the U.K. may tend to the American pattern in the sense of one major shopping trip a week, maximum use of the deep freeze and so on. In default of less-wild assumptions at this stage it has been thought worth while therefore to apply unqualified American figures for a typical shopping centre for Cumbernauld's estimated central area retail sales:

Average unit sales	£2
Customers per car	1.4
Minimum car turnover per car space per day	4
No. of selling days p.a. .. .	300
Customers arriving by car .. .	50 per cent
Estimated annual gross sales for Cumbernauld Central Area .. .	£9,950,000
Thus 9,950,000	
$2 (2 \times 1.4 \times 4 \times 300)$	
= 1,500 car spaces approximately	

If unit sales here are around £2 this gives an area figure corresponding quite well with lower ratios in the area ratio method. At this stage then, using only American figures, and allowing for lower British standards in expenditure and car use, a reasonable provision might be about 1,500 car spaces rising to 2,000. But it must be stressed that American experience alone is somewhat dangerous as a basis for prediction and therefore other techniques must be attempted in order to get corroboration.

The Problem of Parking Peaks

Parking patterns vary according to the hour of day, the day of the week and the season. It would, of course, be in the general interest to encourage off-peak shopping to load traffic facilities more evenly, for the parking problem in a town like Cumbernauld is relatively more serious than in a larger city as there are proportionately more cars to be accommodated.

Greater reliance upon the private car in small towns appears from the results of a sample of towns of fewer than 50,000 population where it was found that 80 per cent of people travelling to the centre used private cars while in cities of over a quarter-million population, nearly half used public transport. Similarly it was found that thirteen times as many vehicles per head entered the central area in towns of 10,000 to 25,000 population as in the cities of over one million population. Factors in this phenomenon have been defined as "the availability of mass transit in larger cities, the scarcity of parking space in the larger cities, and the greater frequency of central area trips in smaller cities."*

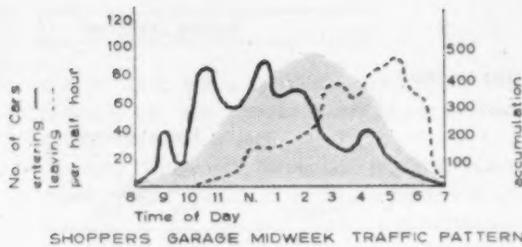
Allied to peak design loads is the question of car stall turnover, related in turn to the average length of time parked. A recent US sample indicates that as the size of a settlement increases, so does the length of stay (for shopping), thus reducing the rate of car-space turnover.

In towns of around 50,000 population each parking stall space may on average be occupied by four cars a day. Assuming an eight-hour shopping period it could be concluded from this stall turnover that each "auto-shopper" parked on average two hours. This is difficult to reconcile with a further survey which showed that the 80 per cent of shoppers parked less than one hour unless the depressive effect of long-term parking by workers, the exclusion of the illegal parker and the fact that the stalls may be empty for part of the period are considered. It is, of course, the coincidence of arrival and the length of stay which produce peaks and it is precisely the interaction of these two factors about which so little is known. The rate of arrivals into parking space during the period of peak accumulation (i.e., 2 to 5 p.m.) for a sample of American towns of Cumbernauld's size has been found to be at least one-third as fast again as at any other time. Turnover has been shown to be as high as 10 on busy days near supermarkets, for nearby shops with good parking could encourage frequent short trips to shop with the average duration of 15 minutes.

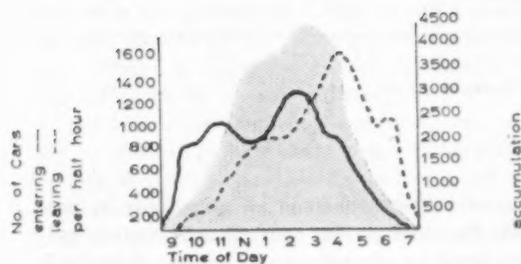
Trends in Car Ownership

At this point it is necessary to discover how trends in car ownership have been moving and, taking certain assumptions, predict what the number of cars will be in Britain in 1980, when the new town will be complete. Then having applied this figure to Cumbernauld, further assumptions would then need to be made about shopping habits. There have been no satisfactory studies of shopping habits in this connection, and rather uncertain assumptions may have to be made if any results are to be obtained at all; but for lack of any other method of determining the area required for parking, apart from simply applying American figures mentioned earlier, no alternative remains.

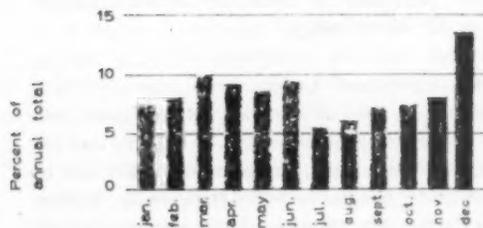
* *Parking Guide to Cities*, US Dept. of Commerce.



SHOPPERS GARAGE MIDWEEK TRAFFIC PATTERN



SUBURBAN SHOPPING CENTER SATURDAY TRAFFIC



SEASONAL DEMAND FOR SHOPPER PARKING

In predicting future national figures for car ownership in this country there are two problems which immediately arise. Firstly, as car ownership increases it might be imagined that it would be likely that the average use of a car would fall off. That is to say, in a country where nearly every family has one or more cars, it might be expected that the average mileage travelled by each car would be less than where cars are few. This has not been true in this country, where the average miles travelled per car has been virtually constant, as it has in America. It is necessary, therefore, only to look at the number of cars without worrying about their declining use, since outside central city areas vehicle mileage has been increasing at almost the same rate as vehicle registration. The other major problem would be regional differences in car ownership. These tend to occur where incomes, in different regions, vary considerably. Scotland, for example, has fewer cars per head of population than the south of England, but since incomes in new towns are normally above average and if living standards are going to rise at the rate which most economists predict, then these small regional differences are of little importance and have been ignored.

A major source in the prediction of car ownership trends is a paper by K. N. Chandler of the Road Research Laboratory*. There are several ways of making predictions about car ownership. The first, and simplest, method would be to take the average increase per annum post-war and apply it to the future. There have been 350,000 vehicles a year increase over the last five years and if this is applied and extended, by means of a straight line curve to 1980, then this would mean that there would be some 15 million vehicles on the roads by that date. It has been argued that there might be a saturation point reached, or at least that the rate at which cars increase will gradually slow down as the saturation point is approached.

Judging by American experience there is little reason to expect that this will happen in Britain. The rate of growth in the US, where there are three times as many cars per head of population, has been rising steadily and at almost the same speed as has that of Britain. This first calculation assumes the increase to be the same average number of vehicles per year, but in fact, when post-war experience is examined it is found that there has been a uniform proportionate increase which is at the rate of 7½ per cent per year. If this continues it would give 37 million vehicles on the roads in 1980. While there are some grounds for choosing between these methods (and they give, as it was shown, widely different answers) the principle of curve-fitting methods itself must be seriously questioned. If allowance is made for vehicles other than cars and motor cycles, the totals would be reduced to 11 million (where a fixed number increase is taken each year), and 27 million (where the increase is proportionate). At present in Britain the trends of post-war experience suggest that the

Graphs showing American weekly and seasonal parking peaks (from Baker and Funaro's Parking, Reinhold Press)

* Traffic Trends, Research Note No. RN/3174/KNC, Department of Scientific and Industrial Research, Road Research Laboratory, February 1956.

technical section

Table 1.—Estimates of the numbers of certain types of vehicles in Great Britain in 1967 and 1980

Method	Vehicles	Actual (1957) (millions)	Estimated (millions)	
			1967	1980
CURVE-FITTING METHODS				
1. Straight-line extrapolation of post-war trends (350,000 per year)	All types except agricultural tractors	—	11½	15
2. Uniform proportionate increase (7½ per cent per year)	—	7.1	18	37
INCOME-METHODS (assuming doubling of real income over 1954 by 1980)				
3. From relationship between cars, motor cycle ownership and actual personal income	Cars and motor cycles	5.6	—	10½
4. From continuance of historical relationship between numbers of cars and motor cycles (over 60 c.c.) divided by population and real income per person	Cars and motor cycles	5.3	—	21
PRODUCTION FIGURES				
5. If present capacity is fully used	Cars and commercial vehicles	5.5	12	17

car population will rise to a level of 11 or 27 million depending on the particular assumptions made. This is a very wide variation indeed, and other aspects must be examined in an attempt to narrow the range. In the first method, based on real incomes and car ownership, different income groups are related to the percentage within the group who own motor cars. So for each different income group, the percentage of people owning cars can be quoted and by estimating changes in the country's real income, what these changes will bring in terms of increasing car ownership can be predicted. The Chancellor of the Exchequer has said that 1954 national income would be doubled by 1980. This is based on sound evidence if an increase in real income of around 2½ per cent per annum is assumed and this would lead to doubling in approximately 25 years. Looking at this relationship of cars to income it can be found that by doubling the real income in each group the car population will be much more than doubled. On this calculation (preserving the present 3:1 ratio of cars to motor cycles) the total will have risen to some 10½ million by 1980. This compares quite well with the lower figure of 11 million which was obtained by projecting forward a fixed number increase each year.

There is another technique which can be used here. The historical relationship of cars per head of population can be taken and it can be seen how this has grown each year and how it relates to the real income per head in the country. Having established the relationship of income per head to cars per head, this function can then be continued on to 1980 producing in this case a figure of exactly double the previous one, namely 21 million vehicles in 1980. This corresponds to the upper figure of 27 million. Finally it should be mentioned that if the total capacity of the motor industry is examined it would be able if fully used, to produce in the neighbourhood of 17 million vehicles without any additional capacity, so that the

figures already quoted could all quite easily be produced. Therefore on the basis of these various estimates, it can be assumed that the number of cars will, at the very least, be about 11 million by 1980 and may increase to as much as 21 or even 27 million. Predictions in this field are bound to be perilous and as has been seen, by simply varying the assumptions very different results are obtained. As income methods are thought to be generally much more satisfactory both results of this method will be used as there is no obvious ground for choosing the lower or the higher limit.* So, in round figures, it will be assumed that the British car population in 1980 may be either (a) 10 million or (b) 20 million.

Ownership Levels and Usage

Ten million in 1980 is equivalent to 0.7 cars per family. This estimate is based on the relative cost of motoring remaining static, and the demand for cars in different income groups remaining static. In fact neither of these factors has remained static; the number of people wishing to run cars is changing and the real cost of motoring is falling. But future trends are almost impossible to predict, being largely dependent on Government policy, on purchase tax, fuel, duty, etc. If the trends of the past four years continue, private car ownership will increase to 10 million in 12-14 rather than 25 years. If this were so the higher limit of 20 million would almost certainly be reached around or soon after 1980. The second estimate is 20 million in 1980 which is equivalent to 1.4 cars per family. This may appear high by current British standards (though it includes a 1:3 ratio of motor cycles) but if trends in America are followed here it will almost certainly ultimately be exceeded.

In many cases of course the motor cycle is not an

* The Road Research Laboratory which has examined the report now suggests that the upper limits are more likely to be reached.

technical section

end in itself, but a substitute until a car can be afforded, i.e., many motor cycles in use represent a hidden demand for cars.

Applying these two ownership levels to Cumbernauld's future population of 70,000 persons or 20,000 families, at 0.7 car per family Cumbernauld will have 14,000 cars and at 1.4 cars per family 28,000 cars.

Before attempting to predict usage of these numbers of cars consideration must be given to the following influences:—

1. The possibility of planning integrated parking facilities for all central area functions permits the Saturday influx to take up unoccupied office and other central area employee parking space (it is improbable that even during the peak a high incidence of families will visit the centre by car twice, or more than one member in a number of two-car families will visit the centre by car simultaneously).
2. The lure of metropolitan Glasgow is likely to be felt particularly at week-ends, hence reducing major resident shopping trips within Cumbernauld and compensating for the arrival of that proportion of shoppers in Cumbernauld's own sphere of influence.
3. The conception of the new town as a high density settlement about a comprehensive pedestrian network located off through routes.
4. The general decline in the very acute Saturday afternoon peak with the reduction of the 5½-day to a five-day week, with a possible further decline if evening shopping returns.
5. The possible extension of delivery, the standing order, telephone order and mail order.
6. The evolution in petro-chemicals and mechanical engineering which may stave off still larger cars.
7. A trend to two-car families could paradoxically reduce peaks by distributing the load more evenly. The housewife, for example, is enabled to shop by car during the week rather than having to wait until the week-end.
8. The cost of parking must be recovered from commercial leaseholders—hence the least possible capital and maintenance costs must be incurred.
9. The possible eventual replacement of the private motor-car by some unforeseen transport medium.

Calculation for Shopper-parking Demand on a Non-seasonal Saturday Peak

An estimate of the total number of cars in the town has been made and at any one time these cars will divide into those parked or garaged at home, those driven to work within the town, those driven outside the town for any purpose, those circulating within the town on any business and those shopping or on any other business with the town centre.

A further group of cars in the town centre will come from outside the town. It will be assumed in the absence of any statistical guide, that the number of people coming into the town to shop from outside will be balanced out by the people going from Cumbernauld to shop in Glasgow and Edinburgh, etc. (In

fact there are likely to be rather fewer cars to arrive in Cumbernauld than depart for other centres since the satellite town/parent city relationship depresses home sales, unless satisfactory parking provision leads to considerable commercial success and to additional attraction from the district.)

An estimate can be made of the approximate number of vehicles available for shopping at different times in different parts of the town. But it is more difficult to determine what proportion of the available cars would be used for shopping at any one time. The average duration of a shopping trip is as important as the total number of shopping trips made and the farther travelled the longer the shopping trip will be. From the total number of residents' cars in the town (14,000 or 28,000) there must be deducted those cars which will either not be available or will not be used for shopping.

The first reduction should be an allowance for that proportion of car owners who will have driven to work and will be parked at peak. This number will be virtually a proportion of those estimated to be engaged in the retail and service trades, i.e., 4,200. Of these 2,770 may be employed in the central area with the remaining 1,430 (often the second wage earner in the family) located at retail outlets throughout the town, composed equally of males and females with a 20 per cent part-time element. Assuming every fourth car is used for work this gives (a) 0.7:—735 cars or (b) 1.4:—1,470 cars, or put another way 1 in every 19 cars may not be available for shopping.

The second group to be deducted is that consisting of those cars owned by households who can be expected to walk. Some shoppers resident in the New Town, no matter what the level of car ownership, or distance from town centre, will sometimes walk to the town centre. It is proposed to equate their number of families, who on a trip to the centre would, if travelling by car, have to commence their journey by motoring in the opposite direction. That is to say, it is assumed that all those families going shopping who in a journey to the centre do not meet a road, will walk (this is roughly equivalent to ¼-mile radius). The situation clearly will not be as sharply defined as this but it is not unreasonable to suppose that the shoppers in this zone who will motor regardless of their proximity to the centre, will be compensated by those shoppers outside this zone who will walk anyway.

This number of families is 4,500, composed of 2,200 families living on the north side, 1,000 families in the central area and 1,300 families on the south side. This is 22.5 per cent of all the families in the town and is not dissimilar to the results of two 1954 surveys of work journeys, one in the US which showed 18 per cent walkers and the other in a British new town which showed 19 per cent walkers. Although shopper foot journeys are being compared with worker foot journeys, the slightly higher proportion adopted above for Cumbernauld would reflect its compact pedestrian nature and residential central area. It has

technical section

been estimated elsewhere that slightly less than 20 per cent of the working population will make the journey to work on foot which in turn reflects the remoteness of industry relative to the residential areas, modified by the distribution of small scale industry within the town.

It has been decided to apply national average car ownership figures to the population as a whole assuming even distribution and usage (with the exception of those households unquestionably within the orbit of the town centre) rather than to attempt to relate varying car owning characteristics to different income groups in a hypothetical distribution. This statistical approach has been adopted for several reasons. First, the nature of the problem to be investigated, i.e., the assessment of shopping habits is bound to involve a range of assumptions which renders redundant refined statistics; secondly the income structure of the town cannot be forecast with any accuracy; thirdly, even if forecast, its distribution could not yet be predicted, and finally the relationship to income of cars owned and the use made of them could change critically over 20 years. A buoyant economy for example or Government action in reducing taxation on cars could result in vastly increasing the volume of home sales in the motor group.

Research has shown that approximately 50 per cent of the week's trade is handled on Friday and Saturday, with perhaps half of this proportion again handled during a Saturday peak. This, for want of a better translation into shopping habits, is assumed to be equivalent to 25 per cent of households shopping during peak, that is 5,000 families. If 22.5 per cent (1,125 families) walk, this leaves 3,875 families who will not walk. Assuming 0.7 car per family this gives 2,712 cars, and at 1 car per family this equals 3,875 cars*.

1 in 19 of these cars will not be available for shopping, hence these figures should be reduced to (a) 2,569 and (b) 3,671. Now with high car ownership levels, purchases to carry, often severe weather conditions, and uphill journeys to the centre a higher car use factor can be expected than that assumed for the work-journey *vis-à-vis* the use of public transport. Say one in five journeys will be made by p.s.v. for 0.7 ownership and one in ten for the 1.4 ownership level. A reduction can then be made for this non-usage of cars as follows:

(a) at 0.7 cars per family, $2,569 - 514 = 2,055$

(b) at 1.4 cars per family, $3,671 - 367 = 3,304$

If an allowance is now made for passengers these figures should be rounded off to between 2,000 and 3,000 cars. This result implies a parking provision of (a) about 14 acres if the lower limit is chosen and (b) 21 acres if the higher is thought to be more likely. When compared with US experience using the area ratio method it suggests a ratio of (a) $1\frac{1}{2}:1$ or (b)

$2:1$. On the other hand the unit sales method using American figures suggested a ratio of only $1:1$. At present the US population owns three times as many cars per family as the British. But all predictions for British trends tend to show that the US present figures will be reached at least by the turn of the century. US experience is therefore relevant and would certainly suggest on these calculations that probably space for 2,000 cars shopping at peak is clearly a minimum which should not be cut and indeed that something more may be required.

Finally some consideration must be given to seasonal peaks, since there will be no slack that can be taken up in the sense of curb-parking. This increase in business which occurs only during a few days a year will be unlikely to produce an adequate return on full-scale extra parking investment, but it may be dealt with by overflow surface car parks.

To the number of comparatively short-term parkers must be added long-term parking provision for those persons engaged in the retail and service trades. The number of cars in relation to the number of employees may increase, but the number of employees required per unit-area will have decreased because of more automatic and self-service selling. It has been estimated elsewhere in the central area report that the number of central area employees in the retail and service trades is likely to be between two and a half to three thousand. It could be stated that the retail assistants will bear the same relation to the commuting labour force as does the total residential labour force, i.e., one in every five will travel into Cumbernauld. Four in every five therefore will be Cumbernauld (and satellite village) residents assumed to be evenly distributed. Applying certain criteria similar to those used in the customer calculation it can be established that those living within a certain distance are most likely to walk to work and beyond this distance a proportion can be found most likely to travel by public transport and hence that proportion likely to travel by private motor car either as a driver or as a passenger. Those coming from outside the town can be dealt with likewise. This approach, however, is unlikely to produce a smaller margin of error than the calculation already performed for the purpose of deducting employees' cars not available for shopping, since there are no adequate survey data. It was shown that between 700 and 1,500 car spaces would be needed for 4,720 employees, depending on the level of car ownership. Of these two-thirds would be parked in the central area and the remainder located at retail outlets around the town. This means long-term parking provision in round figures for 500 to 1,000 cars.

If the mean of 750 is adopted, the number of car spaces which is likely to be required in this connection is 750 long-term plus a minimum of 2,000 short-term, giving a *minimum* total of 2,750 car parking spaces. This result of customer and retail employee parking is not, of course, the extent of the Cumbernauld central area car parking problem but only of that sector generated by the retail activity.

* For the purpose of estimating parking provision in the town centre it is unreasonable to assume that an ownership level of 1.4 cars per family means that in general families will have more than one car parked in the centre at peak hours. In effect then the highest ownership level that need be considered in this instance is one car per family.

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Harlow Town Station

for British Railways
(Eastern Region)

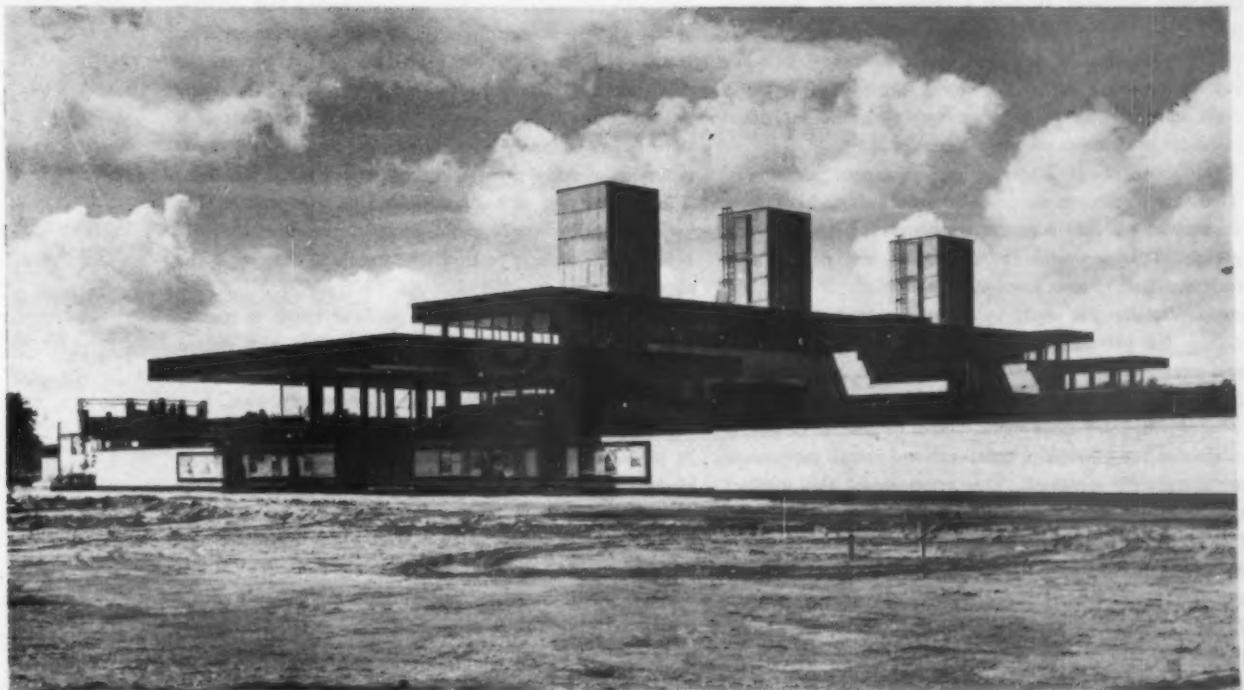
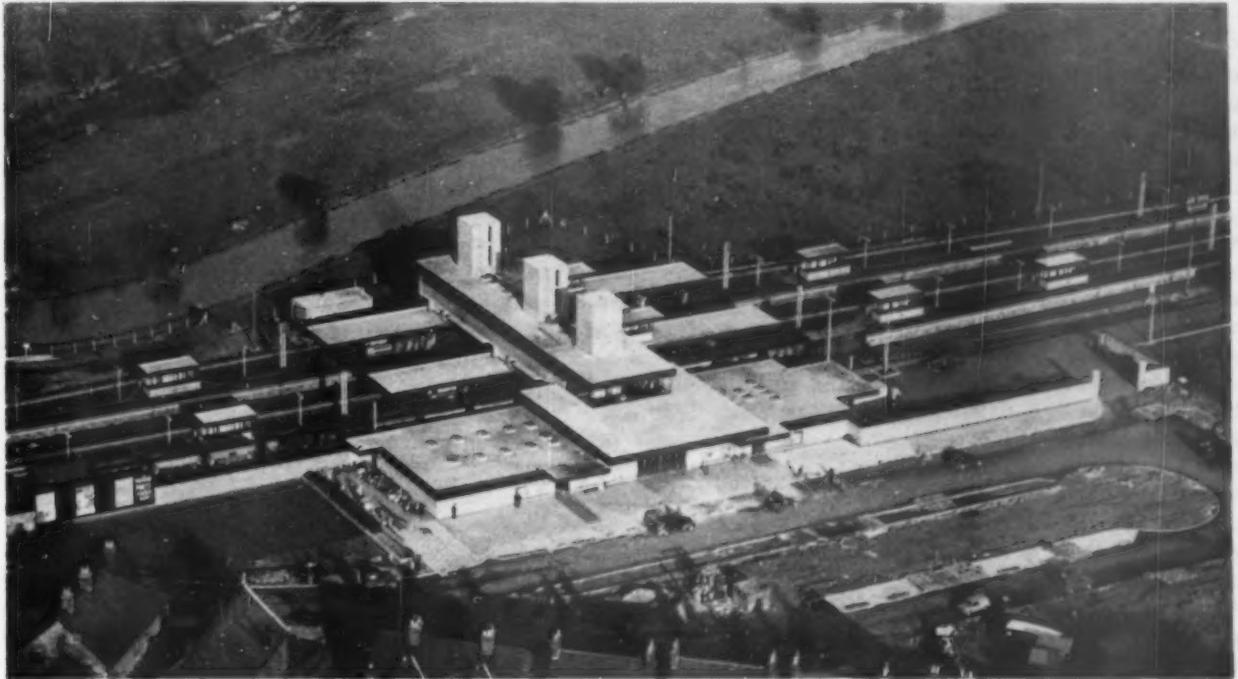
architect
H. H. POWELL, Regional Architect
under the general direction of A. K.
TERRIS, Chief Civil Engineer, Eastern
Region

design team
PAUL HAMILTON, JOHN BICK-
NELL, IAN FRASER

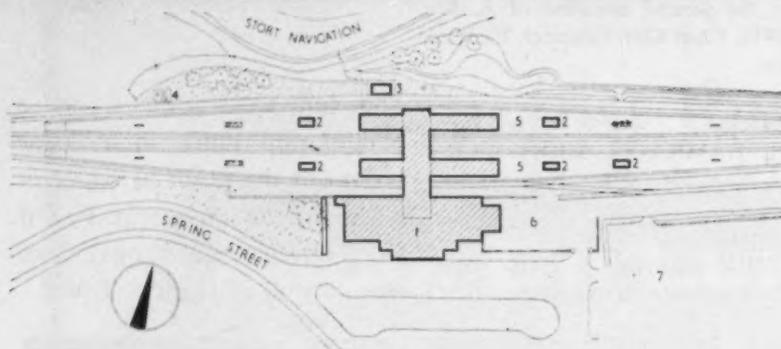
quantity surveyor
C. JOHN MANN & SON and
YEOMAN AND EDWARDS

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The railway station is as a
punctuation mark in a linear
system at the point at which it
meets the outside world. Few if
any modern stations convey this
idea so well as Harlow Town



building study—2nd series



Site plan [Scale: 2400:1]

1. Station building
2. Shelters
3. New relay station
4. Transformers
5. Platforms
6. Parcels yard
7. Car park

APPRAISAL. Harlow New Town lies to the west of Old Harlow, which is on the A11 road to Norwich. At this point the main line from Liverpool Street to Bishop's Stortford and Cambridge forms the northern boundary of the new town. The station for this area is on the site of a small halt, originally called Burnt Mill.

Railway sites are different from most others for both practical and philosophical reasons. Buildings are frequently on made-up ground, such as embankments, and subject to heavy vibration. Construction work has to be carried out alongside or over "running roads." In addition, sites may be inaccessible for normal delivery of plant and material. Harlow Town Station is on marshy ground by the River Stort and some 280 piles had to be driven before work could start. Site difficulties, together with the need for oversize structural members to resist vibration and for robust finishes, make the average station an expensive proposition, therefore the evidence of the cost analysis should not be applied outside this context.

The philosophical consideration is a simple one. The railway has been likened to a linear town (or, more unkindly, a linear slum), pencil-thin and sparsely, but continuously, lined with buildings. In such a system the 4th dimension is all important: trains pass through quickly, coalescing our visual appreciation of buildings and "furniture" into one continuous picture. This is a world within itself, but at a main station there is closer contact with the individual buildings as elements within this continuity.

The planning of a passenger station is in essence quite simple. There are three elements to be arranged; the railway tracks themselves and the separate handling of passengers and parcels. This separation of passengers and parcels is a familiar failure of most London main termini.

At Harlow the plan works well enough. The booking office divides the passengers' concourse from the parcels office, and passengers and parcels proceed without conflict to the platforms. The connection between platforms and concourse is by overbridge. Parcels traffic crosses behind the concourse so that on the overbridge passenger and parcels movements are completely separated. This arrangement also involves a somewhat circuitous route between the booking office and the foot of the passenger stairs. Provided that most passengers are season-ticket holders this is not a serious error; but one wonders whether Harlow will become a commuter town. British Railways, by electrifying the line, will no doubt make it so.

A departure from normal platform planning is the arrange-

ment of passenger shelters. Instead of the familiar canopy, which reaches to the platform edge and has, therefore, to be as high as the loading gauge, small closed shelters are provided. Spaced evenly along the platforms, these shelters have the single disadvantage that passengers have to rush for it in wet weather. Against this, savings in capital cost are considerable—and it is as well to remember that these shelters provide a much higher standard of protection than any other public transport service sees fit to offer.

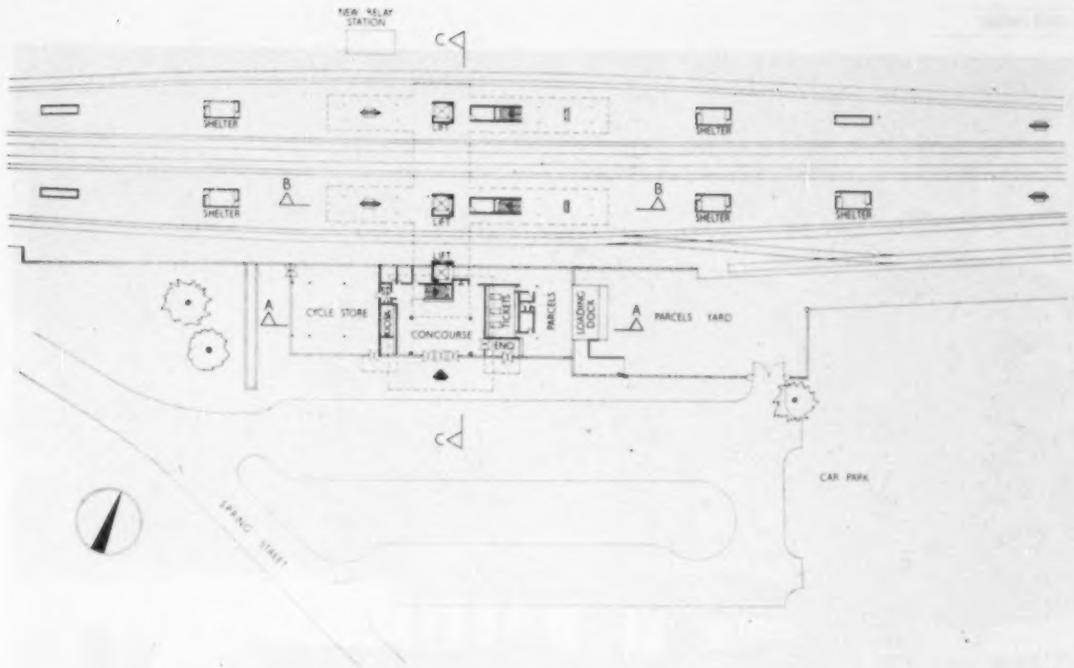
It is impossible to consider the form of this new station without the detail: that is in itself unusual. Further, it is necessary to consider this building in the broader context of linear railway development, and indeed of the progress of English architecture as a whole, before making a proper assessment of its value.

Much of the better architecture in this country in the last decade has, of course, been highly derivative. Sources have been mainly twofold: the North American vernacular and the hardy perennial, Le Corbusier. The curtain wall—from North America—is a godsend to the mediocre architect: detailing is standard according to X's system and is already worked out. But architects of both schools, who have taken their jobs seriously, have become preoccupied with detail—at first with the refinement of it and now with its expression. Harlow is interesting in two related ways. First, because the detail in many cases is so strongly expressed, particularly structural elements; and second, because through this it shows signs of indigenous architectural thought. (There is not much of this elsewhere in the shape of actual building.) The exaggeration of some structural features so that they become almost decorative encourages the mind to speculate as to how far we may be from true structural decoration, the logic of classical architecture.

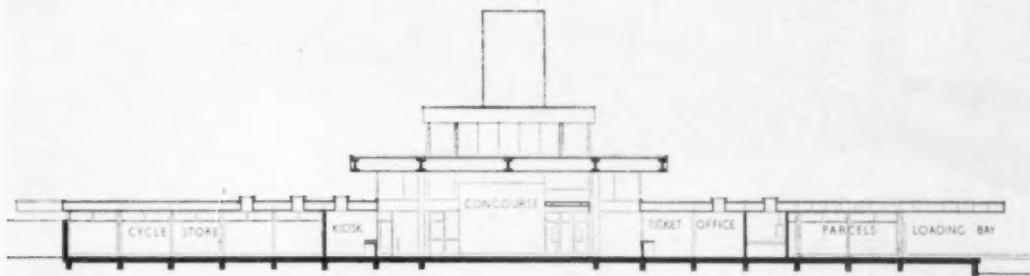
However, the new station is not without traces of outside influence. The detail of boarded roof soffits with mitred returns and central chain rainwater drainage comes straight from the Japanese pavilion at the Brussels Exhibition. It is none the worse for that.

In its context as a building in a linear town the form of Harlow Town Station seems right. The roof shapes and the black horizontal pointing of brickwork emphasise the linearity of its situation; while the strong vertical towers punctuate movement through it.

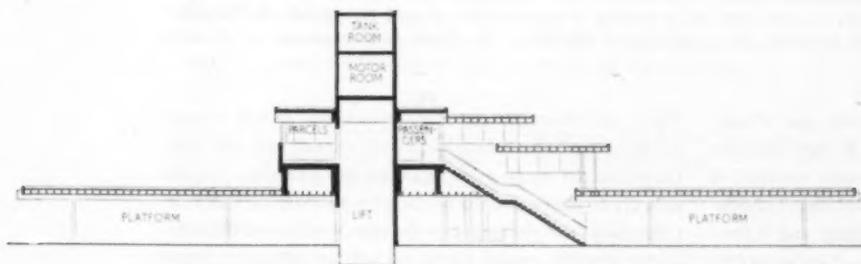
The pylons for overhead electrification (in the area of the station only) have been designed by the architects' department. There is some hope that later they may be adopted as standard throughout the Eastern Region. Whatever the



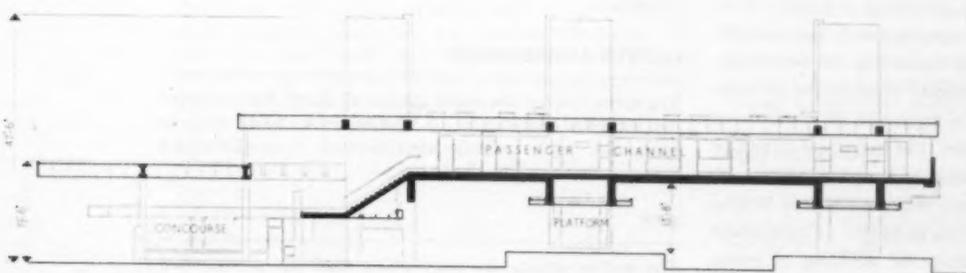
Ground floor plan. Lavatory accommodation, waiting rooms and staff room are placed between the lifts at first floor level
 [Scale: $\frac{1}{16}'' = 1' 0''$]



Section AA [Scale: $\frac{1}{8}'' = 1' 0''$]



Section BB



Section CC

building study—2nd series



In essence the station consists of a series of horizontal roof elements separated from each other and the bottom walling by glass or fresh air. At each side of three entrances are massive stone quoins bearing in incised letters of gold the legends CYCLES—CYCLES, HARLOW TOWN—HARLOW TOWN, ENQUIRIES—PARCELS. The linear brass ornament to all doors is well shown in this view

general feeling may be about the effect of this type of electrification on the English landscape, it is at least desirable that there should not be two dozen assorted varieties of pylon. Many different types have been used on a London-Midland ten-mile stretch between Manchester and Crewe [see AJ, September 22, 1960]. The adoption of the architects' design, if it occurs, will be primarily on grounds of economical manufacture.

The detailing of the concrete is interesting, especially where function of parts is deliberately over-expressed. Two examples are (a) deep cantilever beams supporting the overbridge; (b) detailing of the platform canopies which adjoin the staircases. The roof of the canopy is supported on a rolled steel joist column and beam structure: the beams are turned up at the ends to express containment and support of the roof; while at the staircase end, where they rest on load-bearing brickwork, they are supported on padstones of exaggerated strength. With all this in mind, the detailing of smoke deflectors on the overbridge (diesels make worse stains than steam engines) is disappointingly feeble.

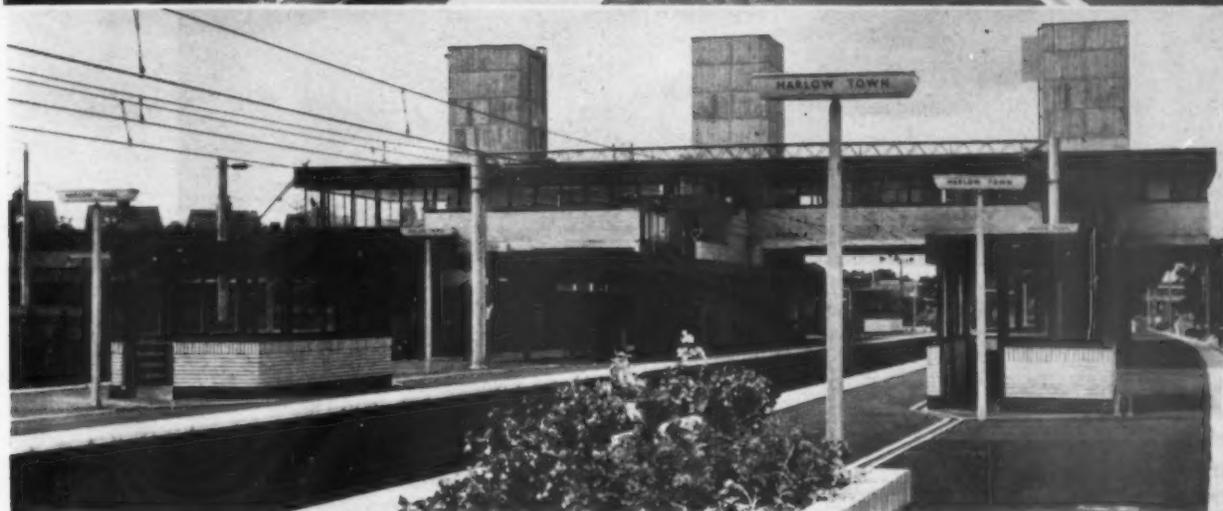
There are other features about which one is less certain. All doors are covered with brass strip as push pads and rails. On the official opening day this brass was gleaming; but the railways do not receive top honours for building maintenance. Conversely (and perversely) in the parcels section of the overbridge specially treated hardwood rails are affixed to robust and dirty concrete walls, presumably for their protection. Generally, however, the finishes are apposite and well detailed.

CLIENT'S REQUIREMENTS

Reconstruction of the small station of Burnt Mill to serve the increased population of Harlow New Town and in connection with railway electrification from Liverpool Street to Bishop's Stortford.

SITE

The station adjoins the town's ring road and is separated from the town centre, half a mile to the south, by an area reserved for parkland and playing fields. The forecourt, to



Top view shows: island shelters in lieu of continuous canopies; architect-designed overhead wire gantries; lighting standards ubiquitous in the Eastern Region

Bottom: a ramped roof over steps to overbridge is deliberately avoided by devising roofs at three levels—but an immediate comparison with Frank Lloyd Wright's work is facile and misleading

be built by the Harlow Development Corporation, will form the nucleus of a small commercial centre. A car park for 400 cars will eventually be provided.

PLANNING

The new station has two island platforms connected by a covered overbridge, containing public waiting-room and lavatories, to a large concourse on the south side. The concourse contains the booking office which has three ticket windows, newspaper and tobacconist's kiosks and public telephone boxes. It is flanked on the west side by a store for 150 cycles and on the east by enquiry and parcels offices with a large parcels yard beyond.

SUMMARY

Floor areas	sq. ft.
Main building	8,171
Loading bay	458
Bridge	3,498
Tank room and lift motor rooms	469
Staircases to platforms (measured on	

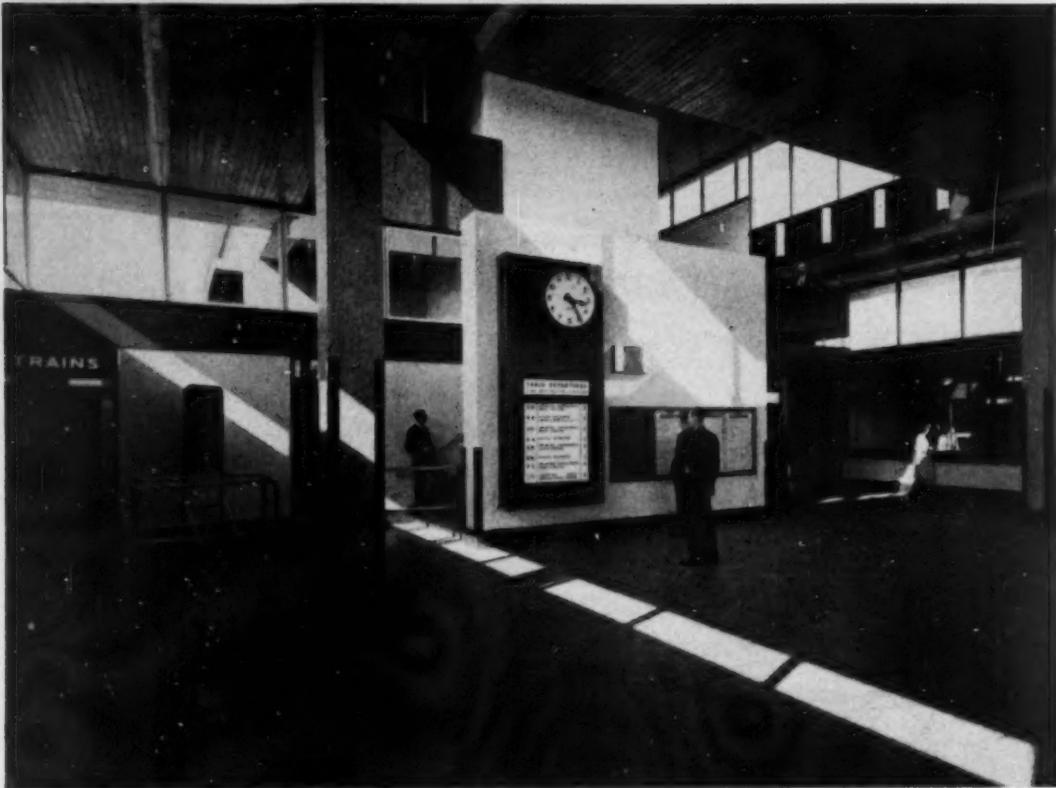
plan) and including rooms under	604
	13,200
Five platform shelters	785
	13,985

Type of contract: Institute of Civil Engineers contract with special conditions. Fixed price bill of quantities on standard method of measurement.
Tender date: February 1959.
Work began: March 1959.
Work finished: Effective completion July 1960.
Adjusted amount of contract sum: £102,043 (for the whole of the works in this analysis).

COST ANALYSIS

	Cost per sq. ft. s d
Based on adjusted amount of contract sum. (AJ revised elemental breakdown in use from November 10, 1960.)	
Preliminaries and insurances	2 1½
1.391 per cent of remainder of contract.	

building study—2nd series



Minor planning failure in concourse: passengers enter from position of camera, book where girl is standing, then cross to barrier at left-hand side. But the plan works for season-ticket holders, who buy newspapers at left (out of picture), then pass straight through barrier

Work below lowest floor finish

Excavations, pile caps, reinforced ground beams and slabs.

STRUCTURAL ELEMENTS

Frame

Main building: box section welded steel columns, castellated steel beams.

s d Concourse: precast, pretensioned and post-tensioned concrete columns and beams.
 9 6½ Overbridge: reinforced concrete cantilever beams on reinforced concrete lift shafts.
 Castellated steel roof beams.
 Stair roofs: steel frame.

8 9 Upper floors

7 6½ Bridge deck: precast, pretensioned concrete units over rail spans: 233 sq. yds., 240s. 6d. per sq. yd.



Left: opposite side of booking hall showing newsagent's shop. There is a satisfactory sense of volume both here and throughout the building. Fluorescent lamps, favoured by the engineers on maintenance grounds, add to the total design
 Right: parcels and enquiry office, planned in annexe off booking hall



Passenger side of overbridge. Waiting-rooms are also provided at this level

Remainder: in situ reinforced concrete
108 sq. yds., 361s. od. per sq. yd.

Roof

I-section timber beams with plywood webs.
1½-in. tongued and grooved boarding impregnated with fire retarder, ¼-in. insulation board.
3 layers felt and chippings.
½-in. painted marine quality ply fascias with felt backing.
Cast iron rainwater pipes internally.
Cast iron rainwater outlets externally.
Timber beams and boarding: 1,631 sq. yds., 87s. 6d. per sq. yd.
Felt roofing: 1,631 sq. yds., 14s. 8d. per sq. yd.

Rooflights

Flat glass fixed lights, in patent aluminium frames, each 5 sq. ft. in area.
Fixed lights, 275s. od. per sq. yd.
Opening lights, 525s. od. per sq. yd.

Staircases

One 18 ft. 2 in. rise × 8 ft. 6 in. wide.
One 15 ft. 2 in. rise × 7 ft. 6 in. wide.
Reinforced concrete with steel nosings, quarry tile treads and risers and polished brass balustrades.

External walls

Main building: 11-in. cavity brickwork, fair-faced in parcels and cycle areas; flint lime facings on blue Staffordshire plinths.
Overbridge: 2-in. special flint lime facings on 4-in. reinforced concrete; fair-faced on parcels side.

Platform stairs: 9-in. brickwork, flint lime facings with reinforced concrete sills and lintels.
Sills elsewhere: 1½-in. blue quarry tile with felt cavity closer and lead flashing.

18 4½

Windows

Universal hot dipped galvanised steel in single panes in sub-frame of steel channels at head and sill, and steel flats with timber fixing fillets, standard sash fasteners and hinges, and padlocks on overbridge.
Glazing: sheet and plate glass to suit sizes: 376 sq. yds., 241s. 6d. per sq. yd.

6 10½

External doors

Iroko-framed doors glazed with toughened plate glass: 260 sq. ft., 18s. 8d. per sq. ft.
Iroko- and ply-faced solid flush doors: 460 sq. ft., 17s. od. per sq. ft.
6 single doors.
12 pairs double doors.
Mild steel channel frame with polished iroko infill for double action doors.
Mild steel angle frame for remainder.
Steel roller shutters: 358 sq. ft., 26s. od. per sq. ft.

9½

2 5½

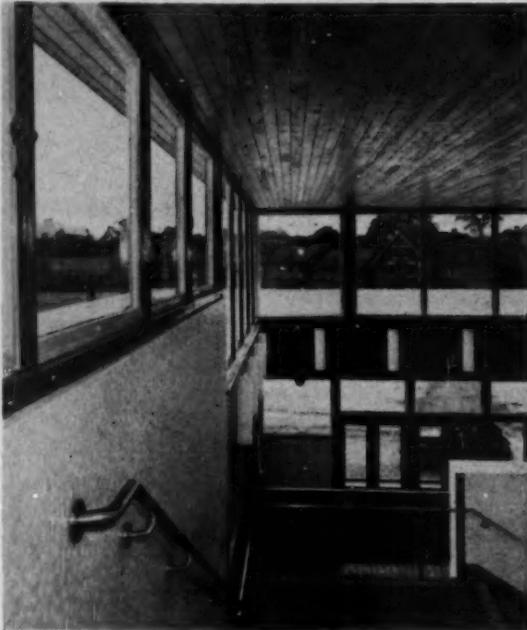
Partitions

Ground floor: 4½-in. flint lime brick fair-faced in parcels office and cycle store: 186 sq. yds., 32s. 2d. per sq. yd.
Overbridge: 3-in. hollow clay block, fair-faced in parcels channel: 231 sq. yds., 15s. 9d. per sq. yd.
Borrowed lights glazed direct into openings with polished iroko beads: 55 sq. yds., 49s. od. per sq. yd.

10 6½

1 2

building study—2nd series



Owing to the arrangement of roofs there is no sense of closure—of being forced downward—at the head of a staircase

Internal doors 1 1½
As external doors.
Iroko, 42 sq. ft., 18s. 8d. per sq. ft.
Flush, 760 sq. ft., 13s. 9d. per sq. ft.
31 single doors.
3 pairs double doors.
Roller shutters, 123 sq. ft., 26s. 0d. per sq. ft.

Ironmongery 2 3½
Polished brass, including finger plates, kicking plates and luggage plates.

Total of structural elements : 61s 7½d

FINISHES AND FITTINGS

Wall finishes 5 6½
Parcels office, cycle store, overbridge parcels channel, platform stairs, equipment rooms: fair-faced: 175 sq. yds., 9s. 10d. per sq. yd.
Staff areas: cement glaze on fair-faced walls: 145 sq. yds., 22s. 8d. per sq. yd.
Public areas: glass mosaic on rendering: 524 sq. yds., 89s. 0d. per sq. yd.

Floor finishes 4 3½
Cycle store: granolithic to falls: 280 sq. yds. 19s. 9d. per sq. yd.
Offices: linoleum on screed to 3 in. total thickness: 80 sq. yds., 36s. 9d. per sq. yd.
Remainder: 6 in. × 6 in. quarry tile ditto: 998 sq. yds., 53s. 0d. per sq. yd.

Ceiling finishes 2 6½
4-in.-wide tongued and grooved V-jointed softwood impregnated with fire-retarder: ¼-in., 89 sq. yds., 13s. 11d. per sq. yd.: ¾-in., 1,522 sq. yds., 16s. 8d. per sq. yd.

Decorations 2 3½
Chlorinated clear solution to all ceilings.

Paint to window frames and steelwork.
Polish to 59 doors, paint to 8 doors.

Fittings 7 10½

Messing units, shelving, racking, waiting-room seat, notice boards (excluding ticket office equipment).

Total of finishes and fittings : 22s 6½d

SERVICES

Sanitary fittings 10½

White glazed fireclay w.c.s 8
" " " lavatory basins 6
" " " urinals 2
Stainless steel sinks 3
Concealed water-waste preventers.
Chromium-plated fittings.

Waste, soil and overflow pipes 7½

Cast iron.

Cold water services 1 2

Four 125-gallon (nominal) cisterns.
Copper piping.
No. of draw-off points: 28.
(Builder's work included.)

Hot water services 1½

Gas-fired heaters in staff mess rooms and lavatories.
No. of draw-off points: 6.
(Builder's work included.)

Heating 5 6½

Gas-fired boiler.
Hot water pipes embedded in floor screed.
Heat load: 220,000 B.t.u. per hour.
(Builder's work included.)

Gas services 3½

Supply to boiler, gas cookers in mess rooms and water heaters.
No. of outlets: 7.
(Builder's work included.)

Electrical services 6 1½

Cost based on a p.c. sum. Includes all fittings and builder's work.
No. of points: 153.

Special services 15 2

Two goods lifts, 13 ft. 6 in. rise.
One goods lift, 16 ft. 6 in. rise.
Cost based on a p.c. sum. Includes builder's work.

Drainage 2 1½

Separate soil and surface water systems, the latter including petrol interceptor.

Total of services : 32s 0½d

External works 8 10½

Parcels yard: hot rolled asphalt on reinforced concrete slab: 829 sq. yds., 31s. 11½d. per sq. yd.
Painted steel entrance gates and work in connection.
External pavings, precast concrete paving slabs.
13½-in. fence walls and 9-in. dwarf walls in flint lime facings with Staffordshire blue plinth and quarry tile cappings.
Cost includes: 6 seat and poster units, 3 platform



Four examples of concrete detailing: left to right, smoke deflector nib on overbridge—feeble and probably ineffective; monolithic sills to the vertical slits; padstone supports to the rolled steel joists—most satisfactory; rainwater head on adjoining building

flower beds, 2 train indicator plinths.
 Cost does not include platform shelters and canopies, which are dealt with in the following analyses.
Total cost per sq. ft. of floor area:
 £84,382 (net cost, excluding external works)
 13,200 sq. ft. (measured inside external walls) = 127 10½

FIVE PLATFORM SHELTERS
 Total floor area: 785 sq. ft.

Work below lowest floor finish 8 1½
 Reinforced concrete ground slab.

STRUCTURAL ELEMENTS

Frame 8 8
 6 in. × 3 in. mild steel channel columns and beams.

Roof 28 6½
 8 in. × 1½ in. timber joists with 1-in. tongued and grooved boarding impregnated with fire retarder, ½-in. insulation board, vitreous enamelled rainwater pipes.
 Timber joists and boarding: 111s. 11½d. per sq. yd.
 3 layers felt and chippings: 87 sq. yds., 17s. 7d. per sq. yd.

External walls 8 4½
 9-in. brick flint lime facings on Staffordshire blue plinth.

Windows 23 5½
 Universal hot dipped galvanised steel in single panes fixed lights in mild steel sub-frames.

External doors 8 8½
 10 single (2 to each shelter).
 1½-in. painted flush doors with glazed light, in 3 in. × 1½ in. mild steel channel frame with timber infill.

Ironmongery 5 5
 Polished brass kicking, finger and luggage plates, pull handles and floor spring.
Total of structural elements: 83s 1½d

FINISHES AND FITTINGS

Wall finishes 7 7½
 Glass mosaic on rendering.
 Mosaic, 72 sq. yd., 83s. 4d. per sq. yd.

Floor finishes 4 5
 6 in. × 6 in. × ¾ in. blue quarry tile on screed.
 Quarry tile, 87 sq. yds., 39s. 9½d. per sq. yd.

building study—2nd series

Ceiling finishes 1 7½
4 in. × ¾ in. tongued and grooved V-jointed softwood impregnated with fire retarder.

Decorations 3 9½
Chlorinated clear solution to ceilings.
Paint to window frames and steelwork.

Fittings 2 10½
Built-in seats: polished iroko on mild steel frame.

Total of finishes and fittings: 20s 3½d

SERVICES

Electrical services 6 1½
Cost based on a p.c. sum. Includes all fittings and builder's work.
No. of points: 5.

Total of services: 6s 1½d

Platform shelters—
Total per sq. ft. of floor area: 117 8½

PLATFORM CANOPIES
Total floor area: 5,270 sq. ft.

Work below lowest floor finish 8
Pile caps and ground beams.

STRUCTURAL ELEMENTS

Frame 6 1½
6 in. × 6 in. steel stanchions.
12 in. × 3 in. double steel channel beams.

Roof 11 9½
10 in. × 1½ in. joists bolted to steel beams, with 1-in. tongued and grooved boarding impregnated with fire retarder.
3 layers felt and chippings.
Vitreous enamelled rainwater pipes.
Felt roofing: 512 sq. yds., 15s. 10d. per sq. yd.

Total of structural elements: 17s 11½d

FINISHES

Ceiling finishes 1 8½
4 in. × ¾ in. tongued and grooved V-jointed softwood impregnated with fire retarder.

Decorations 8½
Chlorinated clear solution on ceilings.
Paint to steelwork.

Total of finishes: 2s 5d

SERVICES

Electrical services 6 1½
Cost based on a p.c. sum. Includes all fittings and builder's work.
No. of points: 55.

Total of services: 6s 1½d

Platform canopies—
Total per sq. ft. of floor area: 27 2

COST COMMENTS

The cost analysis is conveniently broken down into three main sections of the superstructure work: main block and overbridge, platform canopies, platform shelters. The costs do not include the platforms themselves or other incidental railway works.

Two main themes are paramount in stations and are closely reflected in the cost picture. The first is a suitable structural system capable of withstanding vibration stresses from incessant train traffic. The second is suitable furnishings, which may be integral with the structure, to cope with the tremendous demand for hard-wearing and maintenance-free surfaces. With these two themes firmly in mind, examination in more detail of some of the costs tends to correct what may on first inspection seem an unusually high cost.

Main building. Structure shows some apparently high cost items: note the concrete work for upper floors at 240s. 6d. and 361s. 0d. per sq. yd. The roof cost of 18s. 4½d. gives a design reflection of the extra area required in cantilever roofs, but here again the beams and boarding alone are costed at 87s. 6d. per sq. yd.

Furnishings reflect clearly the second theme, the choice being mosaic at 89s. per sq. yd., cement glaze at 22s. 8d. and quarry tiles at 53s.

Services include rather specialised lifts totalling over £6,000 for three lifts.

Platform canopies. Main concentration of cost is in the roof, as expected. The average cost of the canopies at 26s. 6d. per sq. ft. appears good value.

Platform shelters. In the section of the work amounting to £4,300 the analysis shows a cost of 109s. 7d. per sq. ft., an expensive section of the work.

The analysis provides answers to this build-up in terms of cost; for example, the use of a steel column and beam frame for the single-storey structure, a high-cost roof structure of joists and boarding at 111s. 11½d. per sq. yd., and the doors complete with frame and ironmongery costing £55 each. This station is the second one analysed and published in the AJ, and comparison with the Potters Bar station (December 8, 1955) leaves one in doubt as to whether the costs of stations are rising proportionately with the fares, the Potters Bar analysis showing a cost of 72s. 2d. per sq. ft. for the main block.

It is nevertheless encouraging to see that this nationalised industry is adopting the sound policy of investing in their buildings sufficient capital to allow high-quality and durable fittings and finishes to be used.

CONTRACTORS

Main contractors: W. & C. French Ltd. *Sub-contractors and suppliers—Piling:* Holmpress Piles Ltd. *Public address:* Easco Electrical (Holdings) Ltd. *Plastering:* G. H. Martin (Contractors) Ltd. *Tiling:* Parkinsons (Wall Tiling) Ltd. *Plumbing:* Matthew Hall & Co. Ltd. *Stonework:* J. Bysouth Ltd. *Electrical work:* Haines & Sheppard Ltd. *Roofing:* Cambridge Asphalte Co. Ltd. *Lightning conductors:* J. W. Gray & Son Ltd. *Linoleum:* Raymond Leonards Ltd. *Ticket Office equipment:* Roneo Ltd. *Ironmongery:* Parker, Winder & Achurch Ltd. *Paint:* Smith & Walton Ltd. *Glazed tiles:* Purbeck Decorative Tile Co. *Vitreous enamel signs:* Mead, McLean & Co. Ltd. *Overhead line structures:* Tubewrights Ltd. *Lifts:* Wm. Wadsworth & Sons Ltd. *Steelwork:* Robert Stevenson (Structural) Ltd. *Painting:* F. Labbett & Sons Ltd. *Glazing:* Faulkner, Greene & Co. Ltd. *Windows:* Henry Hope & Sons Ltd. *Mosaic and bricks:* Proctor & Lavender Ltd. *Asphalt:* The General Asphalte Co. Ltd. *Roller shutters:* Haskins. *Heating and gas installation:* Norris Warming Co. *Parcels yard gates:* Bayliss, Jones & Bayliss Ltd. *Special timber beams:* Gabriel Wade & English Ltd. *Rooflights:* Quicktho (1928) Ltd. *Plastic angle drips:* U.A.M. Plastics Ltd. *Concourse train indicator:* Partington Advertising Co. Ltd. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Illuminated sign:* British Sign & Electrical Co. Ltd. *Furniture and fittings:* Wm. Dibben & Sons Ltd. *Ladders:* H. C. Slingsby Ltd. *Applied lettering:* Furneaux (Industrial Supplies) Ltd. *Door mats:* United London Workshops for the Blind (Sales) Ltd. *Staircase balustrades and ticket barrier; ironmongery:* James Hill & Co. Ltd.

working detail

STALLBOARD: SHOWROOMS IN LONDON, W.1

Slater and Uren, architects

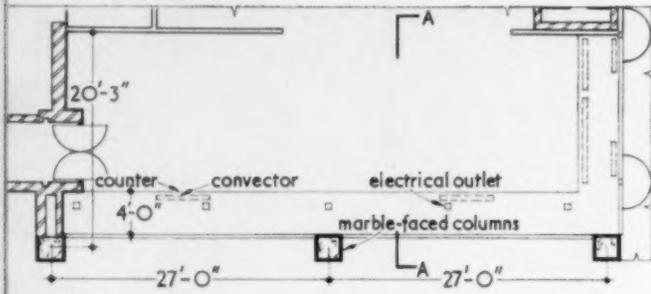


This afrormosia stallboard is laid on a timber raft which in turn is bolted to a framing of slotted steel angle.

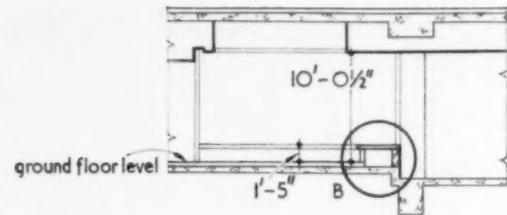
working detail

STALLBOARD: SHOWROOMS IN LONDON, W.1

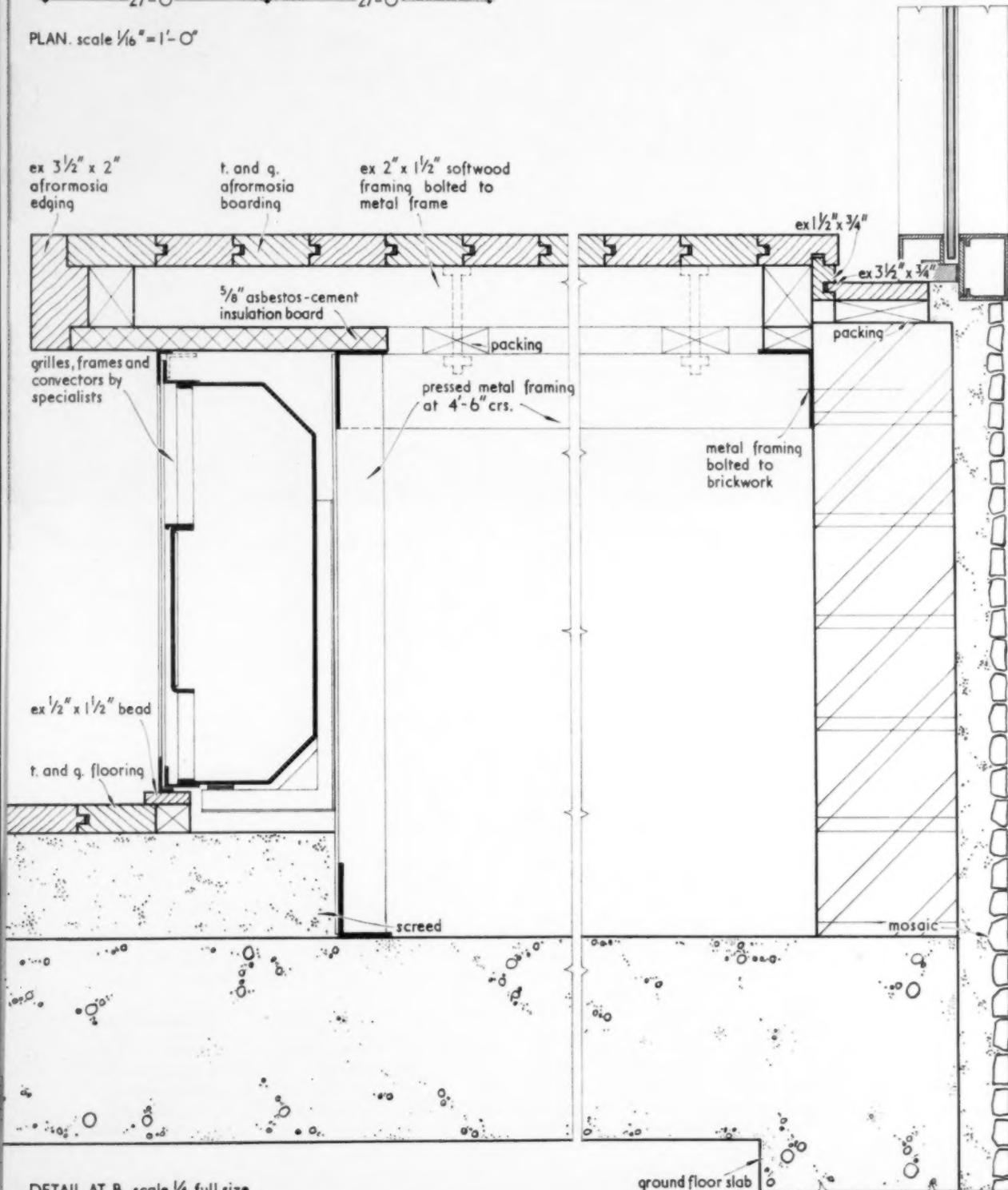
Slater and Uren, architects



PLAN. scale 1/16" = 1'-0"



SECTION A-A. scale 1/16" = 1'-0"



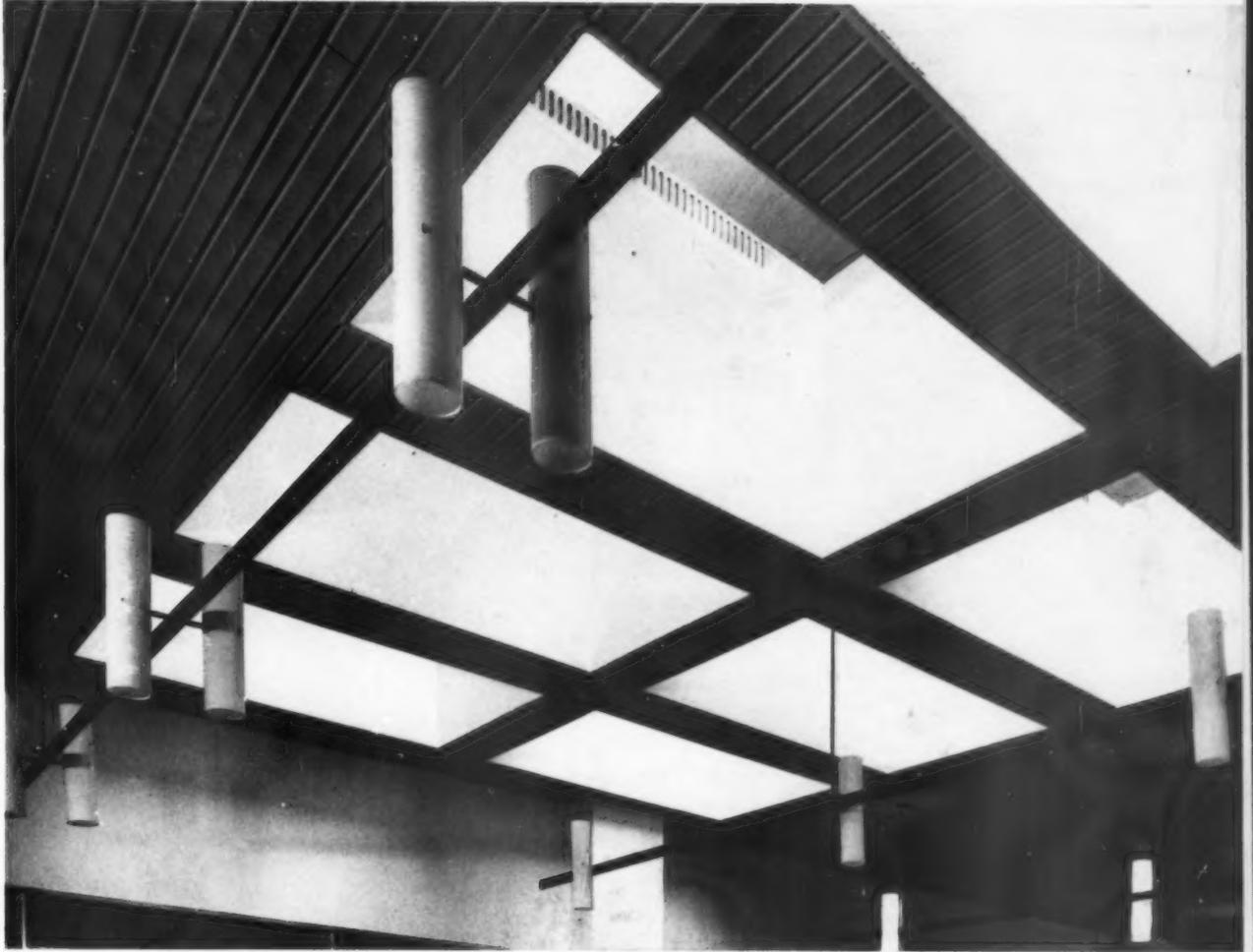
DETAIL AT B. scale 1/4 full size

ground floor slab

working detail

LIGHT FITTINGS IN CANTEEN: OFFICES IN LONDON, N.W.1

Gollins, Melvin, Ward and Partners, architects

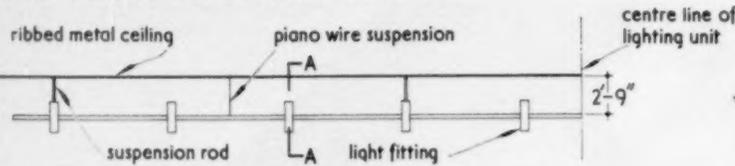


This is an interesting example of a form of lighting in which the light sources and their supporting trunking form part of the architectural diagram of the interior.

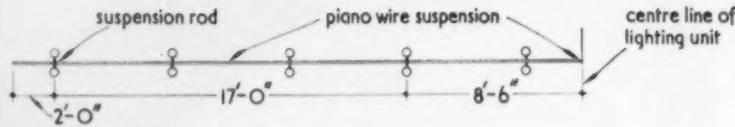
working detail

LIGHT FITTINGS IN CANTEEN: OFFICES IN LONDON, N.W.1

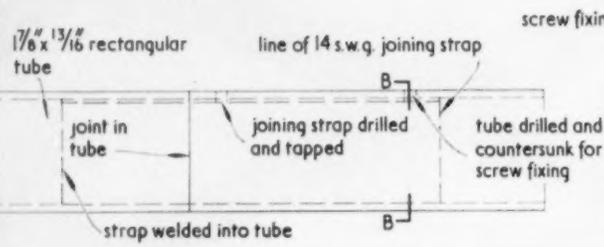
Gollins, Melvin, Ward and Partners, architects



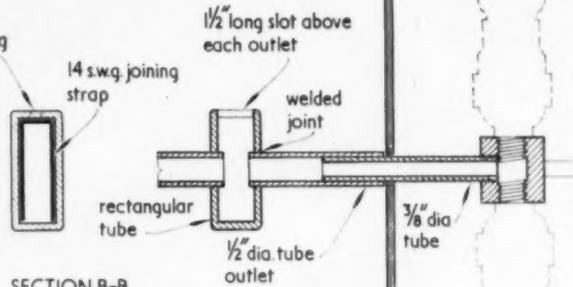
ELEVATION. scale $\frac{1}{8}'' = 1'-0''$



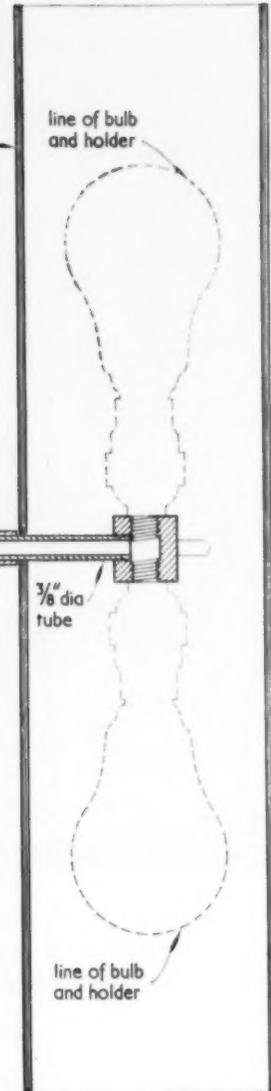
PLAN. scale $\frac{1}{8}'' = 1'-0''$



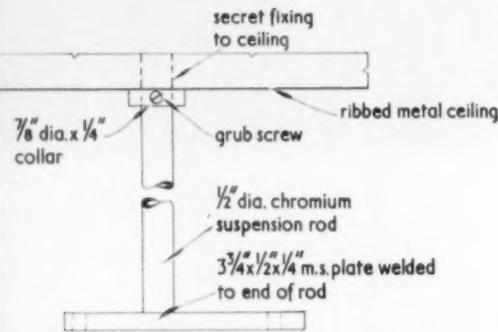
ELEVATION. scale $\frac{3}{8}''$ full size
DETAIL OF JOINTS IN RECTANGULAR TUBE.



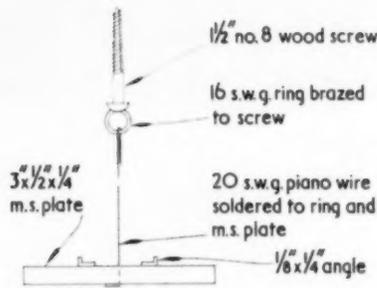
SECTION B-B.



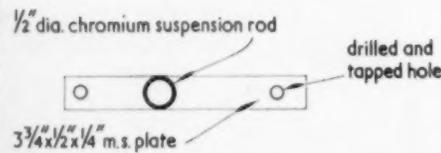
SECTION A-A.
scale $\frac{3}{8}''$ full size



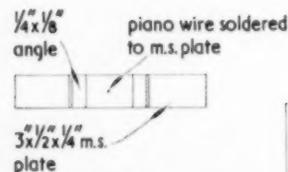
ELEVATION OF SUSPENSION ROD.
scale $\frac{3}{8}''$ full size



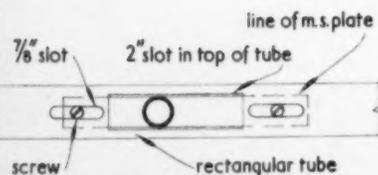
ELEVATION OF SUSPENSION
WIRE FIXING.



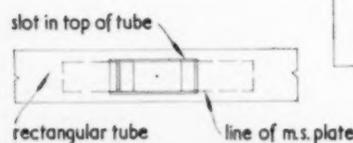
PLAN. scale $\frac{3}{8}''$ full size



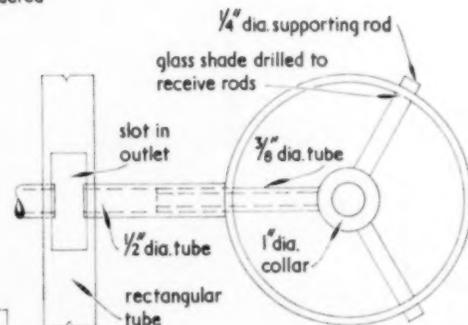
PLAN. scale $\frac{3}{8}''$ full size



PLAN OF ROD FIXING IN POSITION.
scale $\frac{3}{8}''$ full size



PLAN OF WIRE FIXING IN POSITION.
scale $\frac{3}{8}''$ full size



PLAN.
scale $\frac{3}{8}''$ full size



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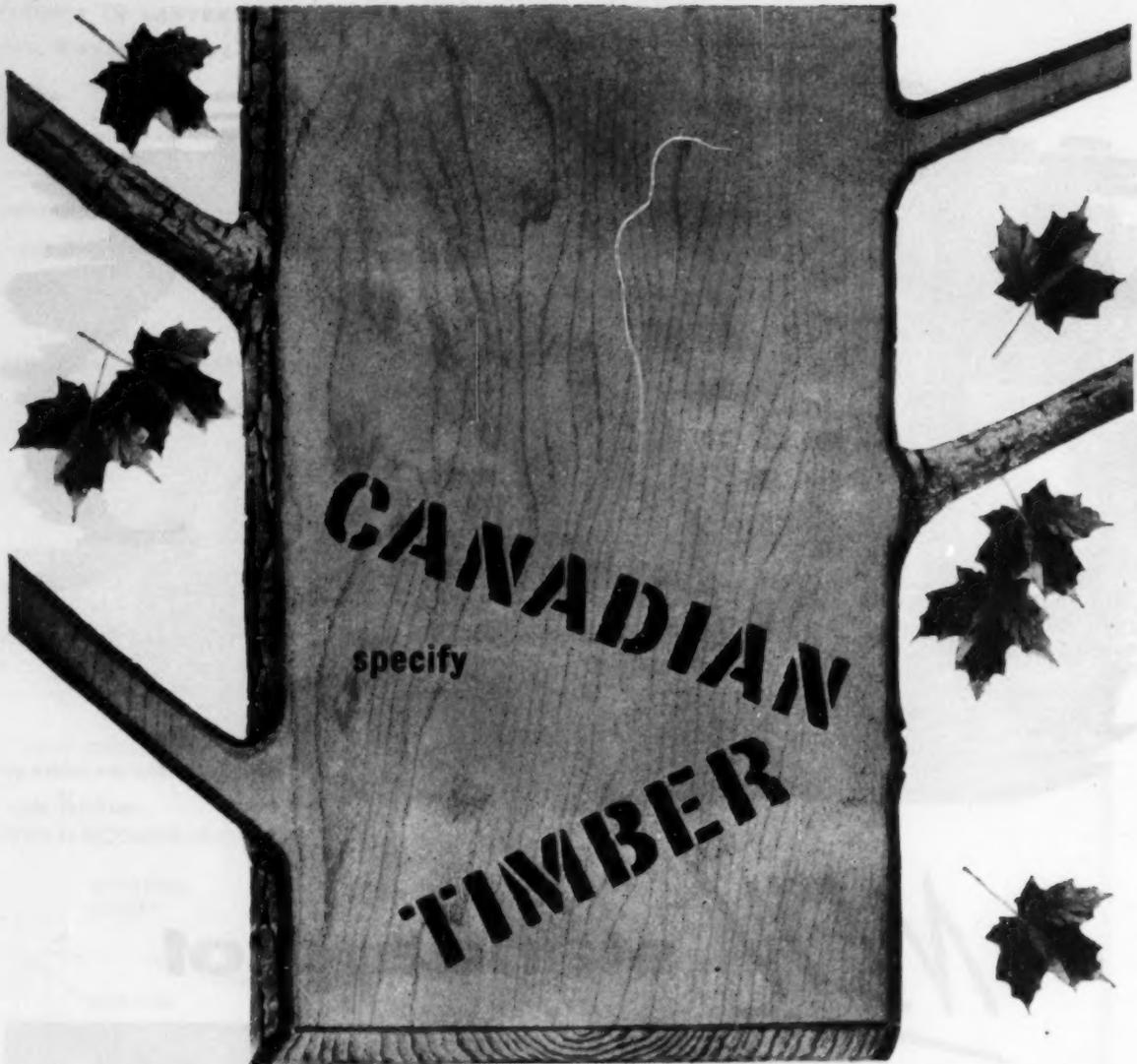
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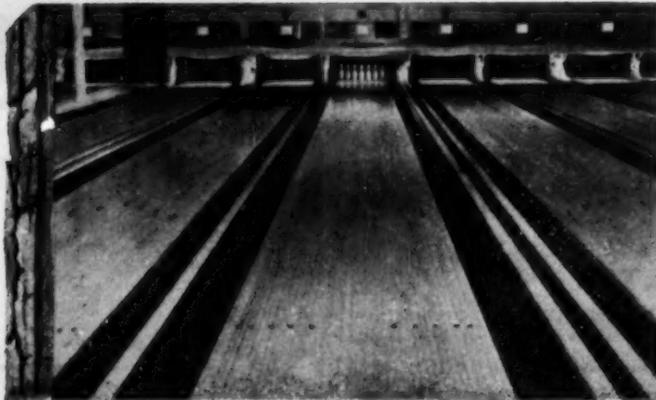
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 Telephone _____

NAP 4095



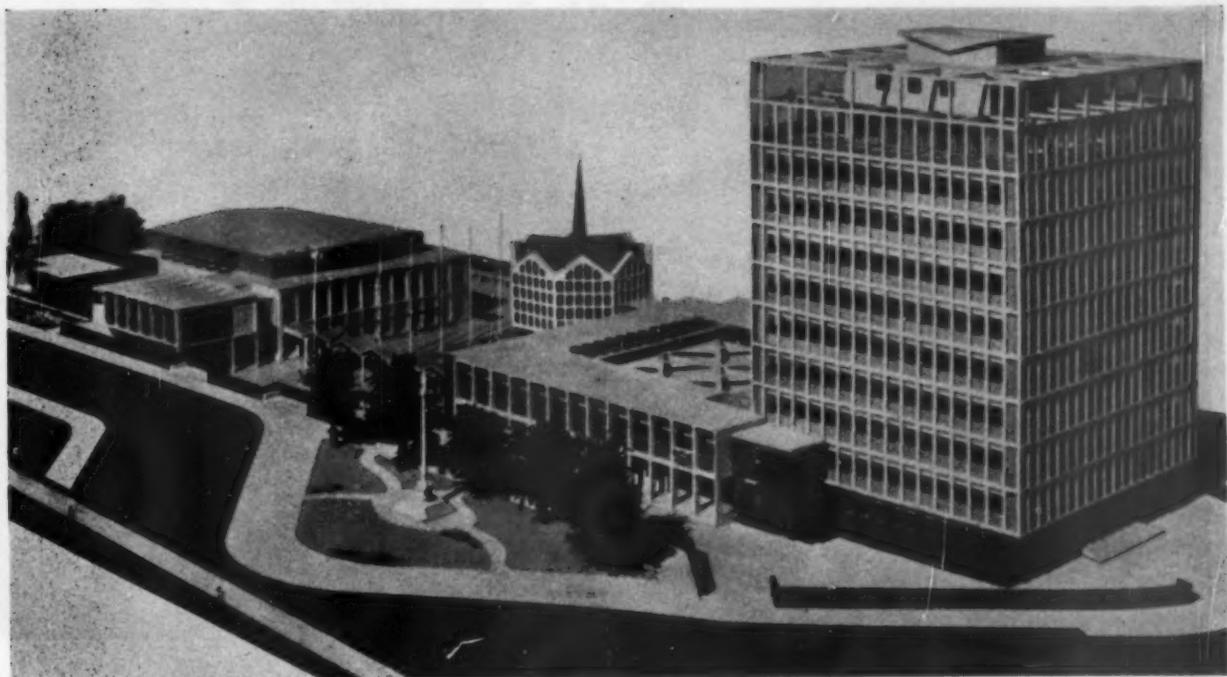
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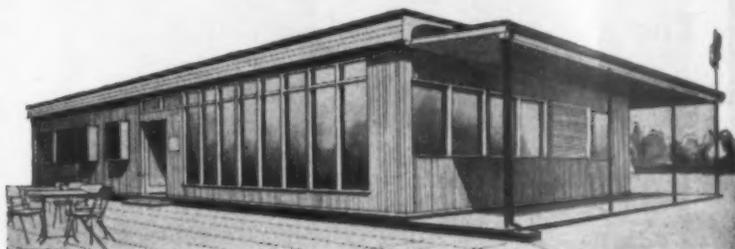
New Civic Centre, Carlisle



This model shows the design by Charles B. Pearson & Son for the new Civic Centre for Carlisle, construction of which, at a cost of about £670,000, is due to start shortly and to be completed in about 24 months. The scheme consists of

an 11-storey office block, linked to an octagonal council chamber by a two-storey council suite. Beyond is an assembly hall which is still on the drawing boards.

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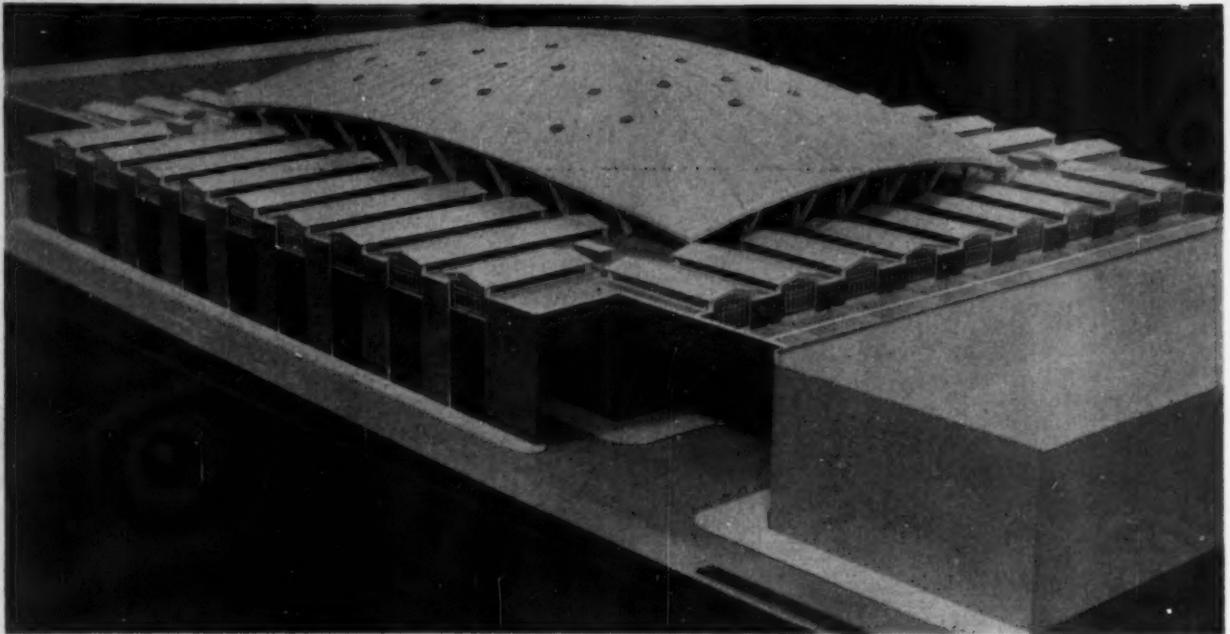
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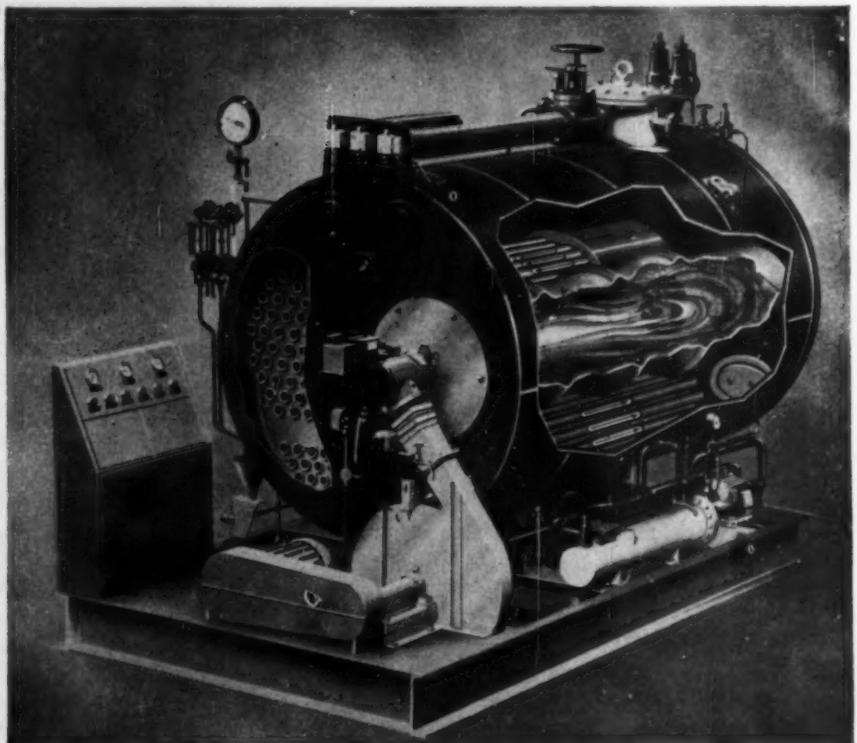
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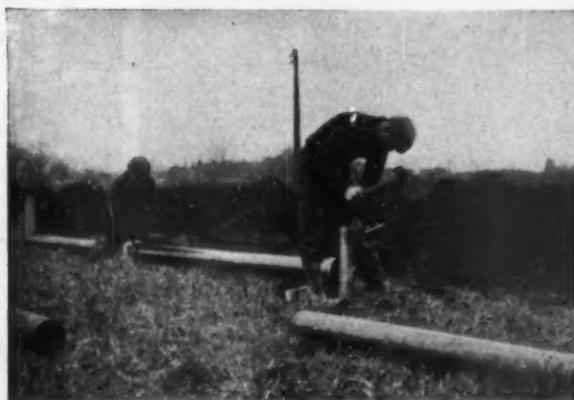
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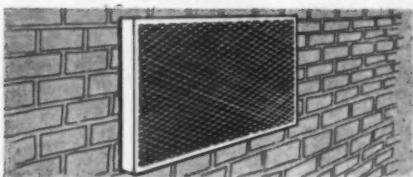
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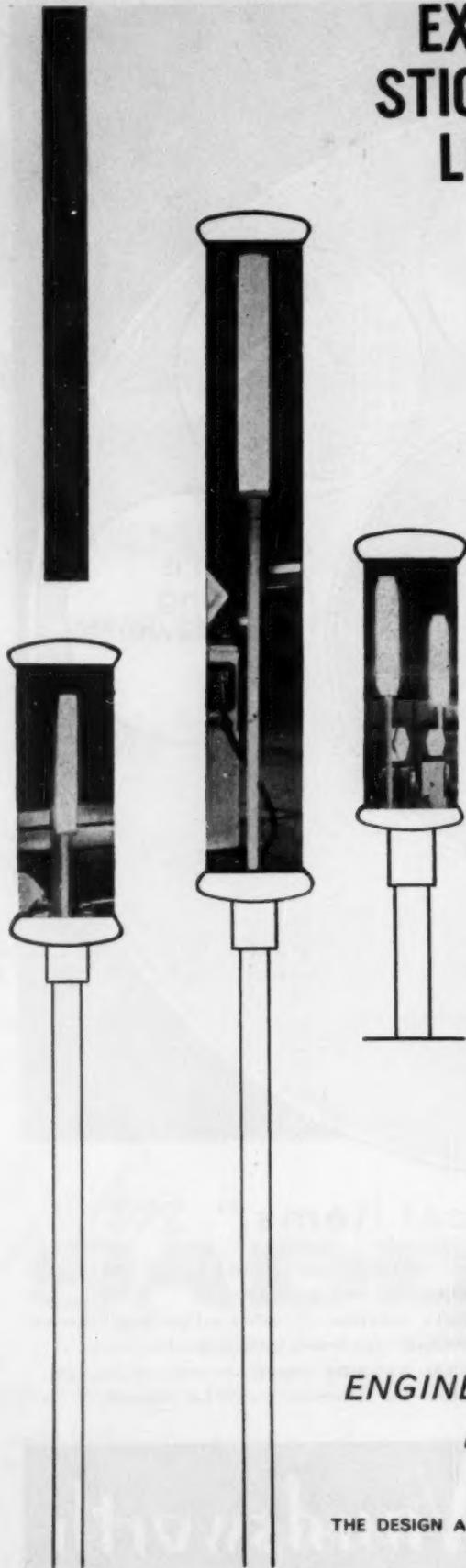
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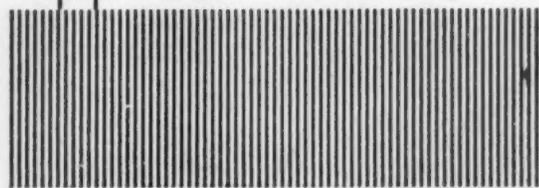
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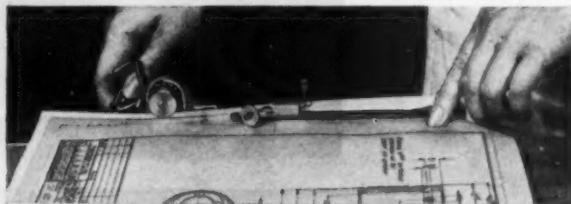
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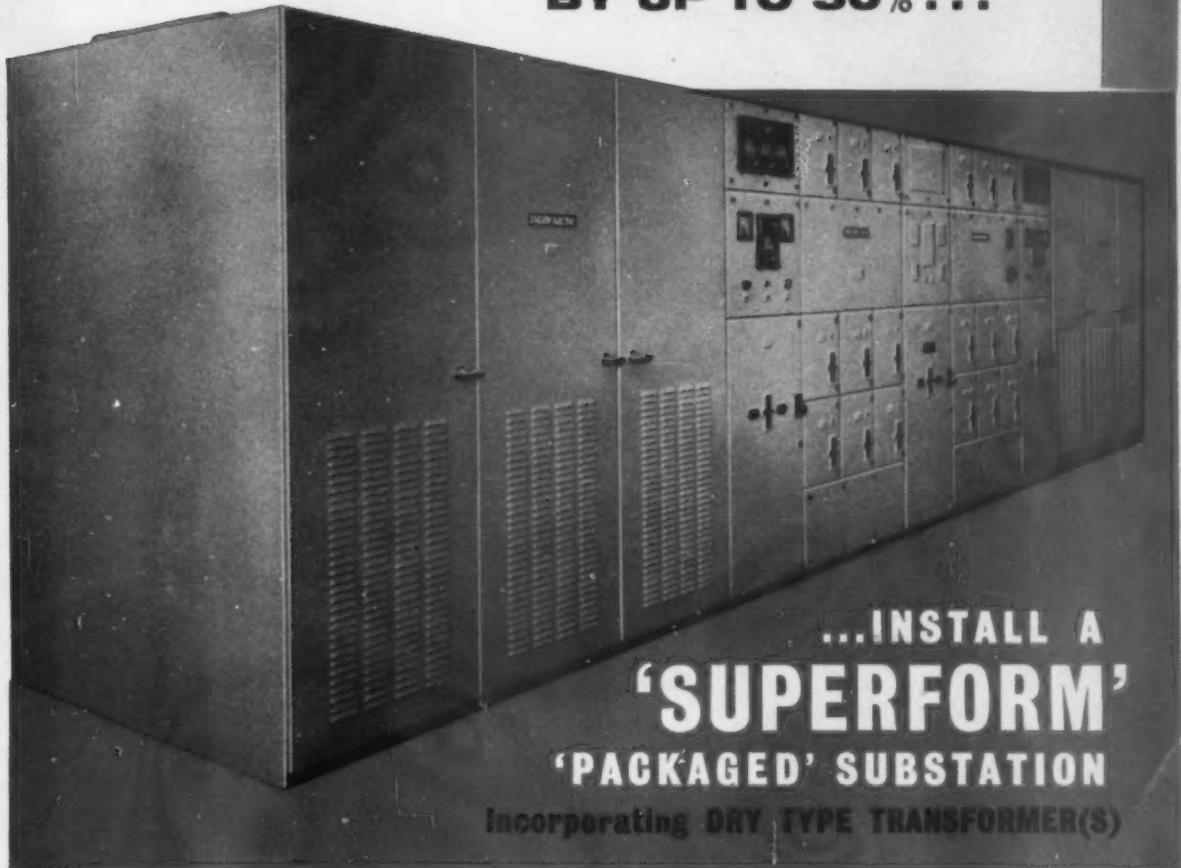
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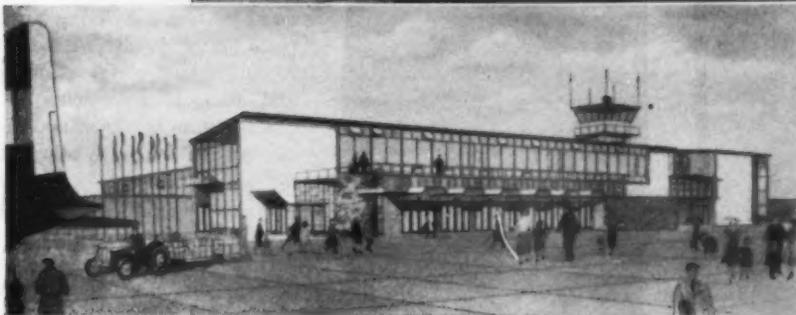
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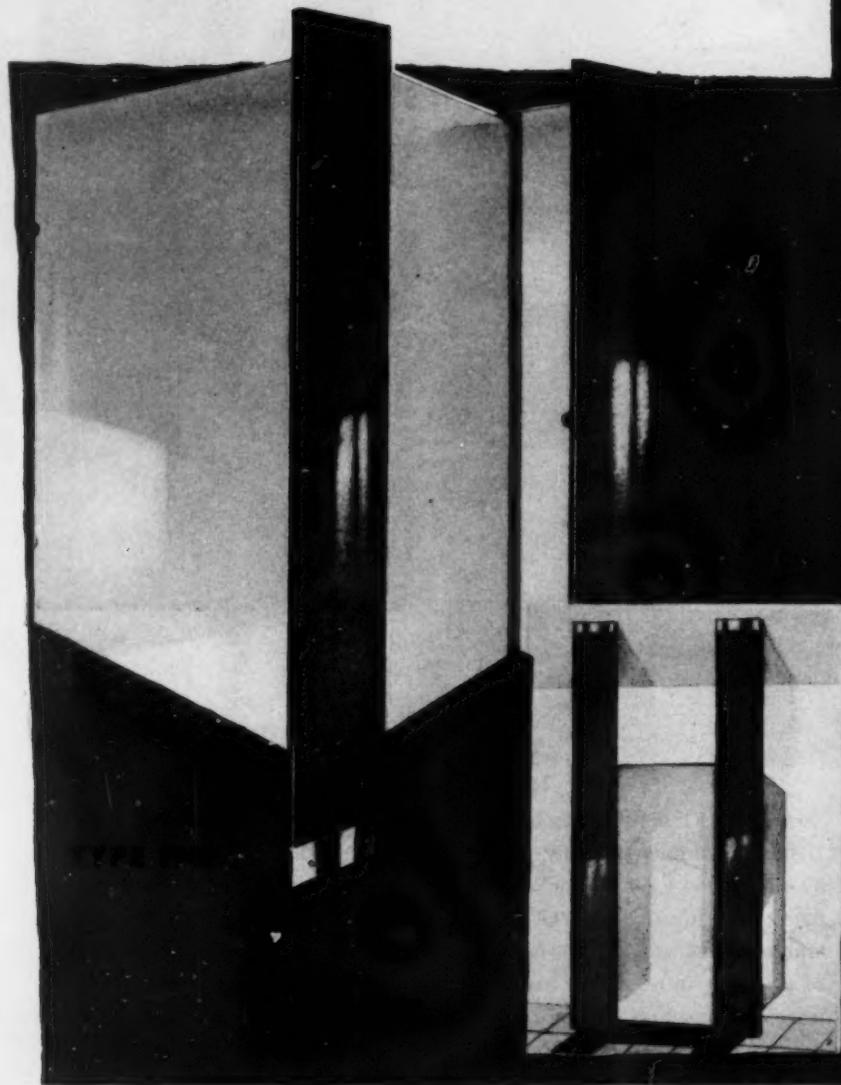
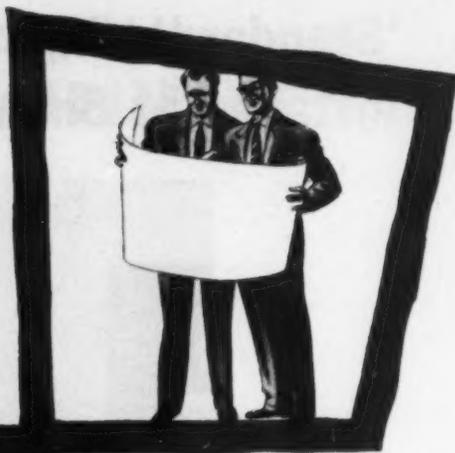
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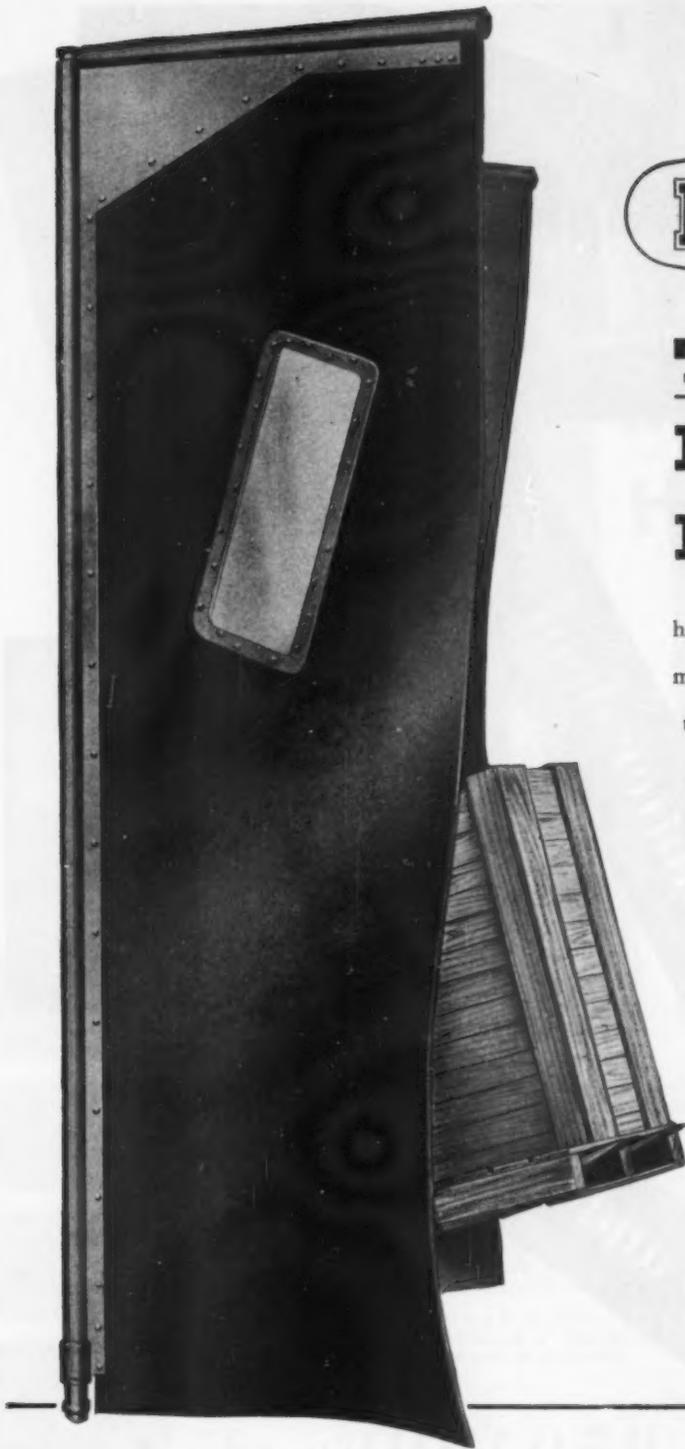
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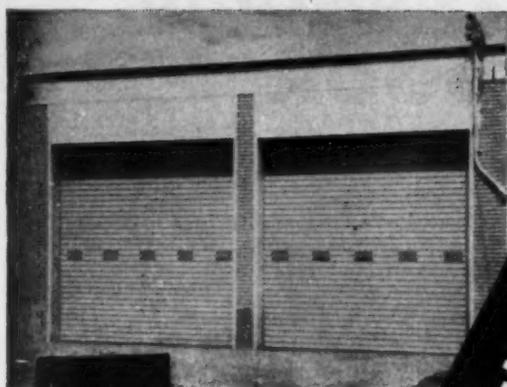
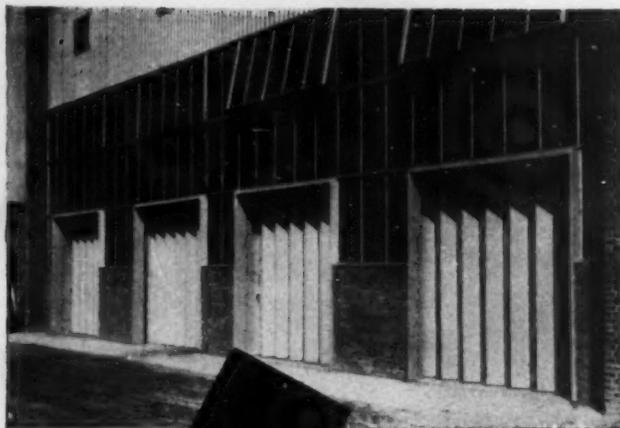
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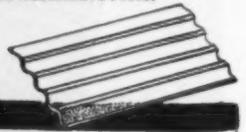
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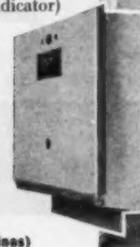
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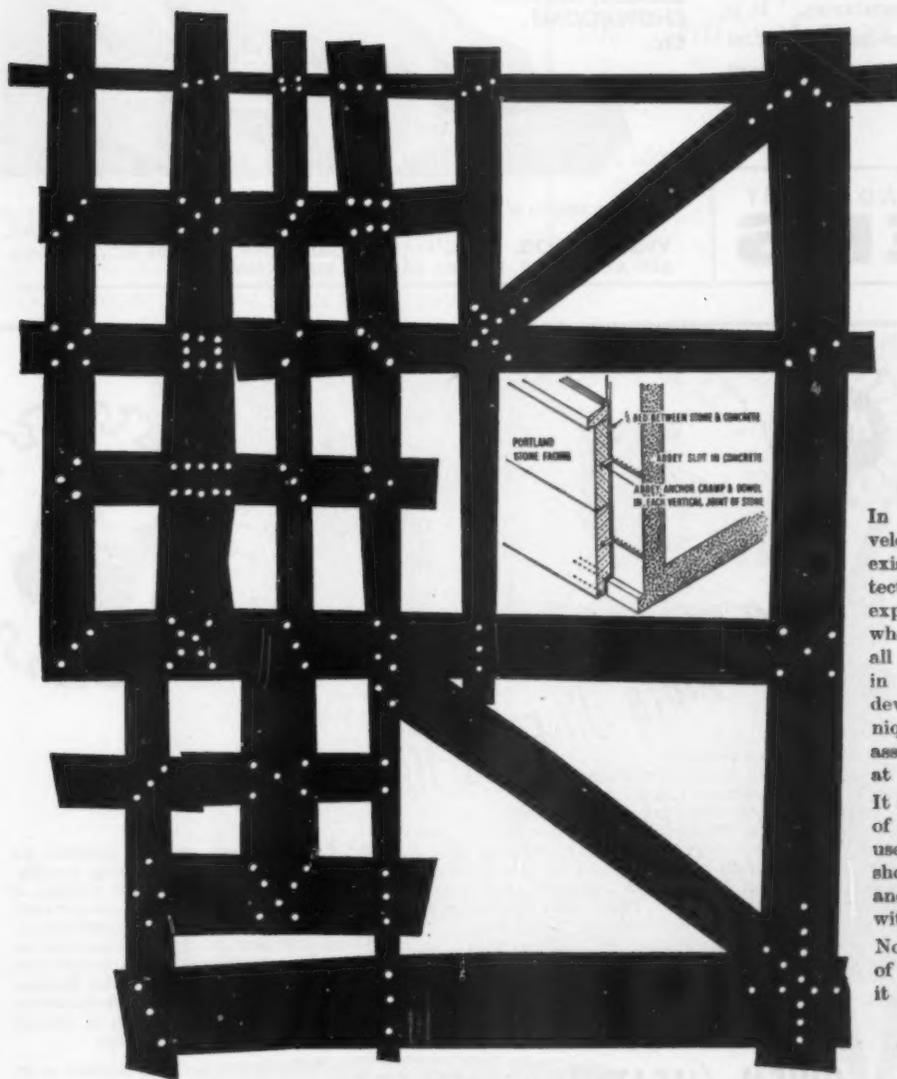
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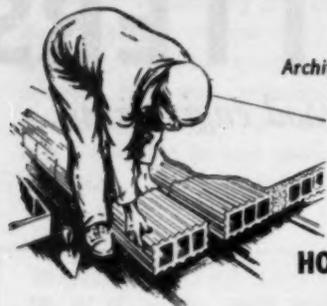
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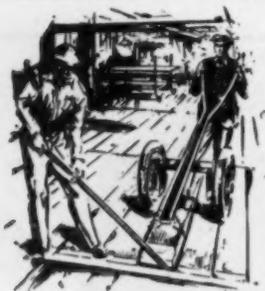
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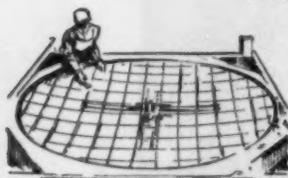
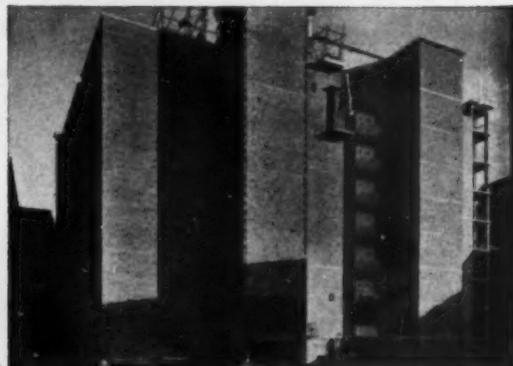
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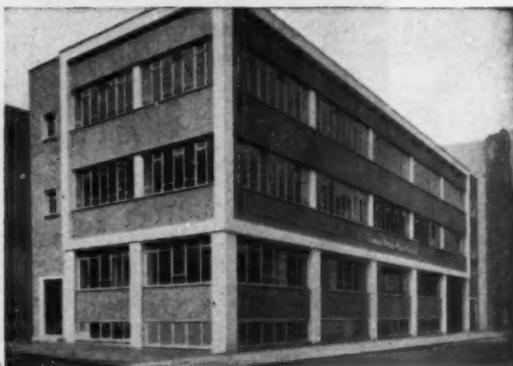
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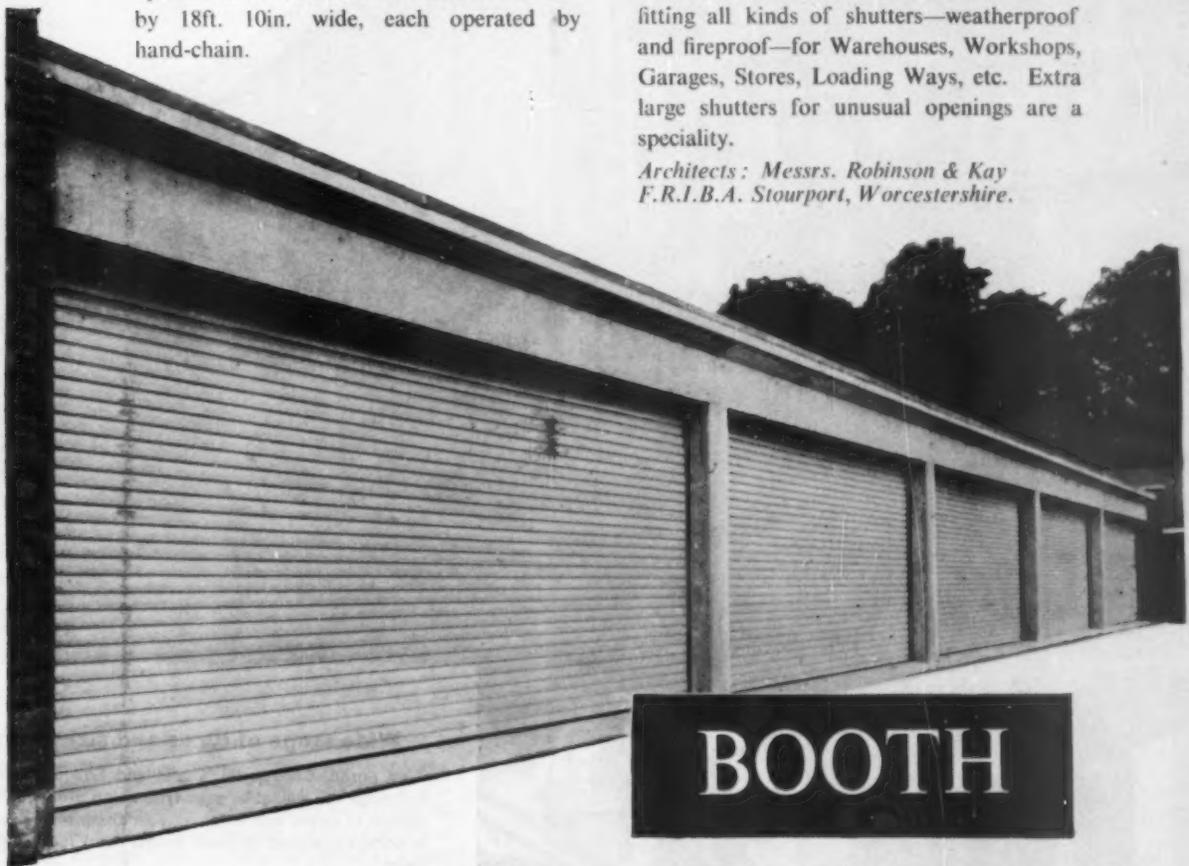
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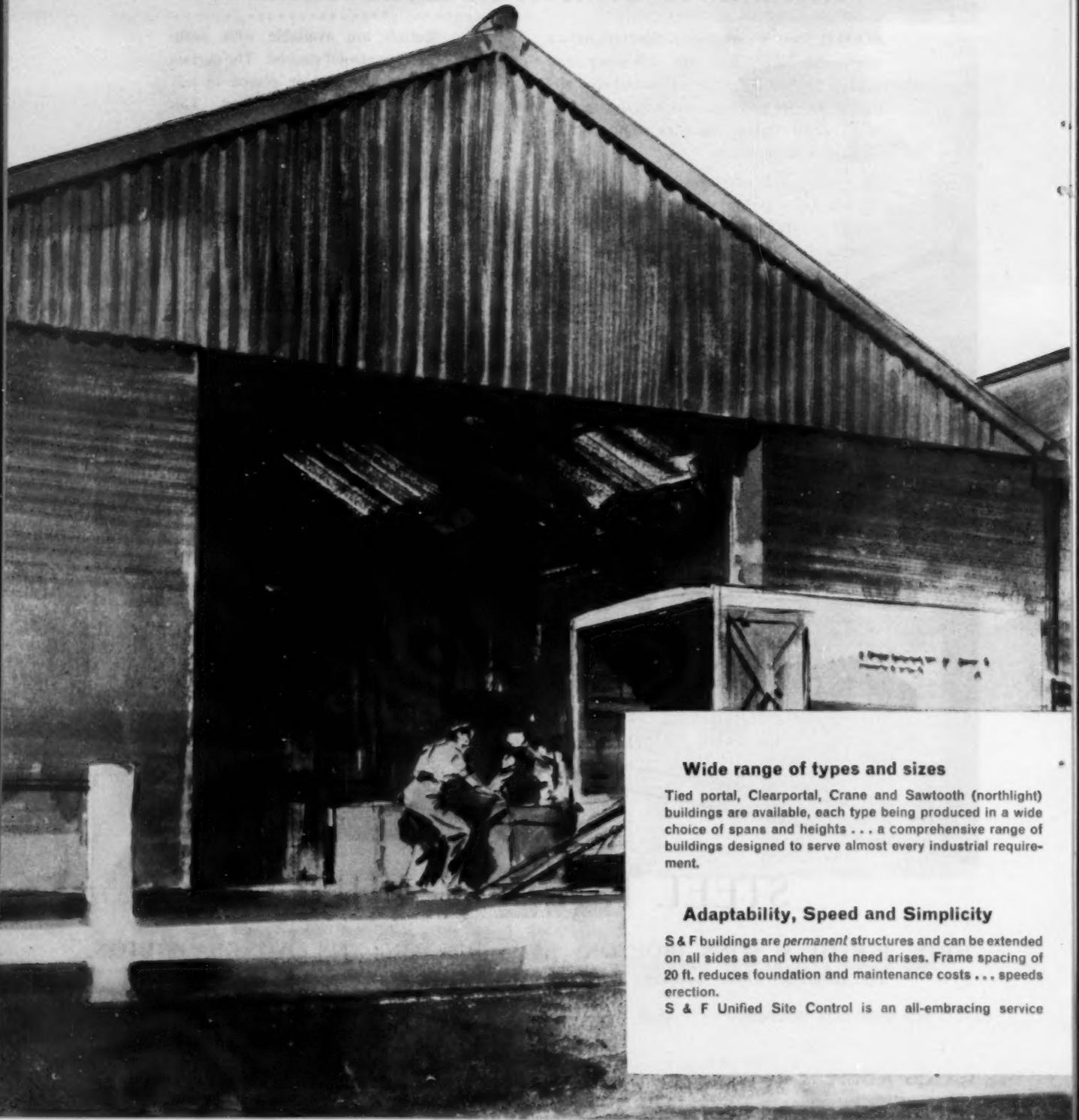
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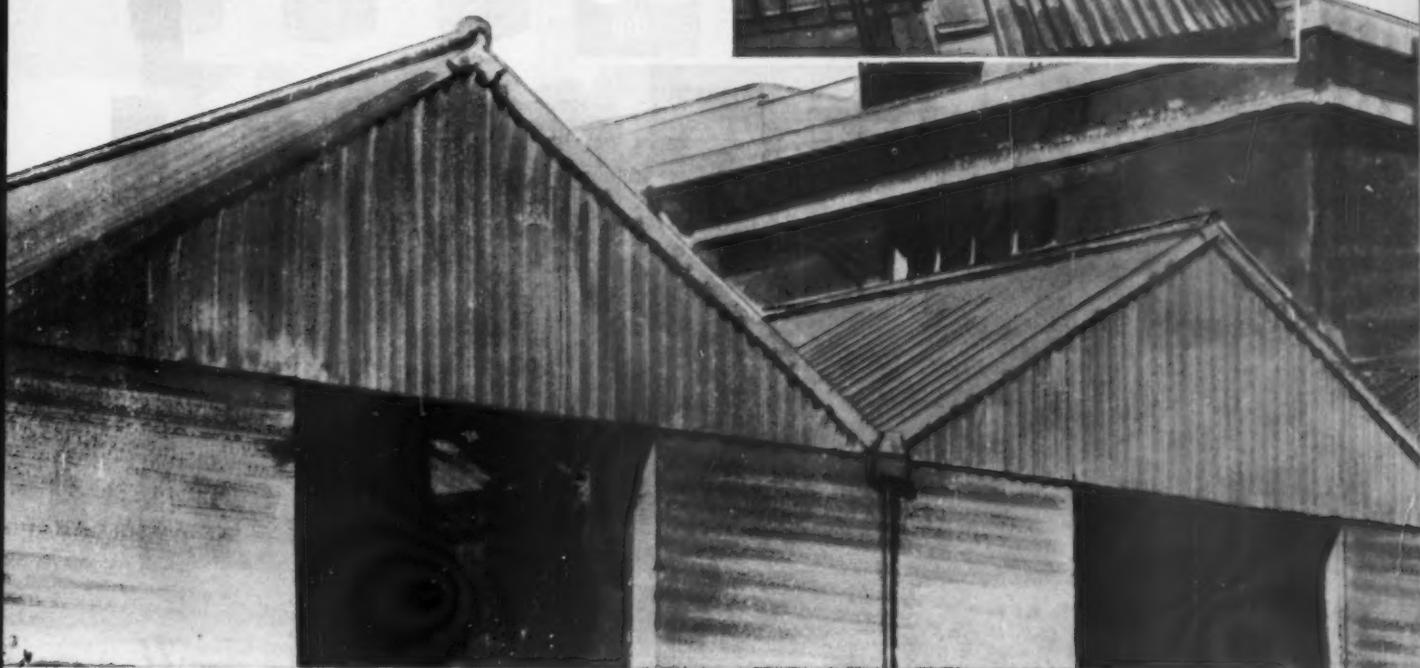
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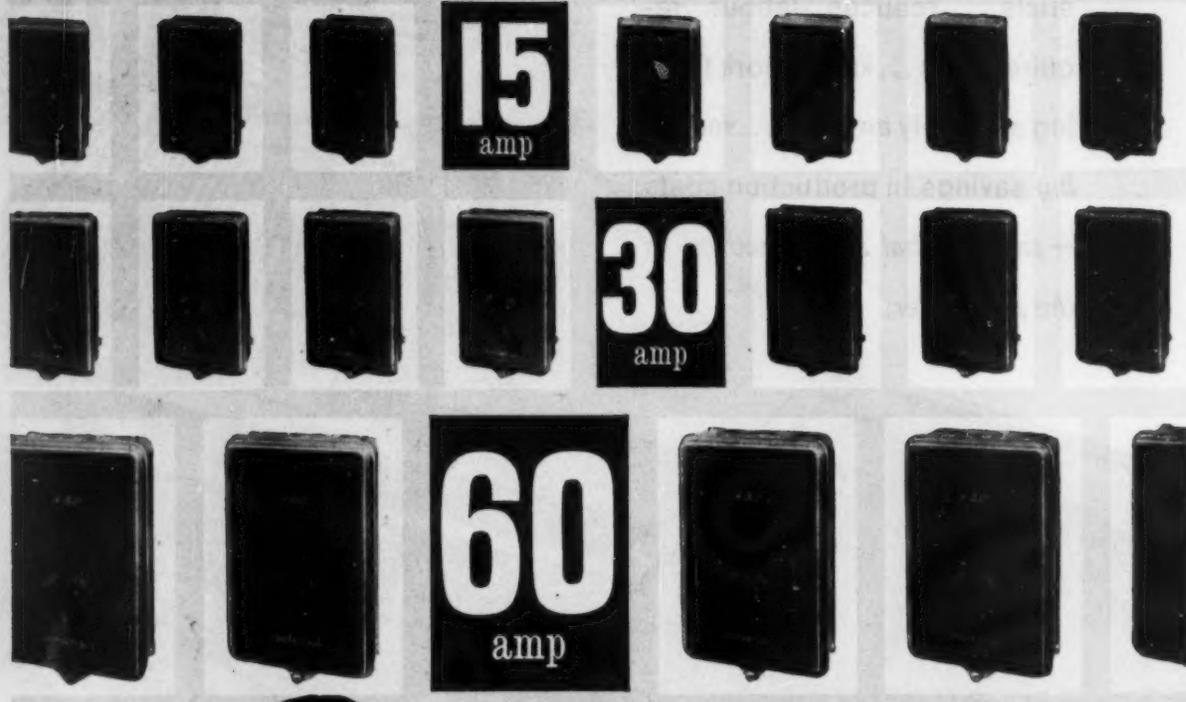
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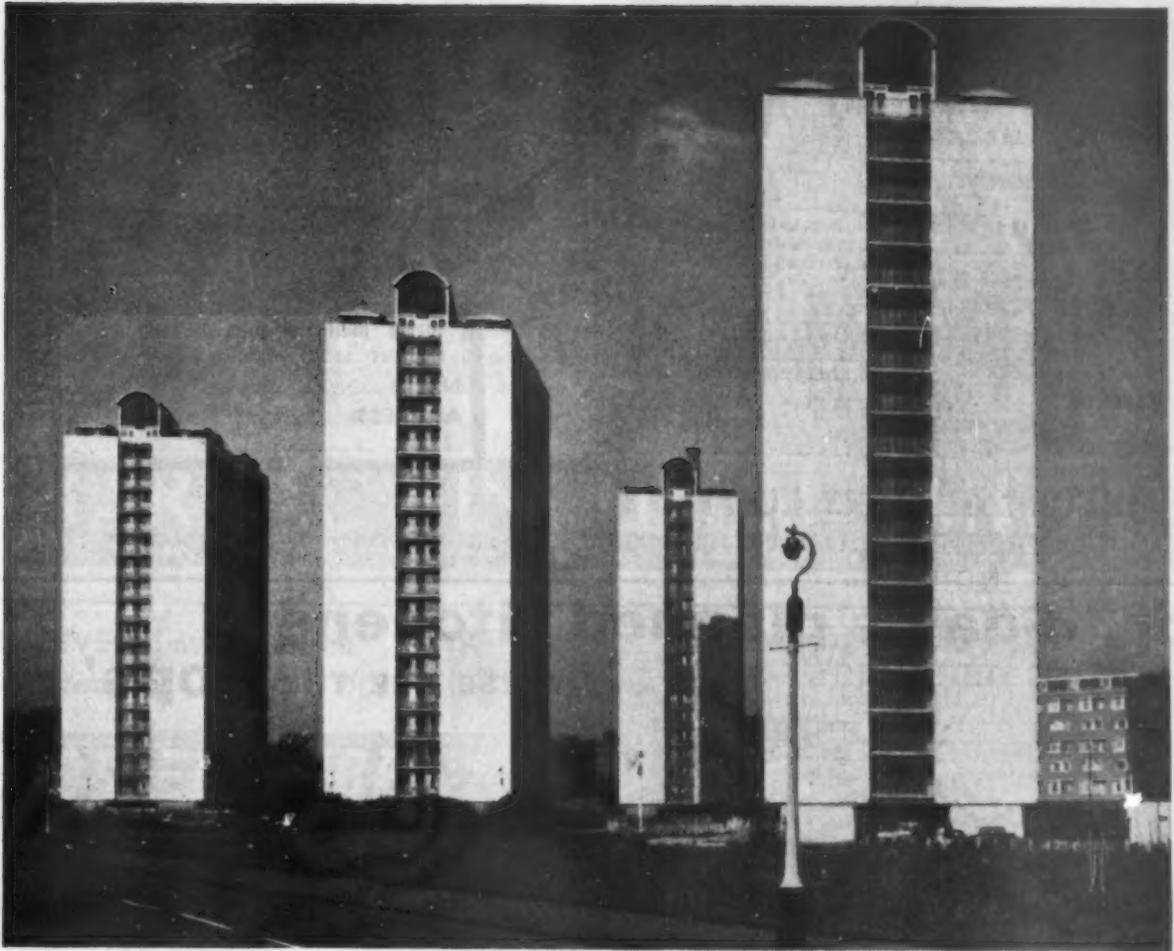
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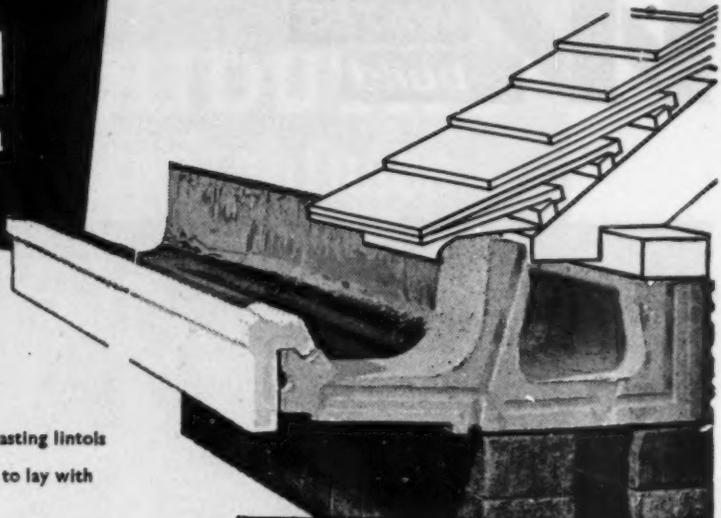
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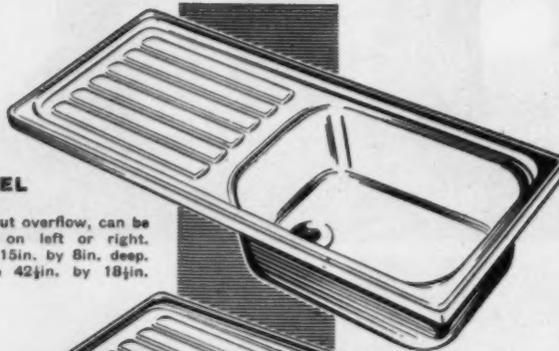
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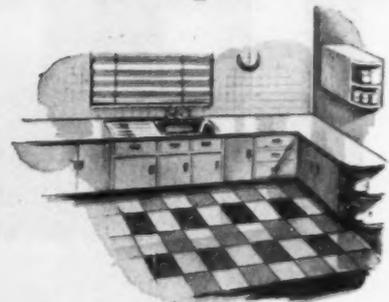


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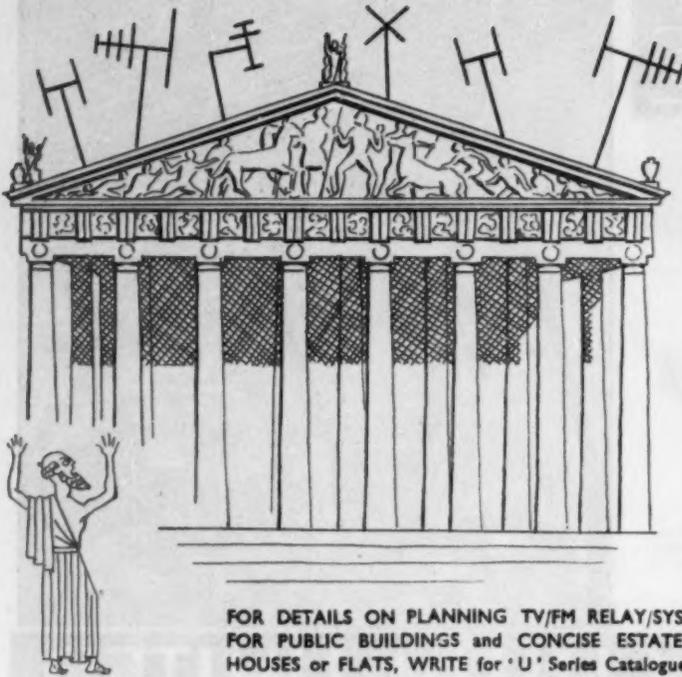
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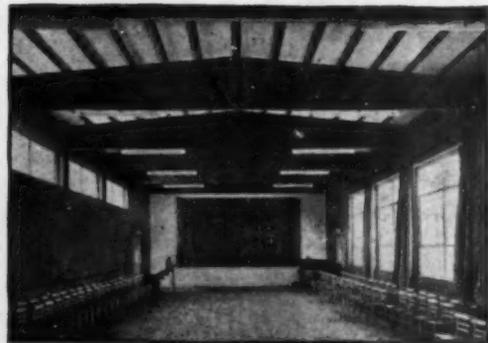
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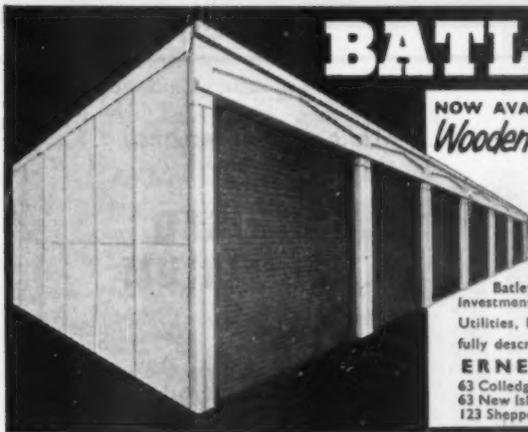
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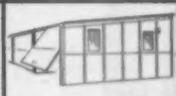
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WOOLAWAY CONCRETE PRODUCTS LTD. have recently been awarded a contract to make the fins for the Guild Chapel adjoining COVENTRY CATHEDRAL.

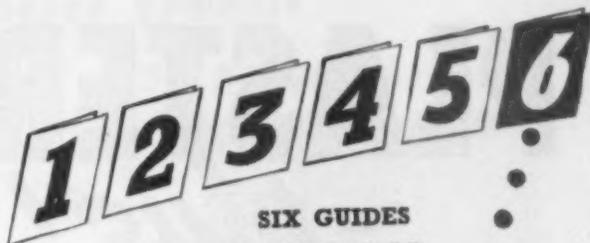
Architect: Sir Basil Spence, R.A., R.D.I., P.P.R.I.B.A.

WOOLAWAY

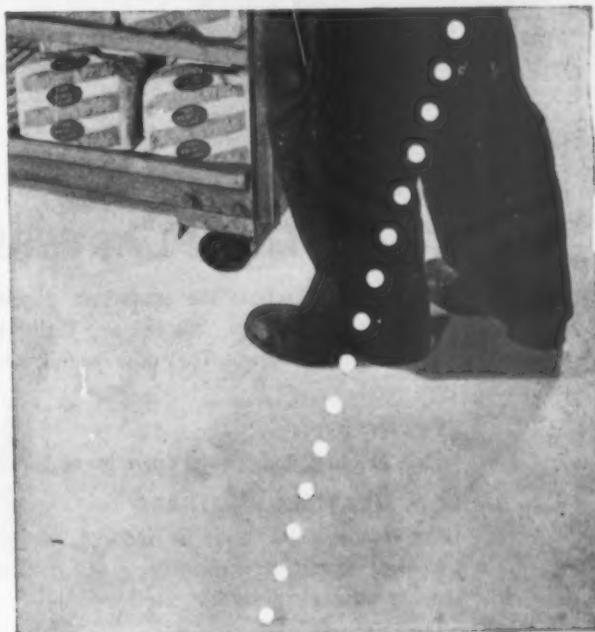
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Three layers for perfect wear. Cellular rubber base, specially treated fabric interliner, and solid rubber wearing surface.



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Diamond Betonac surfacing specifications are calculated to withstand the variable abrasion given to industrial floors.

The effects of differing abrasive conditions can be overcome by using a combination of two or more specifications—even within the same area of floor.

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Diamond Betonac is one of the most widely applicable floor surfacing materials used in the building and structural engineering fields today.

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PLASTER *-plus!*

For long recognised as the most satisfactory internal finish, plastering can now make a much more valuable contribution to building construction.

'SIRAPITE' (Regd.) LIGHTWEIGHT PLASTERS

are factory-mixed and combine the important physical properties of the various 'Sirapite' plasters and Perlite or Vermiculite lightweight aggregate. They offer the following advantages:—

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on the building, and for the operative to handle

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Heat loss through walls is reduced, surface warming expedited, condensation and pattern staining minimised.

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thanks to the resiliency of the aggregate.

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Factory mixing ensures correct proportions of plaster and aggregate. Only needs the addition of clean water.

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Mixing can be done inside a building, without interruption by bad weather.

*An important advance by the
makers of 'SIRAPITE' PRODUCTS*

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THE GYPSUM MINES LTD

Kingston-on-Soar,
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Telephone: Gotham 3645

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Sussex.
Telephone: Robertsbridge 234

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MORHEAT Electric Central Heating Panels are simply screwed on the wall. No earth required. Simply switch on for comfortable background heating, and they are *absolutely safe*. The secret is in the low temperature, non-metallic MHOGLAS element which is sandwiched between sheets of high quality Swedish masonry. Available in Reeded or satin finish in a range of attractive colours.



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MOR HEAT

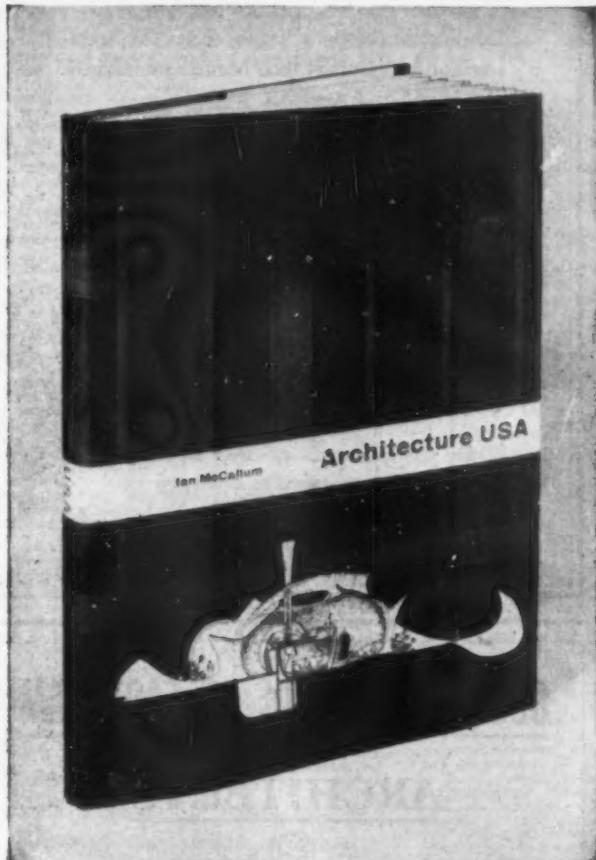
MORHEAT LTD., Church Path, Fareham, Hants. Tel: 2522/3

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Architecture USA by Ian McCallum

SINCE 1950 AMERICA, a land of opportunity and a land of achievement, has attained a dominant place in world architecture. But it has remained largely unknown territory for want of a book that sets out to map the whole field.



Architecture USA remedies this omission by surveying the field in breadth and depth, studying not only the major architects in America today, but also their antecedents—the great pioneers and the social and historical developments that have carried their ideas to fruition. Here, in close enough juxtaposition to make comparisons possible and influences clear, are H. H. Richardson and Louis Sullivan and Frank Lloyd Wright, the pioneers of the Middle West; Greene and Greene and William Maybeck, pioneers of the West Coast; Raymond Schindler, Richard Neutra, Gropius, Breuer, Mies van der Rohe, the Europeans who have made an heroic contribution to US architecture; Edward Stone, Philip Johnson, Charles Eames, Buckminster Fuller, Paul Rudolph and others who have helped to make modern American Architecture both modern and American.

In Architecture USA, Ian McCallum has combined first-hand experience with extensive research to draw a group portrait of the most stimulating assembly of architectural minds in the world today.

Size 11½ × 8½ ins., 216 pages, with 474 halftones and 90 line illustrations and a bibliography. 63s. net, postage 1s. 9d.

THE ARCHITECTURAL PRESS, 9-13 Queen Anne's Gate, SW1

Published in USA by REINHOLD PUBLISHING CORPORATION, New York; and in AUSTRALIA and NEW ZEALAND by HORWITZ PUBLICATIONS, Sydney.

Seven symbols of progress



C.R.D.L.

C.R.D.L. is the symbol of a problem solved: the provision of adequate daylight over all areas of a building. Architects have sometimes been faced with costly beam trimming, cutting of roof insulation and decking, and the provision of heavy curbs; but these complexities disappear when C.R.D.L. is specified.

C.R.D.L. is the Thermacoust Prefabricated Dome Light which is supplied built into any of the five main types of Channel Reinforced Roofing Slabs. Total weight is less than a normal slab; width and tolerances are identical; and it is installed in the same simple fashion and is then ready for any normal roof finish. Any number may be fixed at minimum 4'0" centres in one direction by minimum 6'0" centres in the other.

The light opening is 1'9½" × 2'4" internally; insulated curbs prevent condensation; the dome of clear "Perspex" or drip-proof material is raised slightly above the curbs to provide ventilation.

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When supported on inverted "T" or Thermacoust purlins no special fixing arrangements are required.

Flat-top purlins or R.S.J.'s call for Type 1 site fixing clips.

Slabs may also be provided with any of the exclusive range of Thermacoust Pre-Clips for fixing copper, SNAPRIB aluminium, slates or tiles.



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**TEMPORARY
ARCHITECTURAL
ASSISTANTS**

£1,500 per annum will be paid to suitably qualified Architects Required for work in connection with design and planning of a

**COVERED SWIMMING BATH COMPRISING
TWO POOLS.**

Candidates should have good design ability, with experience in contemporary design and detailing. Applications stating age, qualifications and experience, together with particulars of present and previous appointments and names and addresses of two referees, must be received by the Housing Architect, Town Hall, Beeston, Nottingham, not later than the 22nd December, 1960.

H. D. JEFFRIES,
Clerk.

**ARCHITECTURAL
ASSISTANTS**

Leading oil company has vacancies for Architectural Assistants in their Manchester Offices.

Applicants must be of Intermediate Standard, capable of a high standard of presentation, the work being in connection with the design and development of petrol filling and service stations.

Pension scheme ;
Sickness benefits ;
Luncheon vouchers ;
Three weeks holiday after one years' service.

Write giving details of age, experience and salary required to Box 4755.

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COUNTY BOROUGH OF EAST HAM

ARCHITECTS

Applications are invited for the following temporary appointments:—

**Senior
Assistant Architects**
Salary £1330 - £1500

Salaries in excess of the minimum may be paid according to qualifications and experience. The appointments are for work on a new Technical College costing more than £700,000 and are expected to be for a period of not less than two years.

Further details and application forms returnable by 6th December 1960 from the Town Clerk, Town Hall, East Ham, E.6.

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. Normal printing arrangements have been altered to allow for the Christmas holiday. The latest dates for receiving advertisements for the December issue are as follows:—

December 22 issue—Wednesday, December 14.
December 29 issue—Tuesday, December 20.

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

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

Public and Official Announcements

3s. per inch; each additional line 3s.

**LANCASHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT**
SENIOR ASSISTANT ARCHITECTS, N.J.C.
Scale "B", £1,595 p.a. plus £65 (1)/£50 (2) to £1,570 p.a. (starting salary according to experience).
Applications are invited from experienced Registered Architects, required on the permanent staff of the County Architect, to deal with a wide variety of major projects, including large Technical Colleges, Magistrates Courts, Police Training Schools, etc.
Application forms and details of appointment obtainable from the County Architect, P.O. Box 26, County Hall, Preston, returnable by 30th December, 1960. 4576

**LANCASHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT**
ARCHITECTURAL ASSISTANTS (within salary range of £815-£1,140 p.a.)
Applications are invited from Architectural Assistants for appointments to the permanent staff of the County Architect's Department, which is engaged on a large and varied programme of major projects.
It is desirable that applicants should have attained at least Intermediate R.I.B.A. standard and, within this stage of qualification, to have a reasonably varied experience.
Application forms and details of appointment obtainable from the County Architect, P.O. Box 26, County Hall, Preston, and are returnable by 30th December, 1960. 4575

**COVENTRY
DEPARTMENT OF ARCHITECTURE AND PLANNING**
PLANNING OFFICER (OUTER AREAS)
A.P.T. IV (£1,140-£1,310)
Appointment may be made within the Grade according to qualifications/experience.
The post offers wide experience for recently trained architectural design enthusiasts on 3-dimensional advisory schemes.
Permanent and pensionable subject to satisfactory medical certificate. Housing accommodation in approved cases. Removal expenses loan.
Application forms and details from City Architect and Planning Officer, Council House, Coventry, returnable 14 days of publication. 4731

**BOROUGH OF SOLIHULL
APPOINTMENT OF LANDSCAPE ARCHITECT**
Applications are invited from members of the Institute of Landscape Architects for appointment of Landscape Architect in the Borough Engineer & Surveyor's Department at a salary in accordance with A.P.T. Grade IV—£1,140 x 65 (2) x 65 (1) to £1,310.
The rapid growth of the Borough has necessitated the development of public open spaces and playing fields, as well as the landscaping of housing estates, as well as the landscaping of housing estates.
Half the reasonable cost of removal expenses will be paid, and where applicable housing accommodation made available as soon as possible.
The appointment is subject to the provisions of the Local Government Superannuation Acts; the National Scheme of Conditions of Service, a medical examination and to one month's notice on either side.
Applications, giving full particulars as to present and past experience, together with the names and addresses of two referees, should be submitted to the Borough Surveyor, 90 Station Road, Solihull, not later than Tuesday, 20th December, 1960.

W. MAURICE MELI, Town Clerk.

The Council House, Solihull, 25th November, 1960. 4680

**LANCASHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT**
ASSISTANT ARCHITECTS, A.P.T. V, £1,310-£1,480 p.a. (starting salary according to experience).

Applications are invited from qualified Architects of initiative, keen on design and modern constructional methods, to work on a large and varied programme.
Application forms and details of appointment obtainable from the County Architect, P.O. Box 26, County Hall, Preston, returnable by 30th December, 1960. 4677

**URBAN DISTRICT OF EBBW VALE
ARCHITECT'S DEPARTMENT**
APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for the above appointment in the Architect's Department on Grade A.P.T. II (£815-£960). Applicants to be Intermediate R.I.B.A. or Intermediate E.I.C.S. (Building).
The Department is engaged on a variety of work including a New Civic Centre, Housing, Redevelopment proposals, etc.
Alternate Saturday mornings free. Canteen facilities. Pension Scheme. Medical examination.
Applications, with usual information and names of two referees, to be received by the undersigned not later than Saturday, 31st December, 1960.
HOWARD J. WILLIAMS, Clerk of the Council.

District Council Offices, The Walk, Ebbw Vale, Mon. 4720

CITY OF SALFORD
Applications are invited from appropriately qualified persons for the following posts in the Department of the City Engineer & Surveyor, G. Alexander McWilliam, B.Sc., A.M.I.C.E., A.R.I.C.S., M.I.Mun.E.

- (a) **PRINCIPAL ASSISTANT ARCHITECT, J.N.C.** Scale "A" (£1,410-£1,555 per annum).
- (b) **TWO ASSISTANT ARCHITECTS, A.P.T. Grade V** (£1,310-£1,480 per annum)
- (c) **PRINCIPAL ASSISTANT QUANTITY SURVEYOR, J.N.C.** Scale "A" (£1,410-£1,555 per annum).
- (d) **ASSISTANT QUANTITY SURVEYOR, A.P.T. Grade IV-V** (£1,140-£1,480 per annum).

The posts will form the nucleus of a team which will be responsible for extensive schemes of housing and central redevelopment, including multi-storey flats and new shopping precincts.
The commencing salary will be dependent upon qualifications and experience. Housing accommodation may be provided in approved cases.

The posts are subject to the provisions of the Local Government Superannuation Acts, the Conditions of Service of the Joint Negotiating Committee for Chief Officers or the National Scheme of Conditions of Service, the Standing Orders of the City Council and the passing of a medical examination.

Posts (a) and (c) are terminable by two calendar months' notice and Posts (b) and (d) are terminable by one calendar month's notice. A five-day week is in operation.

Applications indicating the post applied for and stating age, education, qualifications and details of experience, together with the names and addresses of two referees, should be sent to the City Engineer & Surveyor, Town Hall, Salford, 3, Lancs., to arrive not later than Wednesday, 28th December, 1960.
R. RIBBLESDALE THORNTON, Town Clerk. 4651

**BOROUGH OF BASINGSTOKE
BOROUGH ARCHITECT'S DEPARTMENT**

Applications are invited for the post of ARCHITECTURAL ASSISTANT in the Architect's Department, where there is a variety of interesting work. Preference will be given to an Associate R.I.B.A. who should have good housing experience.

Salary within range £960-£1,140 according to experience. N.J.C. Conditions. Post pensionable. Medical examination. Casual user car allowance. Housing available in due course. Assistance with removal expenses. Five-day week.

Details giving qualifications, age, training, experience, etc., and names and addresses of two referees to be sent to the Borough Architect Eric Almond, Dipl. Arch., A.R.I.B.A., Municipal Buildings, Basingstoke, Hants., by 30th December, 1960.

L. WOMERSLEY, Town Clerk. 4746

UNIVERSITY OF OXFORD

Applications are invited for a new post in the architectural section of the University Surveyor's office for an ASSISTANT ARCHITECT. He will be employed on new work and extensions, laboratories, and other university buildings. Applicants must be qualified with several years' experience, and should be keenly interested in progressive design.

The salary will be in the range £1,300 to £1,600 per annum, and in addition the successful applicant will be entitled to membership of the Federated Superannuation System for Universities and to a family allowance at the rate of £50 per annum for each child.

Write for further particulars and form of application to the Surveyor to the University, The Malthouse, Tidmarsh Lane, Oxford. 4790

AYCLIFFE DEVELOPMENT CORPORATION
(New Town of Newton Aycliffe)
SENIOR ASSISTANT ARCHITECT

Applications are invited for an appointment of Senior Assistant Architect at a salary in accordance with Grades A.P.T. IV or V of the Whitley Council for New Towns Staff Scales of Salaries, i.e. £1,140-£1,310 p.a. or £1,310-£1,480 p.a. The commencing salary and grade will be fixed according to the qualifications and experience of the successful applicant.

Applicants should be associates of the Royal Institute of British Architects. The principal work for the successful applicant will be in connection with the development of the town centre of the new town.

Appointment subject to N.J.C. Conditions, superannuation, medical examination and to one month's notice, in writing, on either side.

Housing accommodation available if required. Applications, stating age, qualifications, experience and present salary, together with the names of two referees, to arrive by Wednesday, 28th December, 1960.

A. V. WILLIAMS, General Manager.

Churchill House, Newton Aycliffe, Nr. Darlington. 4730

UNIVERSITY OF HONG KONG

ASSISTANT LECTURER IN ARCHITECTURE
Applications are invited for the above-mentioned post. Applicants should have a degree from a University recognised by the Royal Institute of British Architects and should be A.R.I.B.A. The successful applicant will be required as a First Year Studio Master, which includes responsibility for teaching in the studio, basic architectural techniques, such as draughtsmanship, perspective, scenography, lettering and colour theory. The ability to offer courses in some specialised aspect of architecture will be an additional consideration.

Annual salary (superannuable) is: £1,375 x £50 - £1,525 for a man or £1,040 x £40 - £1,160 for a woman.

First class sea passages are provided for expatriate staff and their families on first appointment and leave.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36 Gordon Square, London, W.C.1.

Applications close, in Hong Kong and London, on 31st January, 1961. 4855

BIRMINGHAM REGIONAL HOSPITAL BOARD

APPOINTMENT OF ARCHITECTURAL STAFF
SENIOR ASSISTANT ARCHITECTS, Salary scale £1,300 to £1,600. Qualifications: Registered architect by examination.

These posts are not necessarily restricted to those with previous hospital experience. They offer opportunities for gaining knowledge and experience of the whole field of hospital architecture, ranging from adaptation schemes to comprehensive new hospital projects. Superannuable. Five-day week. Applications (quoting Arch. 12) stating qualifications, age, experience, present position and salary and naming two referees to Secretary, 10 Augustus Road, Birmingham, 15, by 6th January. Closing date. 4838

SHEFFIELD REGIONAL HOSPITAL BOARD

EXPANDING HOSPITAL PROGRAMME

Applications are invited for the following appointments on the Board's Headquarters staff:—

ASSISTANT ARCHITECTS. Applicants must be Registered Architects and have passed the requisite examinations.

ASSISTANT QUANTITY SURVEYOR. Applicants must hold Corporate Membership of the Institute of Chartered Surveyors.

Salary scale for above posts £905-£1,310 per annum. Commencing salary may be fixed above minimum according to age and practical experience.

ARCHITECTURAL OR BUILDING SURVEYING ASSISTANTS. Applicants must have passed Intermediate Examination of Royal Institute of British Architects or Royal Institution of Chartered Surveyors or an examination giving exemption therefrom.

QUANTITY SURVEYING ASSISTANTS. Applicants must have passed Intermediate examination of Royal Institution of Chartered Surveyors.

Salary scale for above posts £625-£900. Commencing salary according to age and experience.

Application forms (returnable by 30th December) obtainable from The Secretary, Sheffield Regional Hospital Board, Old Fulwood Road, Sheffield, 10, together with further details. 4839

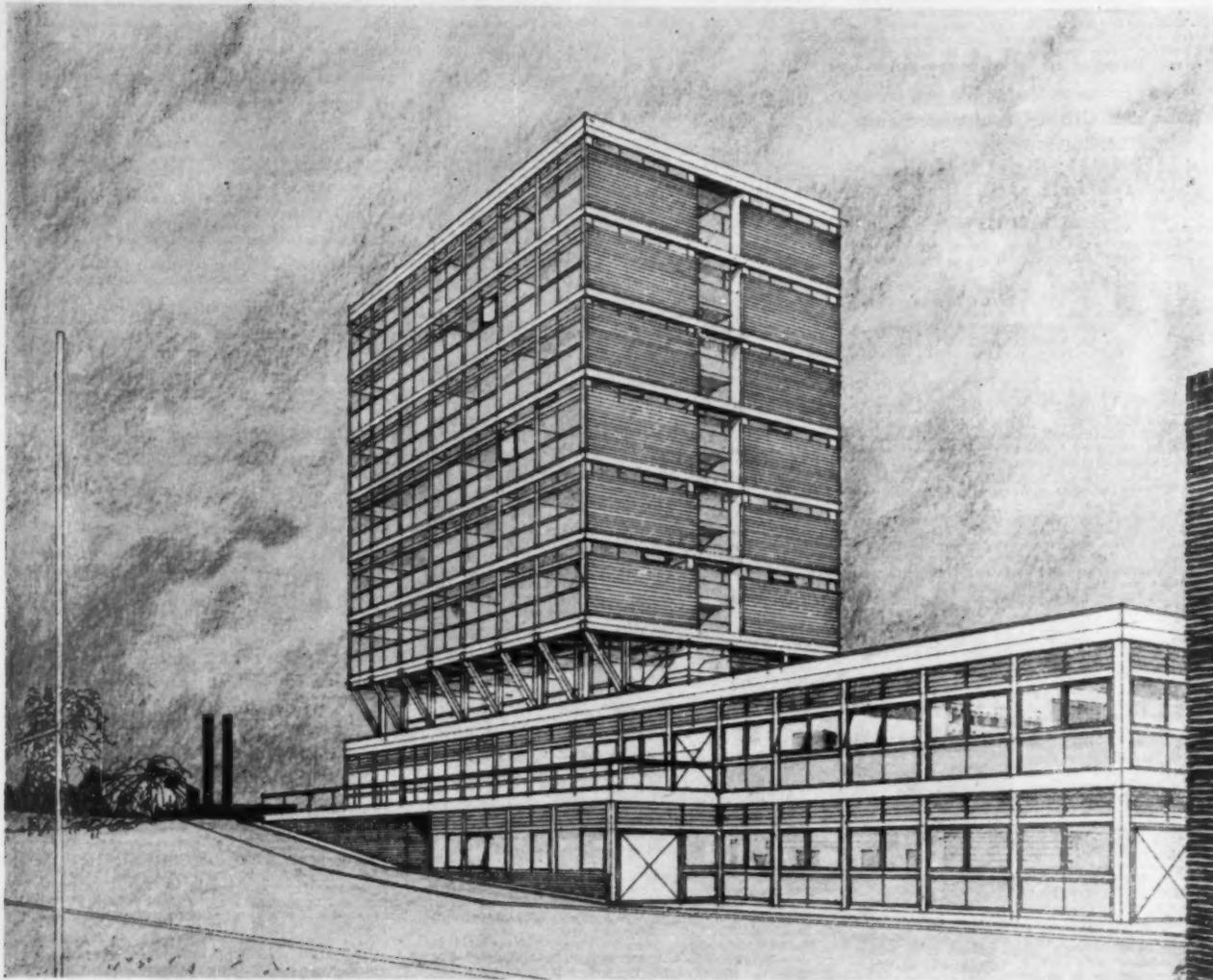
ARCHITECTS AND MAINTENANCE SURVEYORS. Pensionable posts for men and women at least 25 and under 35 on 1st January, 1960 (extension for regular Forces service. Overseas Civil Service. Established Civil Service and temporary Government service as Architect or Maintenance Surveyor). Candidates must be registered Architects or, alternatively, for Maintenance Surveyor posts, have achieved Corporate membership of R.I.C.S. (Building Section), or have passed examinations necessary for attaining Corporate membership. London salary £820-£1,125 according to age, rising to £1,300. Promotion prospects. Write Civil Service Commission, 17 North Audley Street, London, W.1, for application form quoting S/60-61. Closing date 31st December, 1960. 4849

MIDDLESEX COUNTY COUNCIL ARCHITECT'S DEPARTMENT

The establishment and salary scales of the department have been improved recently with the result that there are now excellent opportunities for both newly-qualified and experienced architects to work on a full and varied programme including:—

PRIMARY AND SECONDARY SCHOOLS · TECHNICAL COLLEGES
YOUTH AND COMMUNITY CENTRES · OLD PEOPLE'S HOMES
HEALTH CLINICS · FIRE STATIONS

The department is organised on a group basis under the direction of WHITFIELD LEWIS, F.R.I.B.A., and every opportunity is given to architects of ability to take full responsibility for the design, construction and management of projects.



Vacancies exist in the following grades :

SENIOR ARCHITECTS APT V.—£1,355—£1,525 p.a. (6 POSITIONS)

ASSISTANT ARCHITECTS APT III-IV. £1,005—£1,355 p.a. (18 POSITION)

JUNIOR ASSISTANTS Gen. Division, APT. I and II (up to £1,000 p.a.)

Juniors taking part-time courses of study are encouraged by payment of fees and one day's paid leave per week for study.

Applicants for Assistant Architect and Senior Architect's positions are expected to have Associateship of the R.I.B.A.

The architectural groups are supported by ancillary divisions; Quantity Surveying and Cost Analysis, Heating and Mechanical Engineering and Structural Engineering, and vacancies also exist in these sections.

All posts are established subject to prescribed conditions.

Full details and application forms can be obtained from County Architect, I, Queen Anne's Gate Buildings, Dartmouth Street, S.W.1.

**BOROUGH OF ENFIELD
BOROUGH ENGINEER AND SURVEYOR'S
DEPARTMENT**

(Non-County Borough in the County of Middlesex.
Population 109,700. Area 12,400 acres.)

Applications are invited, from suitably qualified persons, for the following permanent appointment:

JUNIOR ARCHITECTURAL ASSISTANT,
A.P.T. I, £645-£815 per annum plus London weighting.

The commencing salary will be fixed at points within the scale commensurate with qualifications and experience.

There is a large varied programme of work, including the redevelopment of Clearance Areas and other areas scheduled for Comprehensive Development.

Housing accommodation may be made available in appropriate cases. The Council is also prepared to consider 100 per cent. advances to successful applicants for house purchase within the Borough.

Saturday mornings are normally free from duty.

Application forms, obtainable from H. D. Peake, M.Sc.(Eng.), M.I.C.E., Borough Engineer & Surveyor, 7 Little Park Gardens, Enfield, Middlesex, must be delivered to the undersigned as soon as possible.

CYRIL E. C. R. PLATTEN,
Town Clerk.

Public Offices,
Enfield, Middx. 4842

**FIFE COUNTY COUNCIL
AMENDED ADVERTISEMENT**

COUNTY ARCHITECT'S DEPARTMENT.
Applications are invited for the undernoted posts:

(a) **QUALIFIED ARCHITECTS,** salary scale £1,096-£1,366 per annum.

(b) **ARCHITECTURAL ASSISTANTS,** salary scale, Admin. Grades "A" and "B," i.e. £855-£990 per annum.

Candidates should have contemporary outlook and for post (a) should be Associates of the R.I.B.A. Housing accommodation may be available. Superannuation Scheme. Applications stating post applied for, details of age, experience, qualifications, present position and salary, accompanied by copies of recent testimonials, by 4th January, 1961, to the undersigned. No canvassing.

MATTHEW POLLOCK,
County Clerk.

County Buildings,
Cupar, Fife. 4828

**BOROUGH OF MALDEN AND COOMBE
BOROUGH ENGINEER AND SURVEYOR'S
DEPARTMENT**

SENIOR ASSISTANT ARCHITECT

Applications are invited from Chartered Architects for the appointment of Senior Assistant Architect, Grade A.P.T. IV, £1,140-£1,310, plus London weighting and car allowance of £75 per annum, commencing salary according to experience and qualifications. The Council will, if required, endeavour to provide housing accommodation for a temporary period and also advance money for the acquisition of property. Forms of application, which must be returned endorsed by not later than Monday, 9th January, 1961, to be obtained from John Apse, A.M.I.C.E., Borough Engineer and Surveyor.

HAROLD E. BARRETT,
Town Clerk.

Municipal Offices,
New Malden,
Surrey. 4844

**EAST KILBRIDE DEVELOPMENT
CORPORATION**

ARCHITECTS AND ARCHITECT/PLANNERS

The following staff are required for the rapidly expanding programme of industrial and commercial development in East Kilbride New Town. Work on the new Town Centre in process of re-planning as a pedestrian precinct includes the design of shops, offices and other Town Centre buildings. Extensive industrial projects involve the design of factories of all types and sizes. Neighbourhood development includes engineering, planning and architectural work and housing and shopping centres. The appointments offer excellent prospects for persons with the necessary enthusiasm and imaginative ability to plan and carry out the extensive programme.

1. ARCHITECTS AND ARCHITECT/PLANNERS.

£1,140 to £1,480 per annum. Applicants should be A.R.I.B.A. For the Architect/Planner posts applicants should in addition be A.M.T.P.I., in which case a higher placing on the scale may be given.

2. ARCHITECTURAL ASSISTANTS.

Scale rising to £950 per annum. Applicants should preferably have passed the Intermediate examination of the R.I.B.A.

3. JUNIOR ARCHITECTURAL ASSISTANTS.

Scale rising to £815 per annum. Selected candidates should have completed a five-year apprenticeship and be probationer members of the R.I.B.A.

Commencing salaries commensurate with qualifications and experience will be paid, and appointments are subject to the Corporation's Conditions of Service and Superannuation Agreement. Five day week. A house or flat will be made available if required. Selected candidates will be required to pass a medical examination. Application forms may be obtained from the General Manager, East Kilbride Development Corporation, Torrance House, East Kilbride, for return not later than 16th January, 1961. 4846

**BASILDON DEVELOPMENT CORPORATION
DEPARTMENT OF ARCHITECTURE AND
PLANNING**

Applications are invited for the appointment of **DEPUTY CHIEF ARCHITECT/PLANNER** at a salary range of £2,025 to £2,345 per annum. This important post requires significant ability and experience in contemporary architecture for co-ordination of the work of a large department under the direction of the Chief Architect/Planner.

The future programme is extensive and includes major development and re-development over a wide field of architecture and planning.

Applications should be made on the special form (obtainable from the Chief Architect/Planner) to the General Manager, Basildon Development Corporation, Basildon, Essex, by 28th December 1960. 4843

**ROYAL BURGH OF ARBROATH
BURGH ARCHITECT'S DEPARTMENT**

Applications are invited for the following appointments in the above Department.

1. ARCHITECTURAL ASSISTANTS.
2. TOWN PLANNING ASSISTANT.
3. ARCHITECTURAL DRAUGHTSMEN.

Salary in each case to be within the range £735-£915 with placing on the scale in accordance with qualifications and experience.

Housing accommodation will be made available to the successful applicants if required.

Applications, together with copies of two recent testimonials, should be lodged with W. R. Samson, A.R.I.B.A., Burgh Architect, 32 Hill Street, Arbroath, not later than Thursday, 22nd December, 1960.

WILLIAM D. SMITH,
Town Clerk.

Town House,
Arbroath,
Angus.
5th December, 1960. 4850

**ALDRIDGE URBAN DISTRICT COUNCIL
ASSISTANT ARCHITECT**

Applications are invited for this appointment on Grade A.P.T. III, starting point dependent on qualifications and experience. Applicants must be capable of preparing and supervising schemes in the Council's Housing Programme of up to 300 houses annually.

Housing accommodation will be provided and candidate's removal expenses paid.

The Urban District has a current capital works programme of approximately £1,000,000. Aldridge is expanding by approximately 3,000 persons per annum; estimated present population 50,000. School facilities are excellent. Applications to be received not later than 22nd December, 1960.

H. G. G. NICHOLS,
Clerk of the Council.

Council House,
Aldridge,
Staffs. 4810

**METROPOLITAN BOROUGH OF ISLINGTON
BOROUGH ENGINEER AND SURVEYOR'S
DEPARTMENT**

Applications are invited from persons not more than 50 years of age for the following appointments on the permanent staff:

- (a) **TWO SENIOR ARCHITECTURAL ASSISTANTS,** Grade A.P.T. V (£1,310-£1,480 p.a.)
- (b) **TWO ARCHITECTURAL ASSISTANTS,** Grade A.P.T. III (£960-£1,140 p.a.)

All plus appropriate London weighting.

Applications for:—
(a) Should be Associate Members of the R.I.B.A. with considerable experience including the design and construction of multi-storey housing.

(b) Should have passed the Intermediate examination of the R.I.B.A. and be suitably experienced.

Application forms, returnable by first post on Monday the 16th January, 1961 obtainable from the Borough Engineer and Surveyor, Town Hall, Upper Street, N.1.

H. DIXON CLARK,
Town Clerk.

4829

COUNTY BOROUGH OF GATESHEAD

Applications are invited from suitably qualified persons for the following positions in the Borough Surveyor's Department, to work under the **CHIEF ARCHITECT** upon an interesting programme of Housing, Multi-storey Flats, Educational and Public Buildings:—

- (a) **ASSISTANT ARCHITECTS,** Grade A.P.T. IV (£1,140-£1,310 p.a.)
- (b) **ARCHITECTURAL ASSISTANTS,** Grade A.P.T. I-III (£645-£1,140 p.a.)

Salaries within the above scales according to qualifications and experience. Local Government experience not essential.

All posts superannuable, subject to Medical Examination and one month's notice.

Housing accommodation available at economic rent, and part removal expenses paid, for Senior posts.

Applications, giving details of present and previous appointments, qualifications and experience, together with the names of two referees, to be sent to the undersigned within fourteen days of the appearance of this advertisement.

C. D. JACKSON,
Town Clerk.

Town Hall,
Gateshead,
5th December, 1960. 4833

**CITY OF WORCESTER
APPOINTMENT OF ARCHITECTURAL
ASSISTANT**

Applications are invited for this appointment within salary scale A.P.T. I (£645-£815). The appointment is superannuable and subject to a medical examination.

Housing accommodation will be offered, if necessary, and the Corporation are prepared to make a contribution towards removal expenses. Casual User's Car Allowance will be applicable.

Applications stating age, present and previous appointments and experience, together with the names of two referees, are to be sent to the City Engineer and Surveyor, 22 Bridge Street, Worcester, by Tuesday, 20th December, 1960.

BERTRAM WEBSTER,
Town Clerk.

Guildhall,
Worcester. 4825

**BOROUGH OF UXBRIDGE
ARCHITECTURAL ASSISTANT**

Applications are invited for the above appointment on the staff of the Borough Surveyor and Architect at a salary within A.P.T. Grade III £960-£1,140 per annum plus London weighting up to £45 per annum) according to qualifications and experience.

Applicants should have had a good architectural training and experience and preference will be given to those with a professional qualification. The provisions of the Local Government Superannuation Acts apply to this post, and the successful candidate will be required to pass a medical examination. The conditions of service are those contained in the National Scheme of Conditions of Service.

Apply giving full personal details, present and past appointments, qualifications and experience with names and addresses of two referees to Harold E. G. Stripp, F.R.I.C.S., M.Inst.R.A., Borough Surveyor and Architect, 263 High Street, Uxbridge, by 9 a.m. on the 2nd January, 1961.

E. RONALD WEST,
Town Clerk.

4793

**YORKSHIRE ELECTRICITY BOARD
NO. 4 (LEEDS) SUB-AREA
FOURTH ASSISTANT ENGINEER
(CIVIL DRAUGHTSMAN)**

Applicants should have had a recognised technical training and experience in the design and detailing of new buildings and in the conversion of existing buildings.

Experience in the preparation of Bills of Quantities and Estimates and the ability to design simple reinforced concrete and/or steel structures will be an advantage.

Salary: N.J.B. Class L Grade 12 (Scale 8), £1,040-£1,165 per annum.

Applications, together with the names of two referees, should be sent to the Manager, Yorkshire Electricity Board, No. 4 (Leeds) Sub-Area, Bramley, Nr. Leeds, not later than 23rd December, 1960. 4798

**COUNTY BOROUGH OF DUDLEY
BOROUGH ARCHITECT'S DEPARTMENT**

Vacancies exist for **ASSISTANT ARCHITECTS** and **QUANTITY SURVEYORS**

Salaries offered are from A.P.T. Grade I to A.P.T. Grade IV, according to qualifications and experience.

Dudley has an extensive development programme and offers opportunities for gaining valuable experience in all aspects of design and contract administration.

Housing accommodation is available to one successful applicant.

Applications stating age, present salary, qualifications, training and experience, to reach me by Thursday, 22nd December, 1960.

P. D. WADSWORTH,
Town Clerk.

Council House,
Dudley, Worcs.
2nd December, 1960. 4820

**URBAN DISTRICT OF EBBW VALE
ARCHITECT'S DEPARTMENT
APPOINTMENT OF RESIDENT
ENGINEER/CLERK OF WORKS**

Applications are invited from suitably qualified persons for the temporary appointment of a Resident Engineer/Clerk of Works to supervise the construction of a Covered Swimming Bath, shortly to be commenced on the Civic Centre Site, Ebbw Vale.

Applicants should have had good experience in the supervision of Reinforced Concrete Work, including heavy piling.

The duration of the work is likely to be approximately two years but the erection of a new R.C. frame building to house new Municipal Offices and Council Chamber on the same site will commence in 1961 and may be expected to provide continuation of employment for a further period.

The salary offered is £1,200 per annum.

Consideration may be given to the provision of housing accommodation for married candidates if required.

Applications, stating age, qualifications, present and previous positions and experience, together with the names of two referees to be delivered to the undersigned not later than Saturday, 31st December, 1960.

HOWARD J. WILLIAMS,
Clerk of the Council.

District Council Offices,
The Walk,
Ebbw Vale, Mon. 4801

CITY OF SHEFFIELD

Applications are invited for the following post on the staff of the Estates Surveyor, Mr. W. H. Rothwell, B.Sc., F.R.I.C.S.:—
PROPERTY ASSISTANT (REPAIRS), Grade A.P.T. III-IV (£960-£1,310).
Qualification A.R.I.C.S. (Building) or equivalent.

Applicants must have had wide experience in the maintenance of urban properties of all classes, particularly of repairs, conversions and demolition, and including experience of contract administration. Experience of a House Patching Scheme is desirable.

Commencing salary within the above scale commensurate with qualifications and experience. The post is superannuable, subject to N.F.C. conditions of service and to medical examination.

Applications stating name, address, age, qualifications, experience, previous and present positions with dates and salaries and the names and addresses of two referees should reach the undersigned not later than 6th January, 1961.

JOHN HEYS,
Town Clerk.

Town Hall, Sheffield, 1. 4805

PERTH AND KINROSS JOINT COUNTY COUNCIL

Applications are invited for vacancies in the County Architect's Department, Perth, on salary scales (a) £795-£1,075 and (b) £735-£865. Applicants for (a) must be fully qualified A.R.I.B.A. or hold a Diploma in Architecture. Applicants for (b) should be Intermediate A.R.I.B.A. or equivalent. Placing on either scale will be given according to experience. Particulars and forms of application from The County Clerk, P.O. Box 15, County Offices, York Place, Perth. Applications to be lodged by 4th January, 1961. 4791

HAMPSHIRE COUNTY COUNCIL

PLANNING ASSISTANT, A.P.T. II/III (£815-£1,140), required for pensionable post in South-West Area Planning Office centred at Lyndhurst. Commencing salary according to experience and qualifications. Candidates should have passed the Intermediate examination of the Town Planning Institute or other related professional body and have had development control experience in the Planning Department of a Local Authority. Separation allowance and assistance with removal expenses in approved cases.

Applications stating age, education, qualifications and experience, together with a copy of one testimonial and the names of two referees should reach the Clerk of the County Council, The Castle, Winchester, by 21st December. 4799

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

Applications are invited for the appointment of **DEPUTY BOROUGH ARCHITECT AND BUILDINGS SURVEYOR** at a salary within the scope of the scale of £1,350 rising by annual increments of £50 to a maximum of £1,550 per annum.

Applicants must be A.R.I.B.A., preferably with Town Planning experience.

Housing accommodation will be made available if required.

The appointment will be subject to two months' notice on either side and to the provisions of the Local Government Superannuation Acts.

Applications stating age, education, qualifications, full particulars of training and experience, together with copies of two recent testimonials, should be sent to the undersigned not later than Wednesday, 4th January, 1961, in envelopes endorsed "Appointment of Deputy Borough Architect."

A. NORMAN JAMES,
Town Clerk.

Town Hall, Dewsbury. 6th December, 1960. 4809

BOROUGH OF KEIGHLEY BOROUGH ARCHITECT

Applications are invited for the above appointment from persons who are Members of the R.I.B.A. by examination and registered under the Architects Registration Acts, 1931-1938, at a salary of £1,635 x £75 (4)—£1,935. The conditions of service of the Joint Negotiating Committee for Chief Officers will apply. Further particulars may be obtained from me and applications must be received by 24th December, 1960.

H. W. SMITH,
Town Clerk.

Town Hall, Keighley. 4812

COUNTY BOROUGH OF EAST HAM APPOINTMENT OF SENIOR ARCHITECTURAL ASSISTANT HOUSING DEPARTMENT

Applications are invited. Salary in accordance with Grade A.P.T. IV (£1,140-£1,310 per annum) plus London weighting.

Applicants should preferably be Associates of the Royal Institute of British Architects, be competent draughtsmen and have had experience of the construction and supervision of the erection of Housing Schemes.

Further particulars and application form (returnable by 2nd January, 1961) on request to the Town Clerk, Town Hall, East Ham, E.6. 4815

CITY AND COUNTY OF NEWCASTLE UPON TYNE APPOINTMENT OF ASSISTANT PLANNING OFFICERS

(A.P.T. III/IV, £960-£1,310 p.a.)

Applications will be considered from suitably qualified persons for appointments within the above grades in the newly formed and expanding City Planning Department under the direction of Wilfred Burns, Esq., M.Eng., Dip.T.P., A.M.T.P.I., A.M.I.C.E.

These posts offer first class opportunities covering a wide field of activity to planners of ability and enthusiasm.

The appointments are subject to the National Scheme of Conditions of Service, the Local Government Superannuation Acts, and the passing of a medical examination.

Applications giving details of age, present appointment and salary, previous appointments, experience, qualifications, education, training, and two referees, should be submitted to the City Planning Officer, 2, St. Nicholas Buildings, Newcastle upon Tyne, 1, by the 28th December, 1960.

J. ATKINSON,
Town Clerk.

Town Hall, Newcastle upon Tyne, 1. 4822

METROPOLITAN BOROUGH OF FULHAM ASSISTANT QUANTITY SURVEYOR BOROUGH ARCHITECTS AND HOUSING DEPARTMENT

A.P.T. III, £1,005-£1,185. Experience required in preparation of Bills of Quantities and handling large contracts for multi-storey dwellings and public buildings. Commencing salary according to qualification and experience. Five-day week. Canteen. Details from Town Clerk, Town Hall, Fulham, S.W.6. Closing date 3rd January. 4814

ARCHITECTURAL ASSISTANTS of Intermediate R.I.B.A. standard, with interest in Ancient Monuments and Historic Buildings, required by the Ministry of Works, London. Some knowledge of surveying, and preservation of Ancient Monuments is desirable. Salary range from £600 (at age 21) to £900 per annum. Starting pay according to age and experience. Five-day week. 3½ weeks' annual leave initially. Prospects of promotion with salaries rising to £1,435 per annum. Opportunities for permanent (non-contributory) pensionable posts. Apply, giving details of age, training and experience, to: E. Bedford, Esq., C.B., C.V.O., A.R.I.B.A., Chief Architect, Ministry of Works (A1), Abell House, Room 427, John Islip Street, London, S.W.1. Interviews will be held in London. 4781

photomurals



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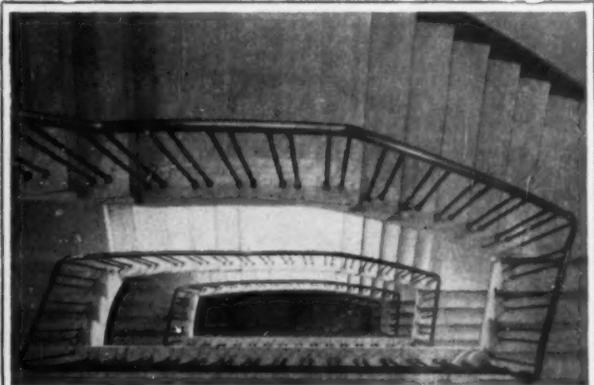
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CITY OF LEEDS

CITY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:-

- Post No. 1. SENIOR ASSISTANT ARCHITECTS, Grade A.P.T. V, Salary scale £1,310-£1,480.
- Post No. 2. SENIOR ASSISTANT ARCHITECTS, Grade A.P.T. IV, Salary scale £1,140-£1,310.

Applicants should be suitably qualified and have had a wide experience in either housing, education or other types of large public building work and will be required to design and work on these projects to completion. Applicants will be considered on their capability for design, experience, contemporary outlook and suitability. The appointments are superannuable—medical examination.

Assistance will be given in providing housing accommodation in approved cases, if required. Application forms may be obtained from the undersigned.

The closing date for receipt of applications is the 9th January, 1961, and these are to be sent to the City Architect, Priestley House, Quarry Hill, Leeds, 9.

Canvassing disqualified.
J. H. SHERIDAN-SHEDDEN,
City Architect.

Priestley House,
Quarry Hill,
Leeds, 9.

5th December, 1960. 4813

EAST ANGLIAN REGIONAL HOSPITAL BOARD

SENIOR ASSISTANT ARCHITECTS (£1,300-£1,600), ASSISTANT ARCHITECTS (£900-£1,310). Candidates must be qualified and registered architects by examination.

ARCHITECTURAL ASSISTANTS (£625-£900). Candidates must have passed Intermediate examination of R.I.B.A.

Commencing salary for assistant architects and architectural assistants may be fixed above minimum on account of age and relevant practical experience.

Appointments are for work on major development schemes within expanding hospital building programme and offer considerable scope for gaining experience in large scale hospital projects.

Applications stating age, qualifications, experience and details of present position (salary, etc.) with names of three referees to Secretary of Board, 117 Chesterton Road, Cambridge, by 22nd December, 1960. 4821

NORTH KESTIVEN RURAL DISTRICT COUNCIL

APPOINTMENT OF DRAUGHTSMAN

The above Council invite applications from suitable persons for the above appointment in the Department of the Surveyor to the Council.

The successful candidate should be capable of assisting with the preparation of plans for housing schemes including site layouts and should preferably have some knowledge of building construction and be capable of dealing with matters relating to Byelaws as to new streets and buildings and will be required to perform such other duties as may be delegated to him by the Surveyor, from time to time.

The salary offered is subject to the present scale A.P.T. Grade I of the salaries fixed by the National Joint Council (£645-£30-£35 (4)-£815), the commencing salary to be fixed according to the qualifications and experience of the person appointed.

The appointment will be subject to the provisions of the Local Government Superannuation Acts, and the successful candidate will be required to furnish a medical certificate of fitness. Candidates should state whether they wish to be offered housing accommodation.

Applications in writing, stating age, qualifications and experience, with the names of two persons to whom reference may be made, should be sent to the undersigned not later than first post on Saturday, 31st December, 1960.

F. FOSTER,
Clerk of the Council.

Council Offices,
31, Clasketgate,
Lincoln.
5th December, 1960. 4771

RE-ADVERTISEMENT CHESTERFIELD RURAL DISTRICT COUNCIL

CHIEF ASSISTANT ARCHITECT

J.N.C. Scale B (£1,480-£1,570)

Applications are invited from Architects who are corporate members of the Royal Institute of British Architects for the above appointment in the department of the Engineer and Surveyor, Mr. J. B. Wikeley, M.Eng., M.I.C.E., Barrister at Law, from whom further particulars may be obtained.

The Council have various interesting works in hand as well as a substantial housing programme.

An essential user car allowance up to Class II will be paid and the Council will reimburse removal expenses. Housing accommodation will be provided in appropriate cases.

Applications with the names of three referees should be sent to the Clerk of the Council, Rural Council House, Salfersgate, Chesterfield, by Thursday, 22nd December, 1960.

H. O. HAWKINS,
Clerk of the Council.

Rural Council House,
Salfersgate,
Chesterfield. 4765

BOROUGH OF WALLSEND

Applications are invited for the following appointments to the staff of the Borough Surveyor.

(a) CHIEF ENGINEERING ASSISTANT. Salary within grade A.P.T. IV according to qualifications and experience.

Candidates should be A.M.I.C.E. or A.M.I.Mau.E. with wide and varied experience in municipal engineering together with associated administrative experience.

(b) ENGINEERING AND ARCHITECTURAL ASSISTANTS. Salary will be within grade A.P.T. III according to qualifications and experience.

Candidates should have received appropriate training and have at least five years' experience. The Council are prepared to assist with housing accommodation for married applicants and removal expenses will be paid.

Applications giving details of experience and qualifications together with the names and addresses of two referees should be forwarded to me by 7th January, 1961.

JOHN STOKER,
Town Clerk.

Town Hall,
Wallsend. 4770

BOROUGH OF GRANTHAM CHIEF ASSISTANT ARCHITECT

A.P.T. III-£960 to £1,140

Applications with names of two referees to Borough Engineer, Guildhall, Grantham, by Monday, 2nd January. House and assistance with removal expenses offered.

JOHN F. GUILLE,
Town Clerk.

Guildhall,
Grantham. 4837

KENT COUNTY COUNCIL

Applications are invited for the appointment of ASSISTANT ARCHITECTS in the office of the County Architect to assist with the Council's expanding building programme which includes schools, colleges, residential homes and other public buildings. The salary range extends to £1,480 a year, the starting grade and salary depending upon qualifications, ability and experience.

Further details and application forms from the County Architect, Springfield, Maidstone. 4852

CITY OF PETERBOROUGH

Applications are invited for the appointment of ARCHITECTURAL ASSISTANT, Grade I, A.P. & T. (£646-£815). Housing accommodation available. National Scheme of Conditions of Service. Application forms from and to be returned to, the City Engineer by 23rd December, 1960.

C. PETER CLARKE,
Town Clerk

Town Hall,
Peterborough. 4696

LANCASHIRE COUNTY COUNCIL

PLANNING ASSISTANT required at ST. ANNES, salary within range £645-£1,145. Commencing salary according to qualifications and experience.

Applicants should be studying for or possess a recognised qualification in architecture, surveying, engineering and/or town planning.

Applications giving age, qualifications, present appointment, experience, etc., and two referees, to the County Planning Officer, East Cliff County Offices, Preston, by the 21st December, 1960. 4824

(a) ASSISTANT ARCHITECTS, A.P.T. III or A.P.T. IV (4 posts) and (b) ARCHITECTURAL ASSISTANT, A.P.T. I, required by POPLAR BOROUGH COUNCIL. Salary scales: (a) £960-£1,140 or £1,140-£1,310; (b) £645-£815 plus London weighting in each case. Commencing salary according to qualifications and experience. Application forms from Borough Engineer and Surveyor, Poplar Town Hall, Bow Road, E.3. Closing date: 31st December, 1960. 4775

BOROUGH OF LUTON

Applications invited for QUANTITY SURVEYING ASSISTANTS, grade A.P.T. I-III (£645-£1,140). Commencing salary in accordance with experience and qualifications. Housing provided and approved removal expenses paid conditionally. Large constructional and development programme offers a variety of work and experience. Application forms from Borough Architect, Town Hall, Luton, returnable by 28th December, 1960. 4774

THE UNIVERSITY OF MANCHESTER

Applications are invited for the CHAIR OF TOWN AND COUNTRY PLANNING, made vacant by the death of Professor Clifford Holliday. Salary not less than £2,600 per annum. Membership of F.R.S.U. and Children's Allowance Scheme. Applications, giving full details of qualifications, publications, experience, etc., and the names and addresses of at least three persons to whom reference may be made, should be sent not later than 21st January, 1961, to the Registrar, the University, Manchester 13, from whom further particulars may be obtained. 4763

Architectural Competition

36s. per inch; each additional line, 3s.

CITY AND COUNTY OF THE CITY OF LINCOLN ARCHITECTURAL COMPETITION FOR CIVIC CENTRE

THE Lincoln City Council invite architects registered under the Architects (Registration) Acts, 1931 and 1938, or who have made application to the Architects' Registration Council for registration, to submit designs in competition for a Civic Centre at Lincoln at a cost not exceeding £975,000 excluding clearance of site and all professional fees but inclusive of external works.

The Council have appointed Mr. Geoffrey Jellicoe, F.R.I.B.A., Sir Leslie Martin, F.R.I.B.A., and Mr. J. M. Richards, A.R.I.B.A., as assessors to adjudicate on the designs submitted.

Authors of the designs placed first, second and third will be paid premiums of £4,000, £2,000 and £1,000 respectively, although the assessors reserve the right to combine the second and third premiums and to divide them into a larger number of prizes for designs of merit.

The closing date for entries is 7th July, 1961, and the last date for the receipt of questions is 31st January, 1961.

Applications for competition documents should be made to the Town Clerk, Town Clerk's Office, Salfersgate, Lincoln, accompanied by a remittance for two guineas returnable on receipt of a design and after the award has been published or on the return of the competition documents at least four weeks before the date for submitting designs.

J. HARPER SMITH,
Town Clerk.

Town Clerk's Office,
Lincoln.
14th December, 1960. 4786

Architectural Appointments Vacant

3s. per line; minimum 12s. Box Number, including forwarding replies, 5s. extra.

RONALD WARD AND PARTNERS invite applications from ARCHITECTS, Senior and Junior. Long-term prospects. Scope for initiative and responsibility in interesting commercial, industrial and civic projects in British Isles, West Africa and Australia. Salaries commensurate with ability. Non-contributory Pension and Life Insurance schemes. Five-day week. Pleasant offices. Apply 29, Chesham Place, Belgrave Square, London, S.W.1. Tel.: BELGRAVIA 3361. 2950

ARCHITECTURAL ASSISTANT required in A busy City office. Assistants should be capable of carrying through schemes from sketch stage to final construction. Mainly office and residential buildings in London area. Varied and interesting projects. Long term engagement to right person. £1,600 per annum plus luncheon vouchers. Five-day week. Applicants must be capable of producing sketch schemes on contemporary buildings and preparing working drawings. Box 4223.

BASIL SPENCE & PARTNERS require qualified and experienced ARCHITECTS to fill positions of responsibility on a major building programme. Write to I. Fitzroy Square, W.1, stating experience and salary required. 9924

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

ELIE MAYORCAR requires ARCHITECTURAL ASSISTANTS with a minimum of three years' office experience in this country. Write, giving brief particulars of architectural education and experience, and salary required, to 13, David Mews, Baker Street, W.1. 3293

£1,000/£2,000 p.a. will be paid to experienced competent ARCHITECTS by a private practice in the City of London. The work will be primarily on the drawing board on new and interesting projects of magnitude. A high standard of design and detailing ability is required. Please apply in writing to Box 9360.

ARCHITECTURAL ASSISTANT required for City Office. Qualifications unnecessary, but experience in the preparation of working drawings essential. Salary £1,000 per annum plus luncheon vouchers. Five-day week. Box 4229.

MONRO AND PARTNERS require ARCHITECTURAL ASSISTANTS of Intermediate/Final R.I.B.A. standard in their London, Watford, and Glasgow Offices for work on interesting industrial and commercial projects. Salary range £960-£1,000 p.a. Non-contributory Pension Scheme. Five-day week. Apply in writing to 32, Clarendon Road, Watford. 8609

SIR JOHN BURNET TAIT & PARTNERS have vacancies for ARCHITECTURAL ASSISTANTS of all grades. Salaries ranging from £1,000 to £1,500 per annum. Luncheon vouchers. Pension and Medical schemes (non-contributory). Telephone LANGHAM 3896 for appointment. 2113

ARCHITECTURAL ASSISTANT required, with at least two years' office experience. Apply in writing to Thomas Mitchell & Partners, 20, Bedford Square, London, W.1. 4282

BRYAN & NORMAN WESTWOOD & PARTNERS require senior and Junior ASSISTANT ARCHITECTS. Please apply to 21, Suffolk Street, London, S.W.1. Trafalgar 4411. 4188

SENIOR ASSISTANTS required immediately. Salary by arrangement. Theo. H. Birks, 38, Portland Place, London, W.1. LAN 7236. 1486

ASSISTANT ARCHITECTS required for staffing a new office opening in Southampton for work on interesting projects including University, War Department and Ecclesiastical programmes. Juniors also required. Apply stating age, qualifications, experience and salary required to Robert Potter, F.R.I.B.A., & Richard Hare, B.Arch., A.R.I.B.A., De Vaux House, Salisbury, 3197

WILLIAM H. ROBBINS, A.R.I.B.A., requires ARCHITECTURAL ASSISTANTS of Final and Intermediate standard for interesting work in expanding office. Applicants should be experienced in design and construction and taking responsibility. Excellent opportunity of advancement, salary range from £750 to £1,400 per annum according to experience. Five-day week. Apply to 77, Wigmore Street, London, W.1. WELbeck 6274/5. 3841

HOWARD V. LOBB & PARTNERS require ASSISTANT ARCHITECTS. Salaries would be between £750 and £1,250 per year. Please write to 20 Gower Street, London, W.C.1. 3640

BOOTH, LEDEBOER AND PINKHEARD require ASSISTANTS in the salary range £750-£1,250. Apply 17-20, Mason's Yard, Duke Street, St. James's, S.W.1. Tel.: TRAFalgar 1866. 3119

INTERMEDIATE to Final ASSISTANTS required immediately. Salary according to ability and experience. Theo. H. Birks, 38, Portland Place, London, W.1. LAN 7236. 9739

WALLIS GILBERT and PARTNERS ALSO NEED STAFF URGENTLY. 5, Cromwell Road, S.W.7. KENnington 1450. 3814

A VACANCY occurs in the West End Branch of large provincial Architectural Practice, for an ASSISTANT at Intermediate standard. The post offers considerable scope on varied projects. Five-day week, Luncheon Vouchers. Write giving particulars of age, experience and salary required to Box 4135.

SENIOR ASSISTANT ARCHITECTS required immediately for a wide variety of interesting work. Applicants should be experienced in all aspects of modern building design and construction. Attractive remuneration to right men capable of working on own initiative under ideal conditions for self expression. Preference given to men over 45 years of age although all applications will be considered on merit irrespective of age. Applications should be made, in writing, to Kenneth P. Masson, Esq., A.R.I.B.A., Chief Architect, S.C.W.S. Ltd., Architectural Division, 76 Morrison Street, Glasgow, C.5. 4158

EXPERIENCED ARCHITECTURAL ASSISTANT required for busy West End office. General practice but mainly office and commercial projects. Bernard Gold & Partners, 4/6, Savile Row, W.1. REGent 7551. 3742

A QUALIFIED ARCHITECTURAL ASSISTANT required immediately in Home Counties office. Successful applicant will have the opportunity of working on widely varying industrial, commercial and housing schemes. Five-day week. Write full particulars to Box 4136.

C. H. ELSOM & PARTNERS need experienced ARCHITECTS for a wide range of public and commercial projects. VICTORIA 4304, 18, Lower Grosvenor Place, W.1. 4271

BRIGHTON & HOVE. Experienced ASSISTANTS in all grades required. Details please to: H. Hubbard Ford & Associates, 67, Church Road Hove, 3, Sussex. 4338

ASSISTANT with several years' office experience and accustomed to preparing working drawings from sketches, required immediately by West End Architects. Should be interested in supervising the work and have a sound knowledge of construction. Write for interview to Box 3557.

TWO first class ARCHITECTURAL ASSISTANTS required. Salary range £1,250-£1,750 p.a. depending upon experience. Write with fullest details of experience. Box 4227.

WATKINS, GRAY & PARTNERS. 57, Catherine Place, S.W.1. require ASSISTANTS of Intermediate and Final standards for work on large hospital projects. Excellent opportunities for those seeking first hand experience in this most interesting and rapidly developing field. Luncheon vouchers and pension scheme in operation. Write giving full particulars. 4233

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WELCH AND LANDER require ASSISTANTS, Intermediate to Final standard, preferably with office experience. 38 Gloucester Place, W.1. Tel. WELbeck 6561. 4376

ASSISTANT required to carry out medium size projects under supervision but with scope for initiative. Preferably used to commercial or school work. Excellent prospects. Box 4375.

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TRIPH & WAKEHAM. Chartered Architects, require ASSISTANTS in all grades to work in their London office on interesting projects both in this country and abroad. Salary by arrangement. Telephone WELbeck 7744 or write to 16, Fitzhardinge Street, London, W.1. for an appointment. 4550

SENIOR and JUNIOR ASSISTANTS required for small Office with interesting and varied work. Green, Lloyd & Son, 5, Pickering Place, St. James's Street, S.W.1. Telephone WHITEhall 8926. 4560

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QUALIFIED ARCHITECTS looking for some really interesting new work should apply to George, Trew and Dunn at their new offices, 50, Eastbourne Terrace, W.2. 4598

ARCHITECTURAL ASSISTANTS who are looking for some really interesting work where wide experience can be gained, should apply to George, Trew and Dunn at their new offices, 50, Eastbourne Terrace, W.2. 4599

TEATHER & HADFIELD. Chartered Architects, Mazda Buildings, Campo Lane, Sheffield, 1, invite applications for the following: ASSISTANT ARCHITECTS capable of taking charge of contracts from sketch design to completion. ARCHITECTURAL ASSISTANT, up to Intermediate standard. Applications to be made by letter. 4587

DENYS LASDUN & PARTNERS require qualified and experienced ARCHITECTS to fill positions of responsibility. Salaries from £1,100 p.a. according to ability and experience. Write to 3, Albany Terrace, N.W.1. or telephone HUNTER 1822 for an appointment. 4542

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£1,000-£1,500. ASSISTANT ARCHITECTS required in the Dundee and Edinburgh offices of Robert Matthew and Johnson-Marsball for work on major hospital projects. Apply to 21, Regent Terrace, Edinburgh, 7. 4449

ARCHITECTURAL ASSISTANT about Inter. Standard required for busy office dealing with wide variety of Commercial, Industrial and Domestic Work. Ability to do perspectives an advantage. Apply: Bostock & Partners, SOUTHall 3491. 4596

BIRMINGHAM. We need a young ARCHITECT, either qualified or in training, with a good sense for clean and straight forward design. There is plenty of scope for the right man. Top salary according to experience. Apply J. Alfred Harper & Son, 63, Temple Row, Birmingham. 4527

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FARMER and DARK require ASSISTANT ARCHITECTS with some office experience, initiative and ability. Varied work. Apply Romney House, Tufton Street, S.W.1. Tel.: ABBey 6311. 4648

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ARCHITECTS ASSISTANT with office experience required for widely varied and interesting work. Perspective drawing ability desirable. Apply A. Beaumont Owen, A.R.I.B.A., Wells & Walchli, 6-8 Sackville Street, W.1. 4597

JUNIOR ASSISTANT ARCHITECT required to help run growing practice in East Anglia. Experience in industrial work preferable. Starting salary £900-£1,200 depending on experience. Box 4667.

EXPERIENCED INTERMEDIATE ASSISTANT to work on various projects, including Supermarkets, Office Buildings, Laboratories and Factories. Five-day week, bonus scheme. Phone Sloane 0833. 4668

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CHIPPINDALE & EDMONDSON require for their Darlington office ASSISTANTS of all grades. Good salaries, luncheon vouchers and five-day week. Applications endorsed "Staff-Private" to be forwarded to 37a Tubwell Row, Darlington. 4742

ARCHITECTURAL ASSISTANTS, to Intermediate standard or above, required in Wimbledon office for interesting work U.K. and overseas. Five-day week; no traveling to town. Apply J. E. Harrison, F.R.I.B.A., Eagle House, Wimbledon, S.W.19, or phone WIM 4244. 4749

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Please write stating age, and giving full details of training and experience, to the Personnel Manager. 4841

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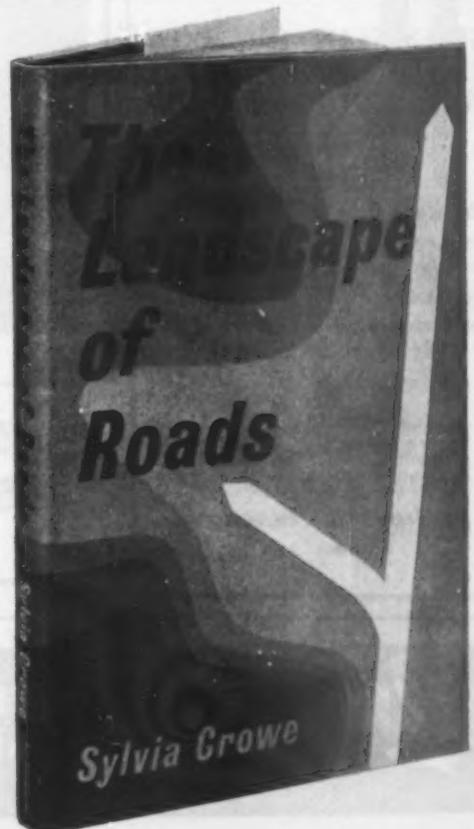
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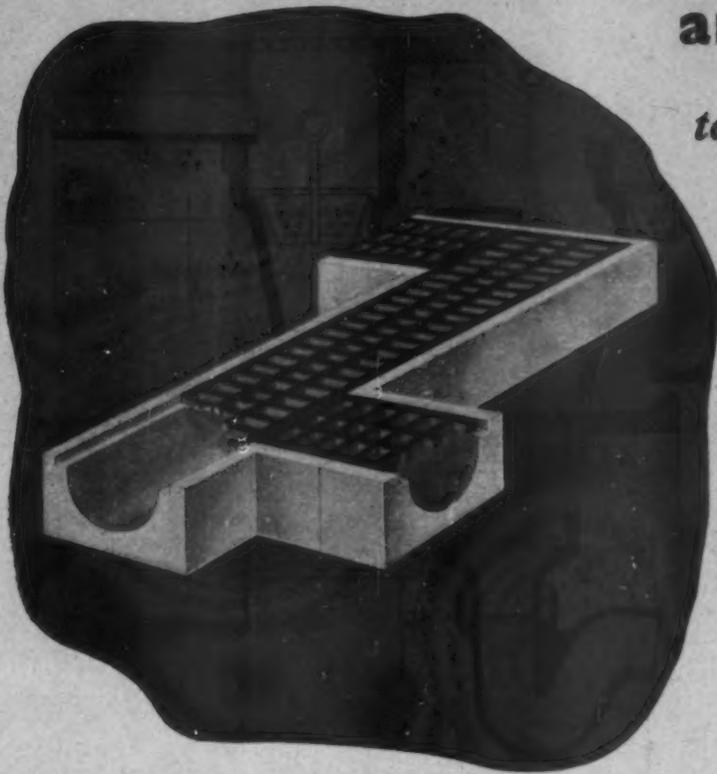
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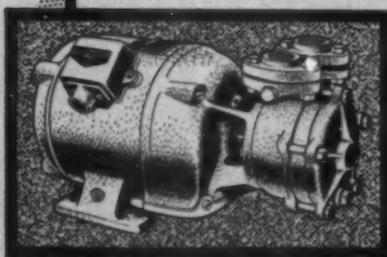
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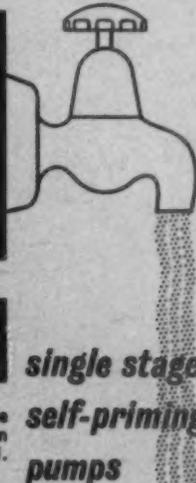


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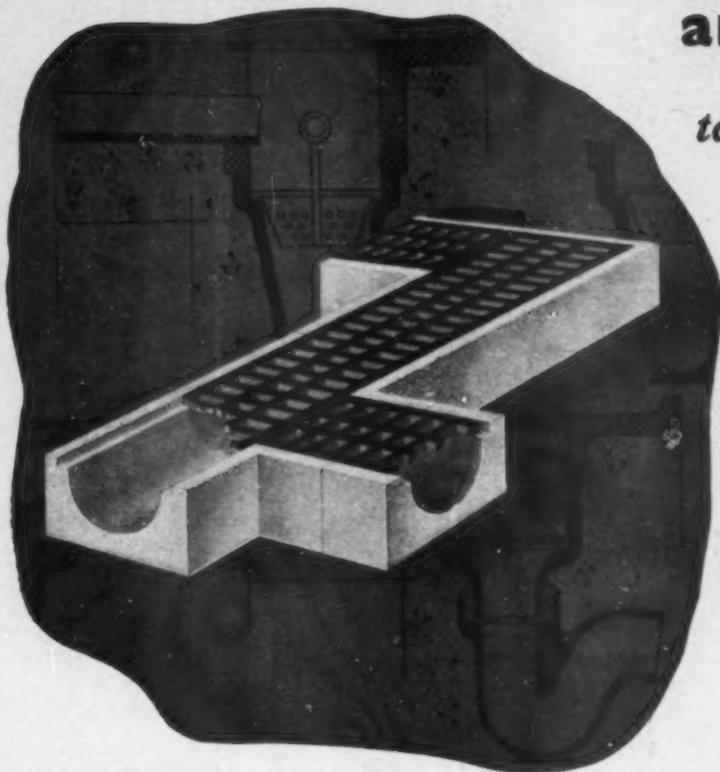
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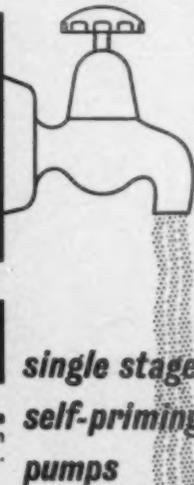
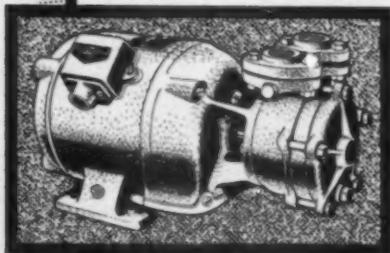
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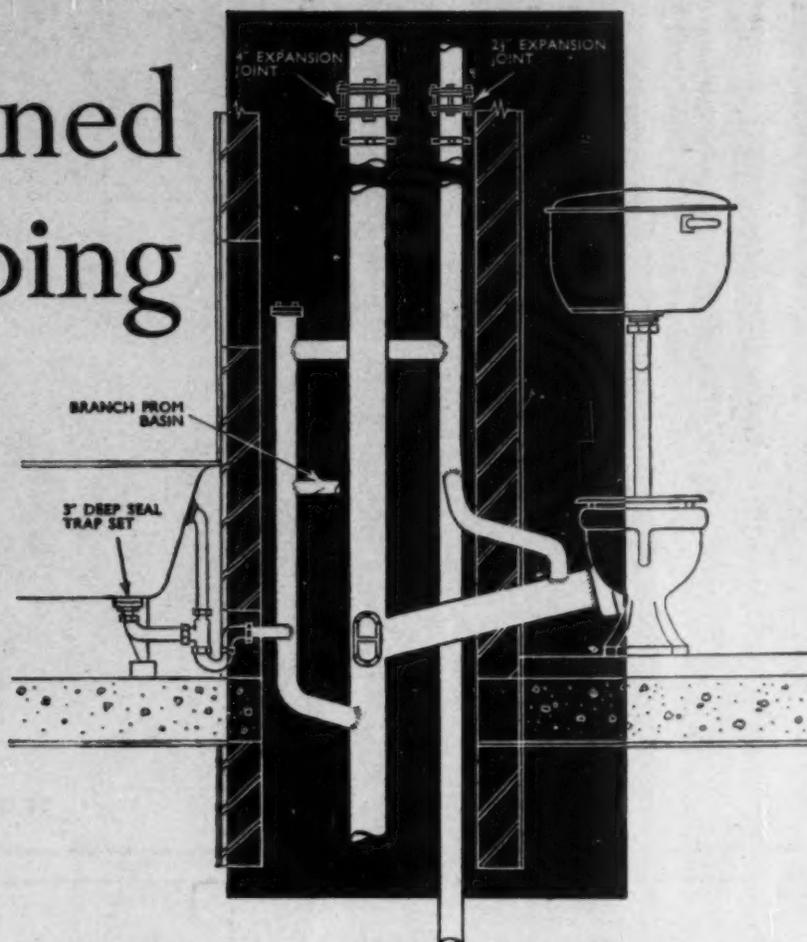
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