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
Letters
News
Diary
Societies and Institutions

TECHNICAL SECTION
Information Sheets
Information Centre
Current Technique
Working Details
Questions and Answers
Prices
The Industry

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. 3211] [Vol. 124

THE ARCHITECTURAL PRESS

, 11 and 13, Queen Anne's Gate, Westminster, S.W.1. *'Phone: Whitehall 0611*

Price 1s. 0d.

Registered as a Newspaper.

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

AA	Architectural Association, 34/6, Bedford Square, W.C.1.	Museum 0974
AAI	Association of Art Institutions. Secy.: W. Marlborough Whitehead, "Dyneley," Castle Hill Avenue, Berkhampstead, Herts.	
ABS	Architects' Benevolent Society. 66, Portland Place, W.1.	Langham 5721
ABT	Association of Building Technicians. 1, Ashley Place, S.W.1.	Victoria 0447–8
ACGB	Arts Council of Great Britain. 4, St. James' Square, S.W.1.	Whitehall 9737
ADA	Aluminium Development Association. 33, Grosvenor Street, W.1.	Mayfair 7501/8
ARCUK	Architects' Registration Council. 78, Wimpole Street, W.1.	Welbeck 2915
BAE	Board of Architectural Education. 66, Portland Place, W.1.	Langham 5721
BATC	Building Apprenticeship and Training Council. Lambeth Bridge House, S.E.1.	Reliance 7611, Ext. 1706
BC	Building Centre. 26, Store Street, Tottenham Court Road, W.C.1.	Museum 5400
BCC	British Colour Council. 13, Portman Square, W.1.	Welbeck 4185
BCCF	British Cast Concrete Federation. 105, Uxbridge Road, Ealing, W.5.	Ealing 9621
BCIRA	British Cast Iron Research Association. Alvechurch, Birmingham.	Redditch 716
BDA	British Door Association. 10, The Boltons, S.W.10.	Fremantle 8494
BEDA	British Electrical Development Association. 2, Savoy Hill, W.C.2.	Temple Bar 9434
BIA	British Ironfounders' Association. 145, Vincent Street, Glasgow, C2.	Glasgow Central 2891
BID	Building Industries Distributors. 52, High Holborn, W.C.1.	Chancery 7772
BINC	Building Industries National Council. 11, Weymouth Street, W.1.	Langham 2785
BOT	Board of Trade. Whitehall Gardens, Horseguards Avenue, Whitehall, S.W.1.	Trafalgar 8855
BRS	Building Research Station. Bucknalls Lane, Watford.	Garston 2246
BSA	Building Societies Association. 14, Park Street, W.1.	Mayfair 0515
BSI	British Standards Institution. British Standards House, 2, Park St., W.1.	Mayfair 9000
BTE	Building Trades Exhibition. 32, Millbank, S.W.1.	Tate Gallery 8134
CABAS	City and Borough Architects Society. C/o Johnson Blackett, F.R.I.B.A., Civic Centre, Newport, Mon.	Newport 65491
CAS	County Architects' Society. C/o F. R. Steele, F.R.I.B.A., County Hall, Chichester.	Chichester 3001
CCA	Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1.	Sloane 5255
CCP	Council for Codes of Practice. Lambeth Bridge House, S.E.1.	Reliance 7611 Ext. 1284
CDA	Copper Development Association. Kendals Hall, Radlett, Herts.	Radlett 5616
CIAM	Congrès Internationaux d'Architecture Moderne. Doldertal, 7, Zurich, Switzerland.	
COID	Council of Industrial Design. 28, Haymarket, S.W.1.	Trafalgar 8000
CPRE	Council for the Preservation of Rural England. 4, Hobart Place, S.W.1.	Sloane 4280
CUC	Coal Utilization Council. 3, Upper Belgrave Street, S.W.1.	Sloane 9116
CVE	Council for Visual Education. 13, Suffolk Street, Haymarket, S.W.1.	Reading 72255
DGW	Directorate General of Works, Ministry of Works, Lambeth Bridge House, S.E.1.	Reliance 7611
DIA	Design and Industries Association. 13, Suffolk Street, S.W.1.	Whitehall 0540
DPT	Department of Overseas Trade. Horseguards Avenue, Whitehall, S.W.1.	Trafalgar 8855
EJMA	English Joinery Manufacturers' Association (Incorporated). Sackville House, 40, Piccadilly, W.1.	Regent 4448
EPNS	English Place-Name Society. 7, Selwyn Gardens, Cambridge.	
FAS	Faculty of Architects and Surveyors. 68, Gloucester Place, W.1.	Welbeck 9966
FASS	Federation of Association of Specialists and Sub-Contractors, Artillery House, Artillery Row, S.W.1.	Abbey 7232
FBBDO	Fibre Building Board Development Organization, Ltd. (Fidor), 47, Princes Gate, Kensington, S.W.7.	Kensington 4577
FBI	Federation of British Industries. 21, Tothill Street, S.W.1.	Whitehall 6711
FC	Forestry Commission. 25, Savile Row, W.1.	Regent 0221
FCMI	Federation of Coated Macadam Industries. 37, Chester Square, S.W.1.	Sloane 1002
FDMA	The Flush Door Manufacturers Association Ltd., Trowell, Nottingham.	Ilkeston 623
FLD	Friends of the Lake District. Pennington House, nr. Ulverston, Lancs.	Ulverston 201
FMB	Federation of Master Builders. 26, Great Ormond Street, Holborn, W.C.1.	Chancery 7583
FPC	The Federation of Painting Contractors, St. Stephen's House, S.W.1.	Whitehall 3902
FRHB	Federation of Registered House Builders. 82, New Cavendish Street, W.1.	Langham 4341
GBPA	Gypsum Building Products Association, 11, Ironmonger Lane, E.C.2.	Monarch 8888
GC	Gas Council. 1, Grosvenor Place, S.W.1.	Sloane 4554
GG	Georgian Group. 2, Chester Street, S.W.1.	Belgravia 3081
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Whitehall 2881
IAAS	Incorporated Association of Architects and Surveyors. 29, Belgrave Square, S.W.1.	Belgravia 3755
ICA	Institute of Contemporary Arts. 17–18, Dover Street, Piccadilly, W.1.	Grosvenor 6186
ICE	Institution of Civil Engineers. 1, Great George Street, S.W.1.	Whitehall 4577
IEE	Institution of Electrical Engineers. Savoy Place, Victoria Embankment, W.C.2.	Temple Bar 7676
IES	Illuminating Engineering Society. 32, Victoria Street, S.W.1.	Abbey 5215
IGE	Institution of Gas Engineers. 17, Grosvenor Crescent, S.W.1.	Sloane 8266

rs

...

l,
rb
es

an
sh
ts
er
is

al
a

il-
an

g

ISTOL 4

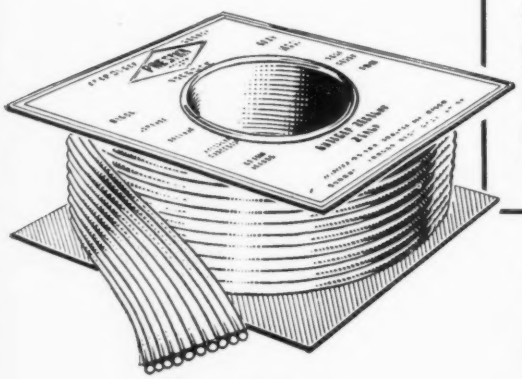
Hey Prestik!

SEE THE EASE AND SPEED OF THIS JOINTING AND SEALING!

Use PRESTIK Builders' White Sealing Strip once, and you will never be content with any other method of jointing, sealing or bedding.

For PRESTIK offers altogether new ease and speed of operation . . . gives you a far more efficient, longer-lasting job . . . can be used inside or outside . . . needs no special tools . . . is completely clean to handle . . . is permanent and weather-proof.

PRESTIK is supplied in handy boxed reels from which you unwind the ready-made strip as you want it. Ask your usual Builders' Merchant for it. Or write to the address below for a sample.



made by the **Bostik** *people*

PRESTIK makes quick work of:

MASONRY—Jointing gutter sections and coping stones. Bedding and jointing concrete blocks and panels.

PRE-FABRICATION — Bedding and Jointing roof sections. Sealing joints in sectional buildings.

FLOORS—Sealing cable duct covers. Sealing skirting board joints.

WALLS and CEILINGS—Sealing wallboard joints (with cover strips). Sealing glass bricks to door and window frames.

DOORS and WINDOWS—Sealing door and window frames to brickwork. Bedding window frames and window boards.

SANITARY WARE — Sealing baths, washbasins, etc., to walls.

white PRESTIK

Builders' Sealing Strip

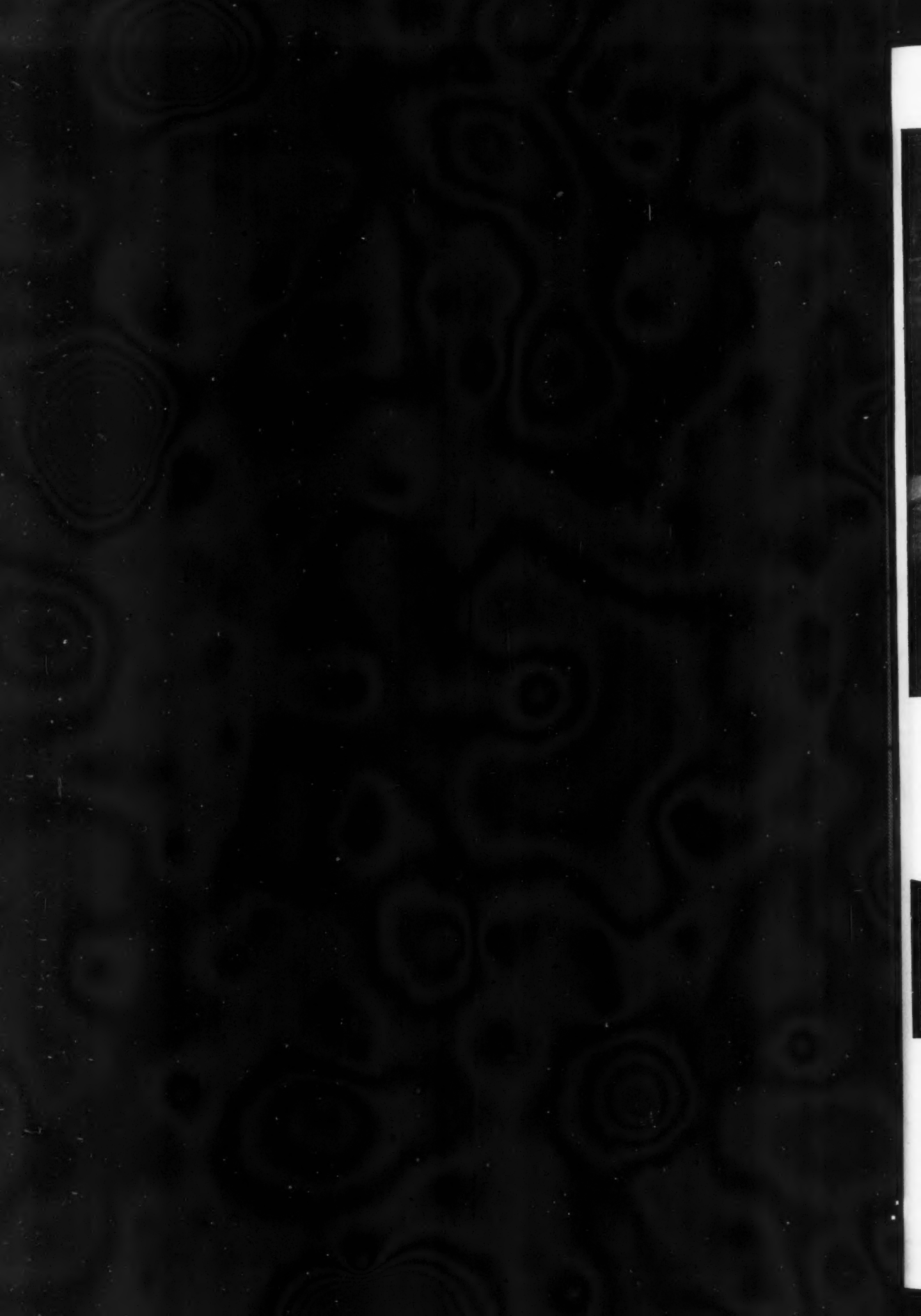
BOSTIK and PRESTIK are registered trademarks of:
B.B. CHEMICAL CO. LTD., ULVERSCROFT ROAD, LEICESTER.

THE ARCHITECTS' JOURNAL
(Supplement) September 13, 1956

. . selective sound control with
Burgess acoustic tiles

BURGESS PRODUCTS CO. L
ACOUSTICAL DIVISION, HINCKLEY, LEICESTERSHIRE


D. L
SHIRE



a vital link

The surveyor is a vital link in the planning and construction of railway sidings which Wards have been building for industry for over 50 years. They have the experience, the technicians, the skilled men and the facilities to carry out contracts of any size.

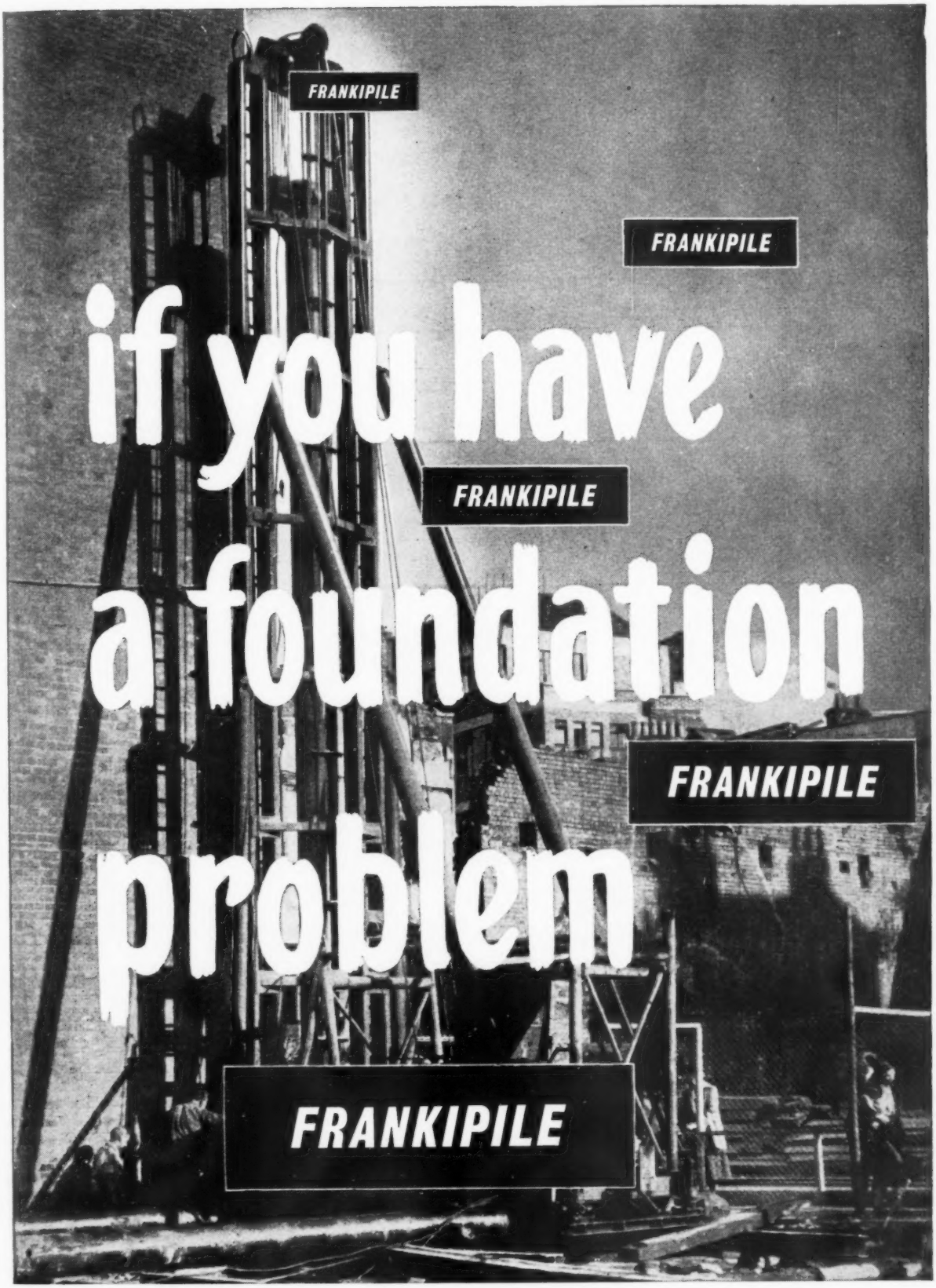
Thos. W. Ward Ltd

ALBION WORKS, SHEFFIELD

TELEPHONE: 26311 (22 LINES). TELEGRAMS: "FORWARD, SHEFFIELD"

LONDON OFFICE: BRETTENHAM HOUSE, LANCASTER PLACE, STRAND, W.C.2

S.C.41



THE FRANKI COMPRESSED PILE CO. LTD. · 39 VICTORIA STREET · LONDON SW1 · CABLES FRANKIPILE SOWEST LONDON

AND IN AUSTRALASIA · BRITISH WEST INDIES · IRAQ · RHODESIA · S. AFRICA

Photo: Courtesy of Adhesive Tapes Ltd., Boreham Wood.

YOU wouldn't dictate

in the street!

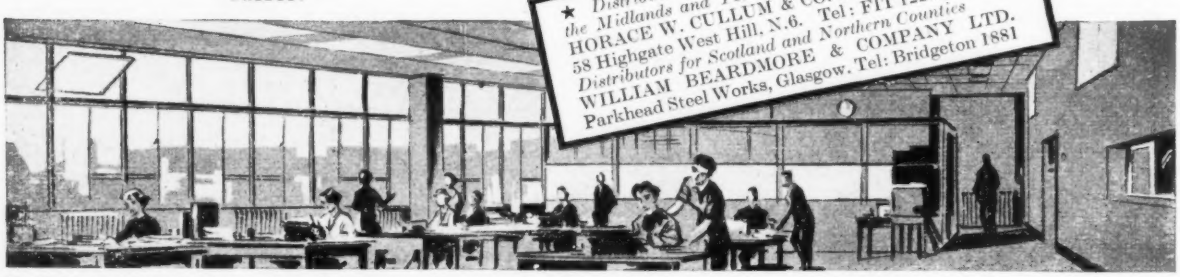
So why expect your employees to produce good work in an office as noisy as a busy thoroughfare. For distracting noise places a steady strain on the nerves and efficiency of office workers, and when people are short-tempered quality and quantity of work deteriorates.
That's why efficient offices all over the world are lined with Acousti-Celotex Sound Absorbing Tiles.

They mop up "unwanted noise" as blotting paper does ink. They are easily and inexpensively installed without interruption to normal office routine. They require no maintenance and can be repeatedly decorated and painted without impairing their acoustical efficiency. If you have a sound problem we will be glad to give you expert advice—without obligation of course.

ACOUSTI-CELOTEX ***SOUND ABSORBING TILES***

ANOTHER CELOTEX CANE FIBRE PRODUCT

★ *Distributors for London, Southern Counties, Wales, the Midlands and Yorkshire*
HORACE W. CULLUM & CO. LIMITED
58 Highgate West Hill, N.6. Tel: FIT 1221 (7 lines)
Distributors for Scotland and Northern Counties
WILLIAM BEARDMORE & COMPANY LTD.
Parkhead Steel Works, Glasgow. Tel: Bridgeton 1881

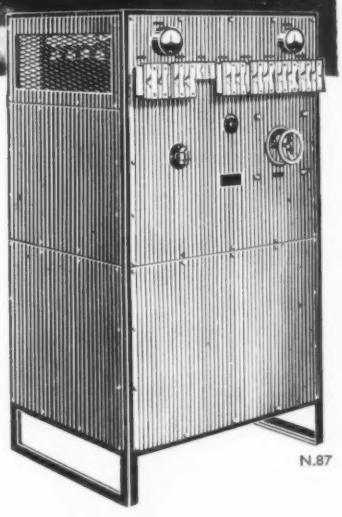


MADE IN GREAT BRITAIN BY CELOTEX LIMITED, N. CIRCULAR ROAD, STONEBRIDGE PARK, LONDON, N.W.10. TEL: ELGAR 5717 (14 LINES)

They never let you down

THE ROYAL NATIONAL LIFEBOAT INSTITUTION

Perhaps the greatest of British charities, this famous institution was founded in 1824, and by the time its second report was published had already contributed to the saving of 342 lives. By 1924—centenary year—it had given awards for the saving of nearly 60,000 lives and today that figure stands at over 78,000. At this very moment, all along our coastline, 154 lifeboat crews are ready for the emergency call which means that someone is in peril on the sea. They never let them down.



N.87

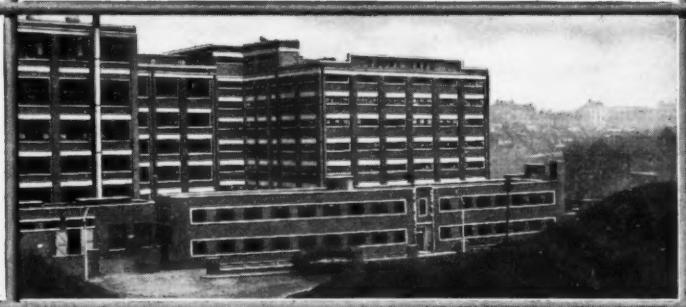
YOU CAN BE CERTAIN TOO that Nife-Neverfayle Emergency Lighting Equipment will never let you down. *Whenever* needed, these reliable units will instantly, automatically spring into action. That is the special advantage of the Nife Steel Alkaline Battery—it never deteriorates, even after long periods of inactivity.

Nife-Neverfayle units occupy only one-third of the space required by conventional equipment and, as they can be installed adjacent to other equipment, a separate battery room is not needed—a point worth remembering when planning new buildings. Maintenance costs are negligible—after years of trouble-free service you will realise just how economical your Nife-Neverfayle equipment has been.

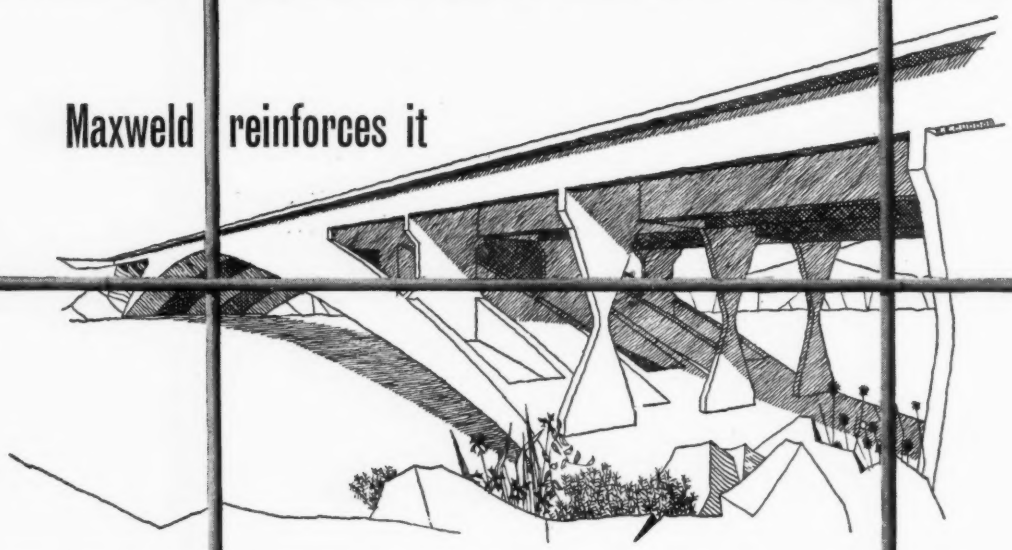
NIFE-NEVERFAYLE

THE EMERGENCY LIGHTING EQUIPMENT WITH THE **STEEL** ALKALINE BATTERY

NIFE BATTERIES · REDDITCH · WORCESTERSHIRE



Maxweld reinforces it



All over the world, MAXWELD reinforces it: concrete and brickwork, in roads, locks, factories, docks, bridges, spas and reservoirs.
Do you need reinforcements? Call up the MAXWELD man!
He'll tell you all about MAXWELD fabric—made to BSS 1221 Part A, closely controlled for quality from raw material onwards, available for quick delivery anywhere. He'll tell you what type you need, how much you need, and how much it's going to cost you. He's backed by *Richard Hill's Design Service*, always ready to work out detailed plans and estimates. Call up the MAXWELD man—at Middlesbrough, London, Birmingham, Manchester, Leeds, Bristol and Glasgow.

Maxweld fabric

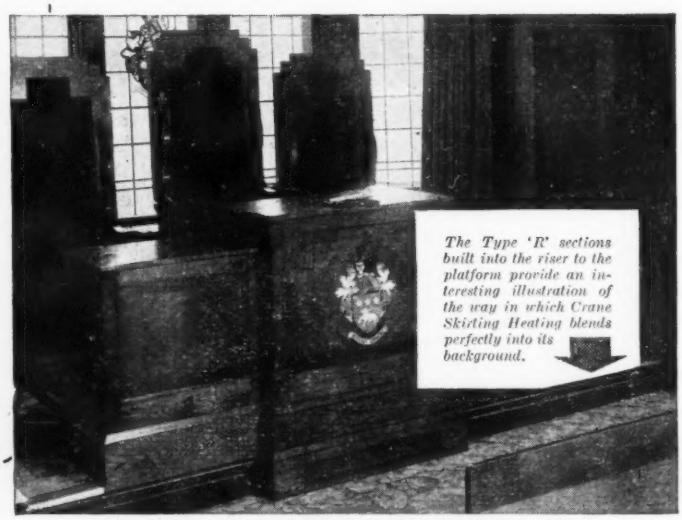
is manufactured by RICHARD HILL LIMITED (Established 1868)
Newport Wire and Rolling Mills, Middlesbrough, Yorkshire. Tel: Middlesbrough 2206

A MEMBER OF THE FIRTH CLEVELAND GROUP

CRC IMX

In the complete re-designing of the Borough of Spenborough's Council Chamber at the Town Hall, Cleckheaton, by the Borough Engineer and Surveyor's Department, it was desirable to have an efficient and concealed system of heating. It is a fine tribute to Crane's reputation that Crane Skirting Heating was chosen for the job. Both Type 'R' (Radiant) and Type 'RC' (Radiant-Convection) were used, together with a number of Crane Concealed Radiators, the complete installation being taken off the boiler plant which serves the Town Hall as a whole. The result is a virtually invisible heating system maintaining an extremely comfortable even temperature throughout the whole Chamber, which has a seating capacity for 80.

Once again, heating by Crane



The Type 'R' sections built into the riser to the platform provide an interesting illustration of the way in which Crane Skirting Heating blends perfectly into its background.

Borough Engineer and Surveyor: J. Wallbank, Esq., M.I.Mun.E., F.R.S.I., M.A.P.L.E.
Heating Engineers: T. H. Rayner & Sons, Ltd., Huddersfield.

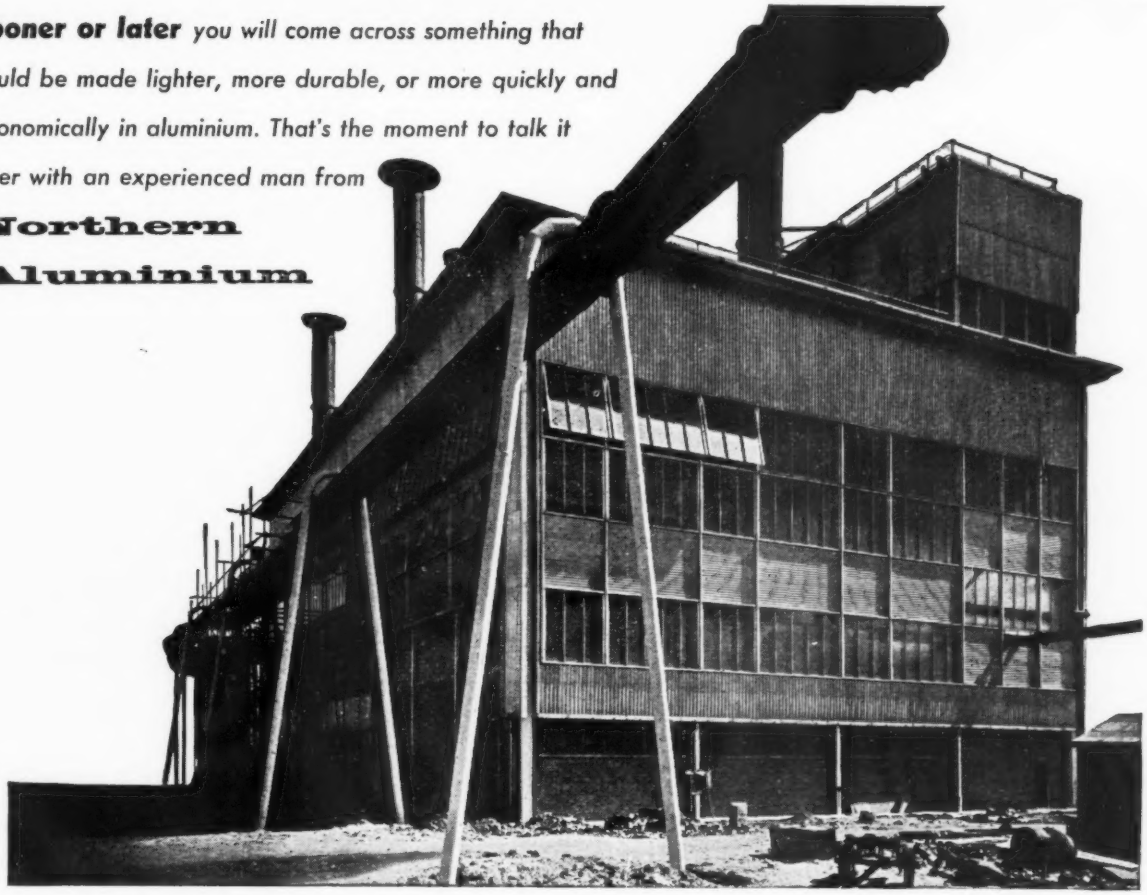
WE ARE EXHIBITING AT THE
Fuel Efficiency Exhibition
NATIONAL HALL
OLYMPIA
LONDON
2-10 OCT. 1956
STAND No. 3 ROW F
GROUND FLOOR

CRANE BOILERS, RADIATORS, VALVES & FITTINGS

CRANE LTD., 15/16 RED LION COURT, FLEET ST., LONDON, E.C.4. Works: IPSWICH. *Branches: Birmingham, Brentford, Bristol, Glasgow, London, Manchester*

Sooner or later *you will come across something that could be made lighter, more durable, or more quickly and economically in aluminium. That's the moment to talk it over with an experienced man from*

Northern Aluminium



Carburetted water gas plant at Aberavon (Wales Gas Board), clad with Noral sheet by John Bland & Co. Ltd., Cardiff. Architects: T. Alwyn Lloyd & Gordon P.P.T.P.I., F./A.R.I.B.A.

Built to last

The choice of Noral 'Industrial' corrugated aluminium sheet for the walls of this plant shows the Gas Industry's increasing appreciation of aluminium as a building material. Noral sheet will stand up to severely corrosive conditions. It costs the minimum in maintenance and will never need painting throughout its long life.

Noral corrugated sheet is light to transport and handle, and cannot crack, rust or burn. It is made in several patterns. For detailed information, send for our free booklets 'Noral Corrugated Sheets' and 'The Durability of Aluminium in Building'.

**Write to our Sales Development Division, Banbury, Oxon.*

ACCREDITED ROOFING AGENTS (*Head Offices*)

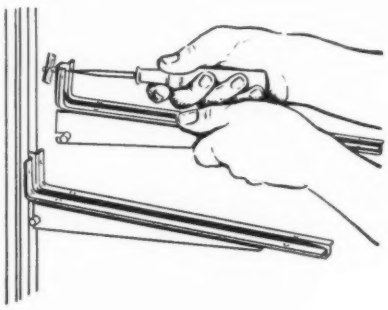
INDUSTRIAL ENGINEERING LTD., MELLIER HOUSE, ALBEMARLE ST., LONDON, W.1.
JOHN BLAND & CO., LTD., EAST MOORS, CARDIFF.
W. H. HEYWOOD & CO. LTD., BAYHALL WORKS, HUDDERSFIELD.
MANCHESTER SLATE CO. LTD., LANCASTER ROAD, DIDSBURY, MANCHESTER, 20.

Northern Aluminium
COMPANY LIMITED

An ALUMINIUM LIMITED Company

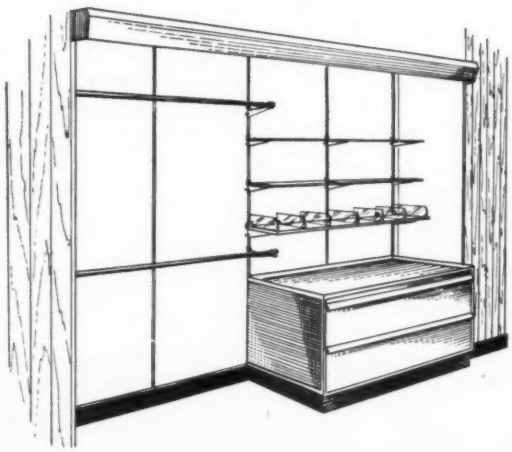
the completely new system of shopfitting

This completely new system of shopfitting takes advantage of all available space, so that many more goods may be displayed, more attractively, in a manner that makes it easy for the customer to SEE, to SELECT, and to BUY.



VIZUSELL is simple to install, and permits rapid change of display to suit changing conditions. It is also remarkably inexpensive.

WHATEVER THE SIZE OF YOUR BUSINESS - VIZUSELL WILL ENLARGE IT

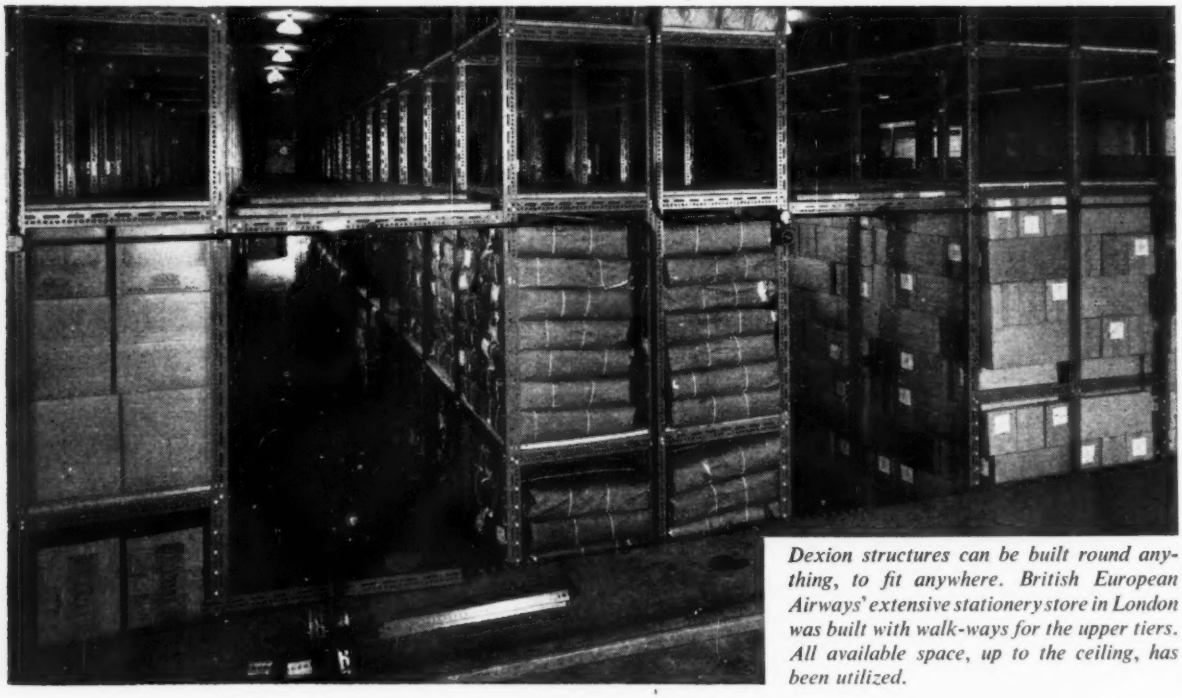


★ *Write or phone for full information*

VERSATILE FITTINGS (W.H.S) LTD.

55 FETTER LANE, LONDON, E.C.4. Phone: Fleet Street 1887

SUBSIDIARY OF W. H. SMITH & SON LIMITED



Dexion structures can be built round anything, to fit anywhere. British European Airways' extensive stationery store in London was built with walk-ways for the upper tiers. All available space, up to the ceiling, has been utilized.

IT PAYS TO THINK OF DEXION
–at the planning stage

A FACTORY LAYOUT must be flexible, capable of being adapted at short notice to changing circumstances. This applies particularly to storage requirements and works equipment.

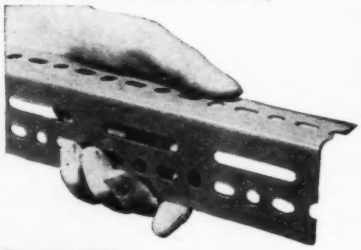
There is no more versatile material for building stores and equipment, exactly to your own designs, than Dexion Slotted Angle. Such Dexion equipment is quick and cheap to install. And any Dexion structure can be readily adapted and altered to meet changing needs. There is no waste, no scrap: Dexion is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

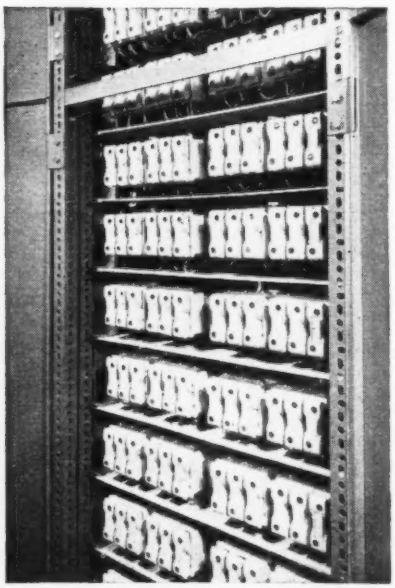
When you are planning the building and layout of a factory, Dexion deserves careful consideration at an early stage. This versatile material may bring about important economies, initially and for years to come.

A technical design and estimating service is available free; and for large installations, construction teams will carry out the work if required.

GET THE FACTS

Dexion 225 is sold in packets of ten 10-ft. lengths, complete with bolts. Steel Dexion (price from 1/3½ to 1/5 per foot) is rust-protected, stove-enamelled. Where a light but strong, non-magnetic, non-corroding material is required, use Alloy Dexion (full technical details and prices on request). Send today for sample piece of Dexion and illustrated booklet BH.143 showing many uses in industry. Dexion Ltd., 65 Maygrove Road, London, N.W.6. (Telephone MAIda Vale 6031-9.)

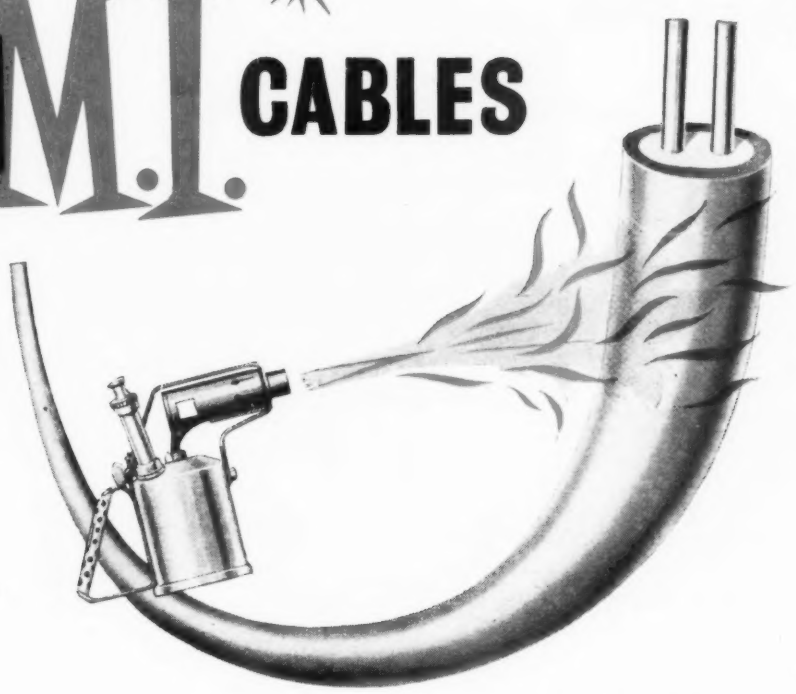




Dexion provides a strong but inexpensive mounting for fuses. In this panel, dividers have been fixed between Dexion cleats. Dexion is suitable as a framework for every type of fuse or switchgear, light or heavy, large or small.

DEXION
REGD.
SLOTTED ANGLE

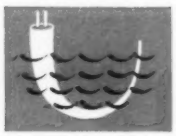
BICC M.I. CABLES



✳ *Mineral Insulated Cables with copper sheaths*

are FIREPROOF

WATERPROOF



MECHANICALLY TOUGH

NON-AGEING

EASILY INSTALLED

Oil-proof, vermin-proof, fatigue and corrosion resistant . . . virtually indestructible.

FOR LIGHTING AND POWER APPLICATIONS WHERE A HIGH SAFETY FACTOR IS ESSENTIAL

BICC M.I. Cables cannot burn, and will operate continuously at 250°C and for a short time up to the melting point of copper . . . no fears of cable breakdown in a fire emergency ; no possibility of causing a fire either. Even when subject to exceptional current overload, the high thermal conductivity of insulant and sheath keeps temperature to a safe minimum.
These cables used in conjunction with appropriate terminations are suitable for operation in flameproof conditions. An obvious choice for garages, refineries, chemical-factories and petrol storage installations—wherever cables of exceptional strength and electrical stability are required.

NEW FEATURES! SIMPLIFIED TERMINATIONS! WIDE RANGE OF SIZES!

New manufacturing techniques developed by the company ensure accurate control of cable size, result in fully annealed copper conductors and enable a consistently high manufacturing standard to be maintained.

BICC M.I. Cables are available for immediate delivery in 250 v. and 660 v. grades with one, two, three, four or seven conductors. Full details, specifications and jointing instructions are available on request.

BRITISH INSULATED CALLENDER'S CABLES LIMITED · 21 BLOOMSBURY STREET, LONDON, W.C.1

Brush off the fear of FIRE!

With OXYLENE BORAM Fire Retardant Coating which raises inflammable surfaces to Class 1 "surface spread of flame" (B.S. 476-1953).

Oxylene Boram can be overpainted or applied to painted surfaces without loss of fire retarding qualities. It gives real fire protection and is approved by Local and Fire Authorities.

Free Technical Service.
Write for particulars.

OXYLENE BORAM

Also Fabric RINSE for Textiles

FIRE RETARDANT COATING

"The one-powder mix"

THE TIMBER FIREPROOFING CO. LTD.,
13a Old Burlington Street, LONDON, W.1.
Tels; GROsvenor 6421/2
Works at:— Market Bosworth, Nuneaton
Queen Elizabeth Avenue, Hillington, Glasgow, S.W.2.

OHB/2376

INSTANT ACCESSIBILITY

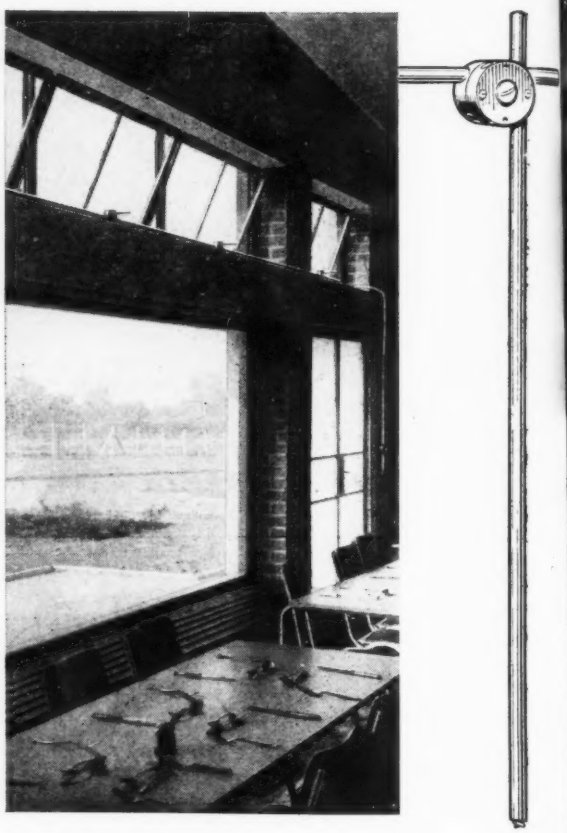


Illustration shows part of the canteen at the Administration and Design Office of W. J. Fraser & Co. Ltd., at Harold Hill, where Teleflex Remote Controls were used for window operation.

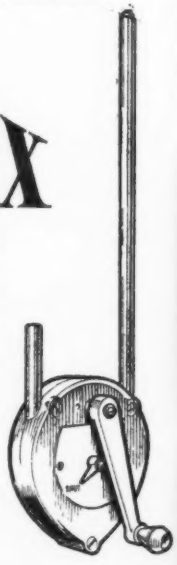
Architects:
Alan W. Pite & Sons, L.R.I.B.A., F.R.I.C.S.
General Contractors:
Messrs. A. E. Symes Ltd.

TELEFLEX

REMOTE CONTROLS

For the quick and trouble-free operation of high windows and ventilators in offices, factories and schools, Teleflex Remote Controls are invariably specified.

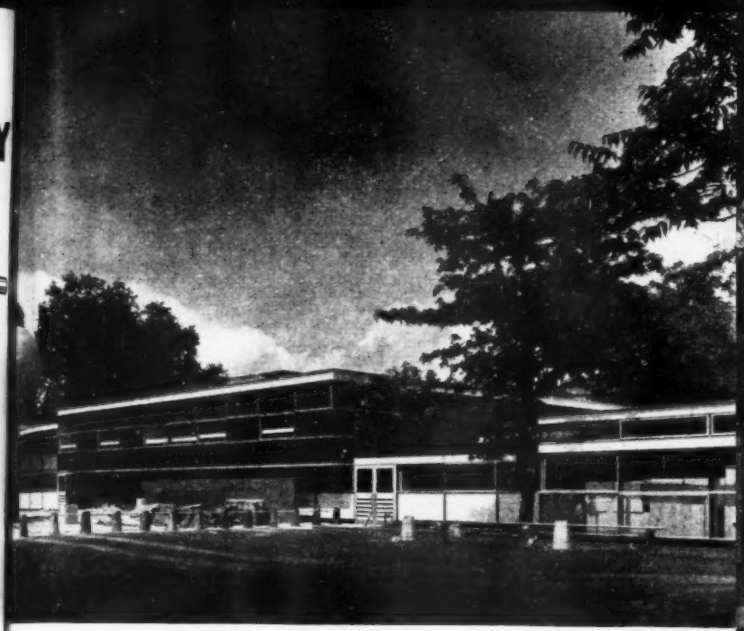
The Teleflex System ensures instant *positive* opening and closing action. Concealed in neat, rigid conduits, it is easily installed, maintenance-free and surprisingly reasonable in cost.



Write today for illustrated Catalogue.

TELEFLEX PRODUCTS LTD.
BASILDON · ESSEX

Telephone : Basildon 22861. Telegrams : Teleflex, Phone, Basildon



OUSFIELD PRIMARY SCHOOL : KENSINGTON

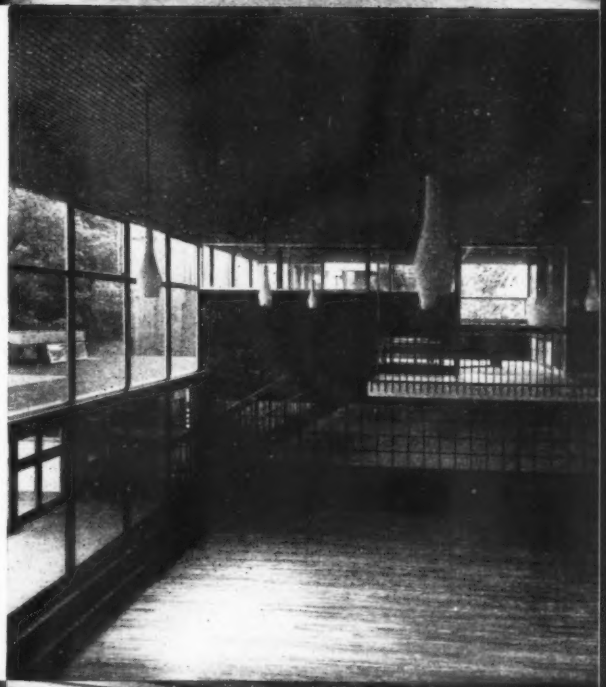
Architects · Chamberlin, Powell & Bon

contractors

W. J. MARSTON

& SON LIMITED

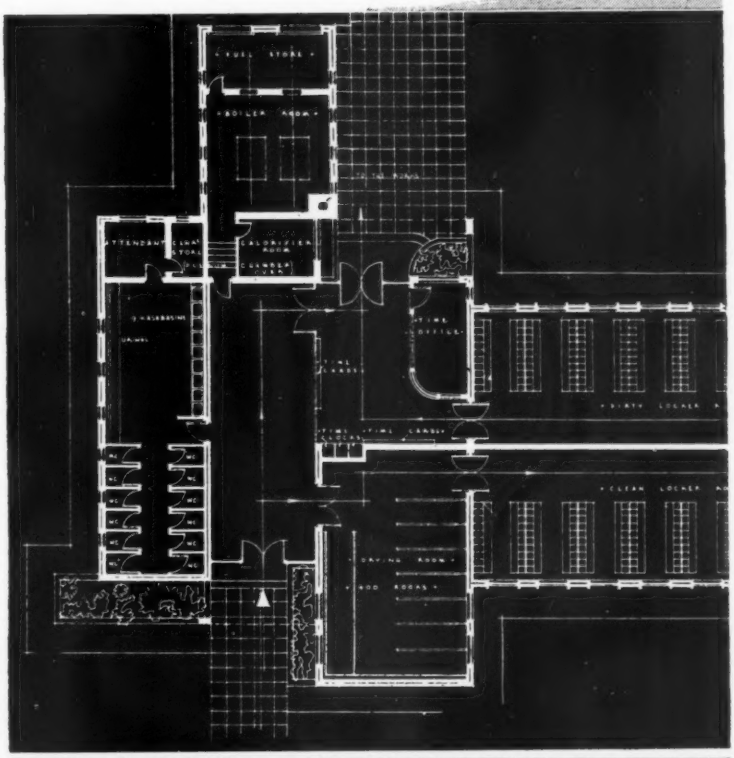
FULHAM · SW6

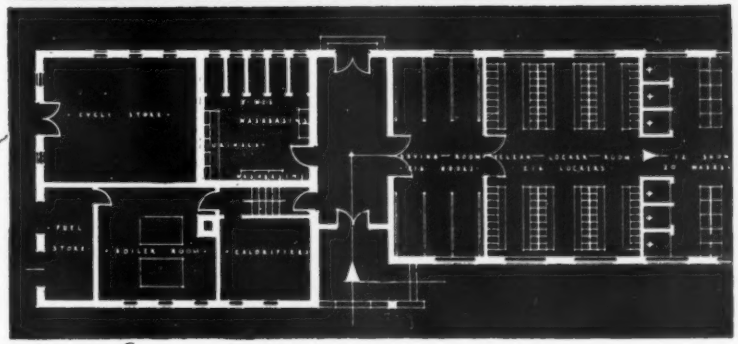


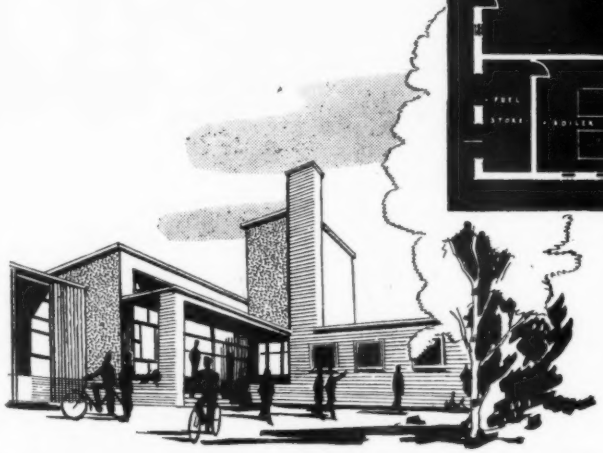
ABLUTION CENTRES

FOR IRON & STEEL FOUNDRIES

At Brightside, we have an intimate knowledge of foundry problems acquired in our own and many other foundries, and our approach to the layout of an Ablution Centre is essentially Practical. We are able to supply useful advice, founded upon many years of experience in the sphere of heating, ventilating and hot water service engineering.
Specimen layouts of washing and locker amenities for different numbers of operatives are available on request and we invite enquiries for any size of Ablution Centre from all who have the design and construction of such facilities in view.







BRIGHTSIDE

THE BRIGHTSIDE HEATING & ENGINEERING CO. LTD. · SHEFFIELD

(A Subsidiary of The Brightside Foundry & Engineering Co. Ltd.)

And at **BELFAST, BIRMINGHAM, BRADFORD, BRISTOL, EDINBURGH, GLASGOW, LIVERPOOL, LONDON, MANCHESTER, NEWCASTLE, PORTSMOUTH**

BP .57

Safeguard Public Health Encourage Personal Hygiene

in FACTORIES · HOSPITALS · CLINICS SCHOOLS · HOTELS AND OFFICES

Investment by British industrialists and others in modern equipment to safeguard the health and welfare of the vast and growing numbers of workers, has proved beyond doubt the wisdom of a policy both far seeing and democratic in concept.

The installation of Sugg's incinerators wherever women employees form part of an organisation is plain commonsense.

Our sales and technical staff will be glad to advise and co-operate.

The Sugg Incinerator

Gas-Fired

WILLIAM SUGG & CO. LIMITED

(Incorporating Cowper Penfold & Co. Ltd.)

VINCENT WORKS, REGENCY ST., LONDON, S.W.1. Tel: VIC 3211

SUGG WESTMINSTER

Reproduced by permission of Josiah Wedgwood & Sons Ltd.

The firm of Josiah Wedgwood & Sons Ltd. was founded in 1759. 'Sherwood', a design produced in the Wedgwood Studios, is on Queenware traditional shapes which were first made by Josiah Wedgwood F.R.S. in the 18th Century.

Products of Integrity

In this age of synthetics and substitutes
the authentic production still commands the
respect and favour of the discriminating.

Specify—

CLAY ROOFING TILES

Issued by the National Federation of Clay Industries, Drayton House, London, W.C.1 — *'The Clay Tile Bulletin', post free on request.*

LEEDS

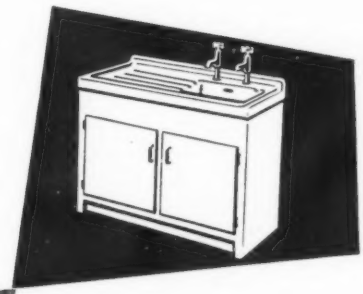
'IMPERIAL PORCELAIN'

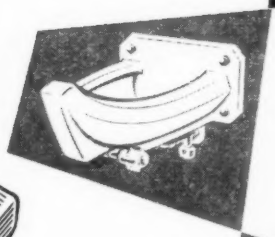
FIRECLAY

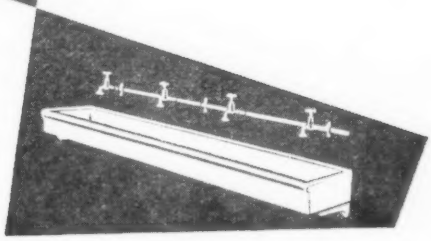
The strength and high resistance to thermal shock of "IMPERIAL PORCELAIN" FIRECLAY SANITARY WARE are a guarantee of long life in service.

"IMPERIAL PORCELAIN" FIRECLAY SANITARY WARE outlasts all other types and proves that the best is cheapest in the long run.

All the resources of England's largest organization manufacturing Fireclay Sanitary Ware stand behind the product.







IMPERIAL L FC PORCELAIN

PRODUCTS OF THE

Leeds Fireclay GROUP OF COMPANIES

WORTLEY, LEEDS 12. Tel. LEEDS 638021

LONDON OFFICE: LEEDS HOUSE, CAVENDISH PLACE, LONDON, W.I. Telephone: LANgham 3511. Telegrams: FIRECLAY WESDO LONDON

Cogent

Scheme for better cooking

Specialist attention, based on the most up-to-date knowledge of all aspects of large scale cooking, is freely available through the Radiation service to architects. All we ask is to be called in at the earliest possible moment, as special equipment may be needed, or unusual arrangements for services, drainage and ventilation required.

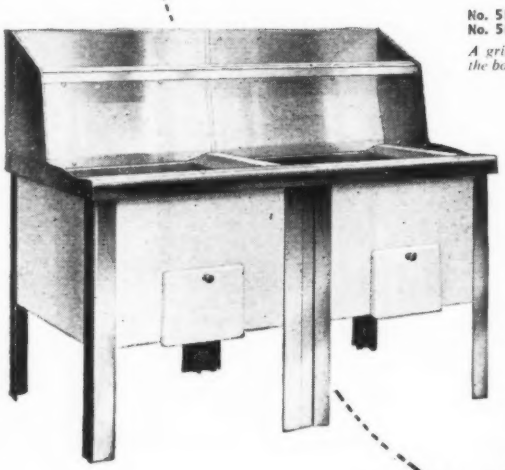
The **STRATFORD RANGE** is designed on the unit principle to permit of wall or central pattern suites being built up to meet requirements.

The oven is **REGULO** controlled; large, medium and small boiling burners are included in the hotplate, and being in vitreous enamel finish, the whole is easy to clean.

The two different Models of the STRATFORD RANGE have these overall dimensions:

	Width	*Height*	*Depth*
No. 5127	27"	36"	31¼"
No. 5136	36"	36"	31¼"

A grill can be supplied instead of some of the boiling burners at a small extra cost.



The **KINGFISHER FRYER** for deep fat frying is constructed on the unit principle and so is easy to install singly or in any number. Units are available with pans 24" or 18" wide. The fat temperature in either model is thermostatically controlled.

Finish includes vitreous enamel and stainless steel.

Please consult us on all large cooking problems

Insist on NEW WORLD PRODUCT OF Radiation Ltd. **appliances**

RADIATION GROUP SALES LTD · LARGE APPARATUS DIVISION · 7 STRATFORD PLACE, LONDON, W.1 · MAYfair 6462

ELLARD

ESTATE

SLIDING DOOR GEAR

The illustration on right shows yet another example of the use of ELLARD "Estate" Sliding Door Gear in the modern dwelling house. See how simple it is to convert a spacious room to one of a cosy and intimate atmosphere. The finger-tip smoothness of door action offers immediate reduction of living space when desired with the additional advantage of fuel economy. Elegant appearance, ease of operation and long service are the main selling features of this attractive ELLARD Door Gear. Excellent design, moderate cost and maximum use of floor space make ELLARD Door Gear the obvious choice for both council estates and private houses.

RADIAL

SLIDING DOOR GEAR

Illustration on left shows ELLARD "Radial" Sliding Door Gear fitted to a private garage. Sliding doors are of great advantage in protecting cars against damage caused by accidental swinging of hinged doors. In addition, valuable working space is offered where it is most desired, at the entrance to the garage. Note also how ELLARD Door Gear provides easy access to and from the garage by a personal entry door. ELLARD "Radial" Sliding Door Gear is low in price and gives long service without maintenance. This gear is also suitable for the larger openings of commercial and industrial garages.

OVERDOR

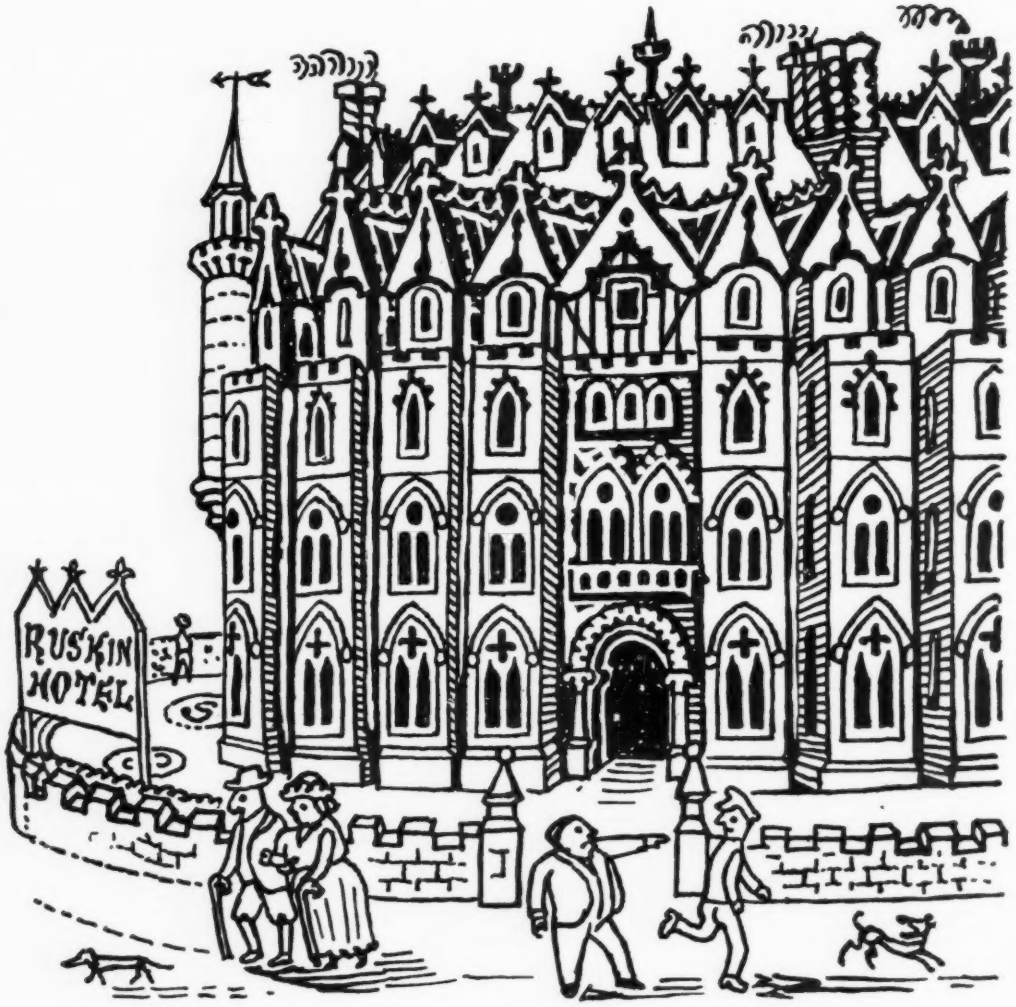
GARAGE DOOR GEAR

ELLARD "Overdor" Gear, illustrated on right, represents the best method of operating an overhead type door, and it requires the minimum space, fixing time and maintenance. An entirely clear threshold is achieved, and both side walls are available for windows or shelves. "Overdor" Gear is designed for doors from 6ft. to 7ft. 3in. high and up to 200 lbs. in weight. The door is safely balanced and can be opened and closed with ease. The width of the door is not critical, but the construction should ensure that the door does not sag when in the raised horizontal position, and we suggest a maximum width of 10ft. The balance springs impose a compression force along the iambs, thus relieving the building of all stress until the door is raised, when less than half the weight of the door is supported by the twin top tracks. ELLARD "Overdor" is therefore especially suitable for lightly constructed buildings.

ANNOUNCEMENT We wish to advise our friends that the name of this Company has recently been changed from Clarke Ellard Engineering Co. Ltd. to ELLARD SLIDING DOOR GEARS LTD. This change of name implies that our entire production is now devoted solely to the manufacture of "ELLARD" SLIDING DOOR GEARS, resulting in even better service to users of these products.

ELLARD SLIDING DOOR GEARS LTD., WORKS ROAD, LETCHWORTH, HERTS. · TEL: 613/4

BMJ.



A passion for the monastic life?

THE Ruskin Hotel was built in the Victorian era. Anxious to provide the right cosmopolitan background for visitors to Little Biddecombe, the architect cleverly incorporated details copied from Chartres Cathedral, Notre Dame and the Chateau of Saint Pancras.

Unfortunately, this passion for the medieval meant that the principal keys were fully fourteen inches long, and the locks, though doubtless proof against erring monks, were no match for modern picklocks.

After the sudden resignation of the night porter, following the loss of Lady Porterhouse's diamonds, the Manager sent for the Man from Chubb. The locks he proposed were inconspicuous but well-nigh impenetrable, and he arranged a simple system of master keys which will make future scandals, to say the least, unlikely.

Leaving nothing to chance, the Manager has also acquired, for his own and his guests' valuables, one of those Chubb safes which no burglar has ever succeeded in opening. There is now no safer place for a holiday than the Ruskin Hotel.

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

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

Greater insulation . . .

greater comfort

Wood floors are notably warm underfoot and help to produce the temperature gradient required for room comfort with maximum fuel economy. After experiments with warm air systems and various floor finishes, the Ministry of Education* has concluded that by using wood flooring 1″ thick the temperature of the floor surface could equal that of the air temperature 6″ above it, whilst synthetic flooring by comparison, produces a floor temperature 2°F lower.

* *See M.O.E. Building Bulletin No. 13 Fuel Consumption in Schools.*

There's nothing like **WOOD** *for floors*

Issued by THE TIMBER DEVELOPMENT ASSOCIATION LTD., 21 COLLEGE HILL, LONDON, E.C.4 and branches throughout the country

IN CONJUNCTION WITH THE HARDWOOD FLOORING MANUFACTURERS ASSOCIATION

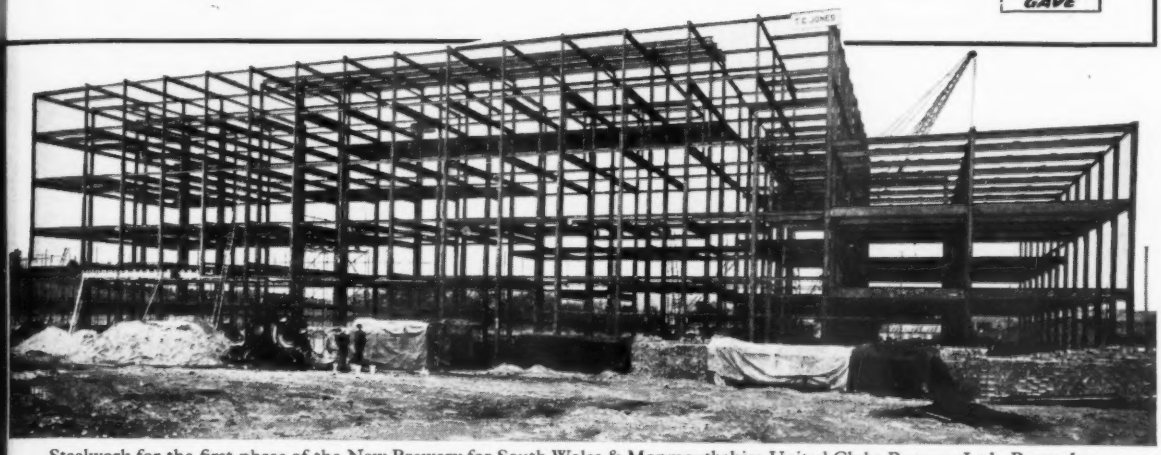
TDA 1016

THE ARCHITECTS' JOURNAL
(Supplement) September 13, 1956

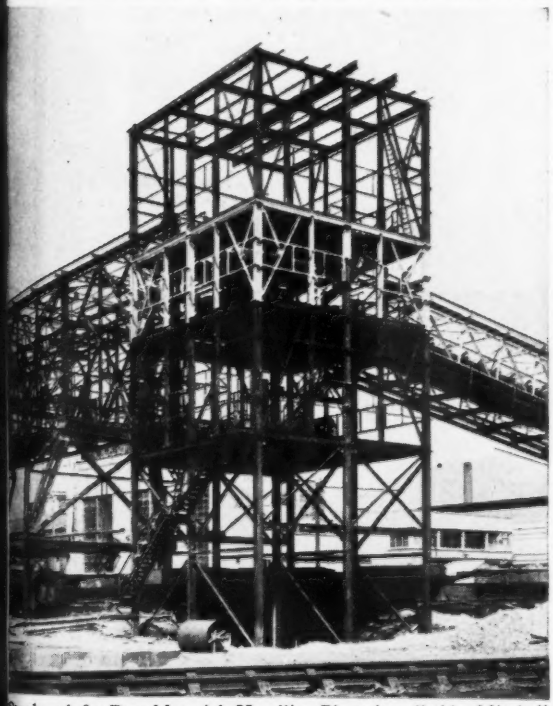
STORY of STEEL

In the Service of Industry

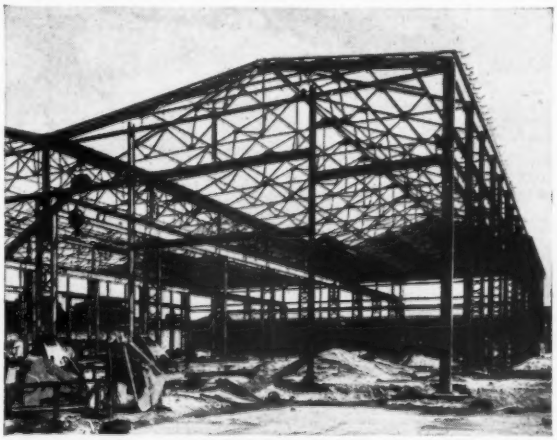
WINGS DAY SEPT. 15th
GIVE FOR THOSE WHO GAVE



Steelwork for the first phase of the New Brewery for South Wales & Monmouthshire United Clubs Brewery Ltd., Pontyclun, Monmouthshire. *Consulting Engineer:* Sidney Culverwell Esq. *General Contractors:* John Morgan (Builders) Ltd.



Steelwork for Raw Materials Handling Plant, installed by Mitchell Engineering Ltd., at the gigantic new Works of the Steel Company of Wales at Margam.



Steelwork for Crane Shop for K & L Steelfounders and Engineers Ltd., Letchworth.

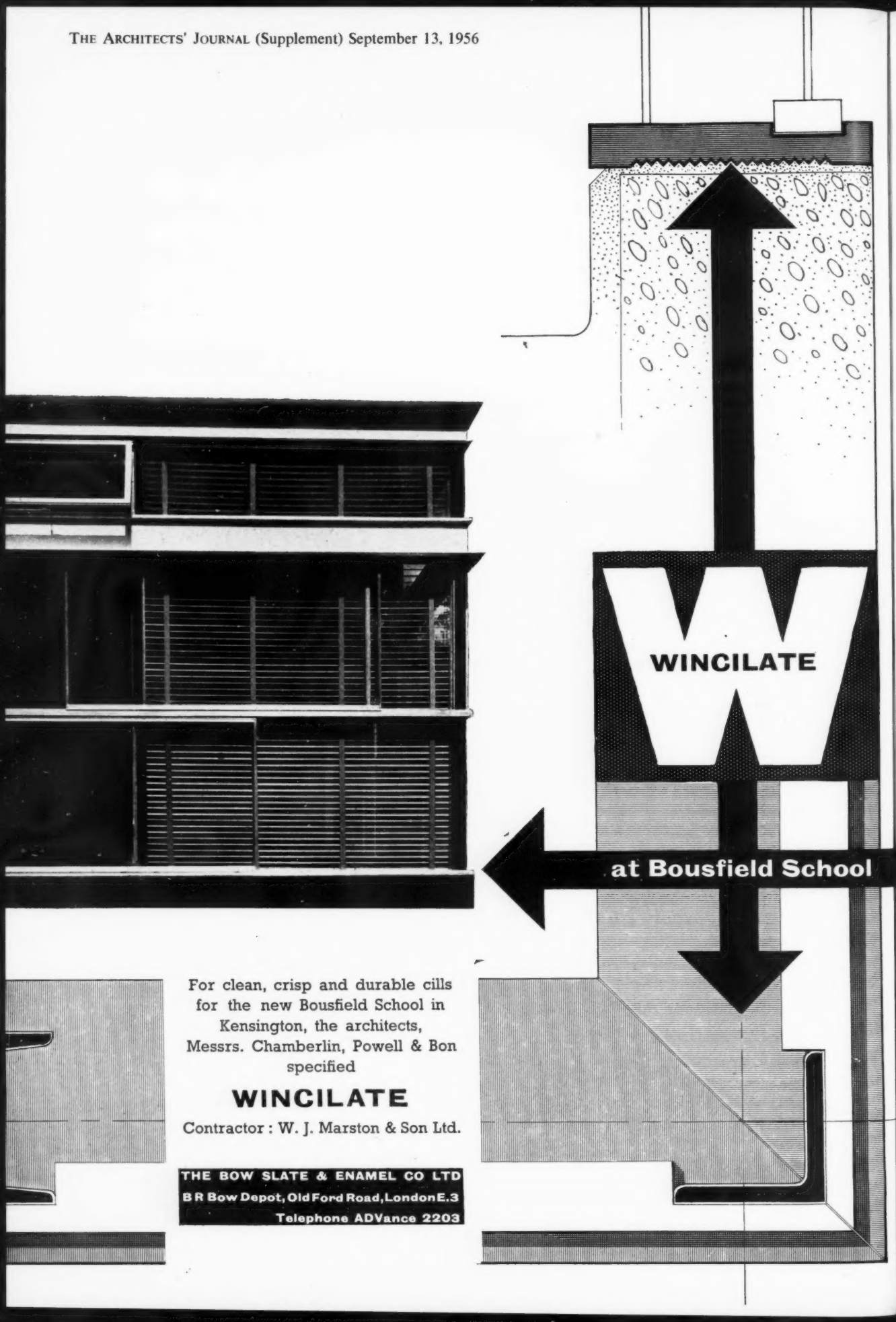
T. C. JONES
AND COMPANY LIMITED

HEAD OFFICE
Wood Lane, London, W.12
Tel: Shepherds Bush 2020

THE 600 GROUP OF COMPANIES

SOUTH WALES OFFICE
Bute Street, Cardiff
Tel: Cardiff 28786

Works: SHEPHERDS BUSH, LONDON. NEASDEN, MIDDX. TREORCHY, GLAM.



For clean, crisp and durable cills for the new Bousfield School in Kensington, the architects, Messrs. Chamberlin, Powell & Bon specified

WINCILATE

Contractor : W. J. Marston & Son Ltd.

THE BOW SLATE & ENAMEL CO LTD
B R Bow Depot, Old Ford Road, London E.3
Telephone ADVance 2203

Made as they have always been made

There is still no other roofing material to rival good hand-made clay tiles for beauty and durability.

TUCKERS

"LOUGHBOROUGH" HAND-MADE

CLAY ROOFING TILES

possess all the distinctive qualities which are exclusive to the genuine hand-made product. Modern equipment ensures more thorough processing of the clay and perfect burning in the kilns, but experience has shown that there is no satisfactory substitute for the skilled hands of the moulder if the life and nature of the material are to be preserved.

Tuckers Tiles are carefully made and rigorously sorted. They have given a good account of themselves for generations, and may be specified with the utmost confidence.

GUARANTEED AGAINST LAMINATION

Available in Red, Mottled Purple, Rustic Brown, Dun and Thatch colours, with Fittings to match. Black and other special shades to order. Size approximately 11" x 7".

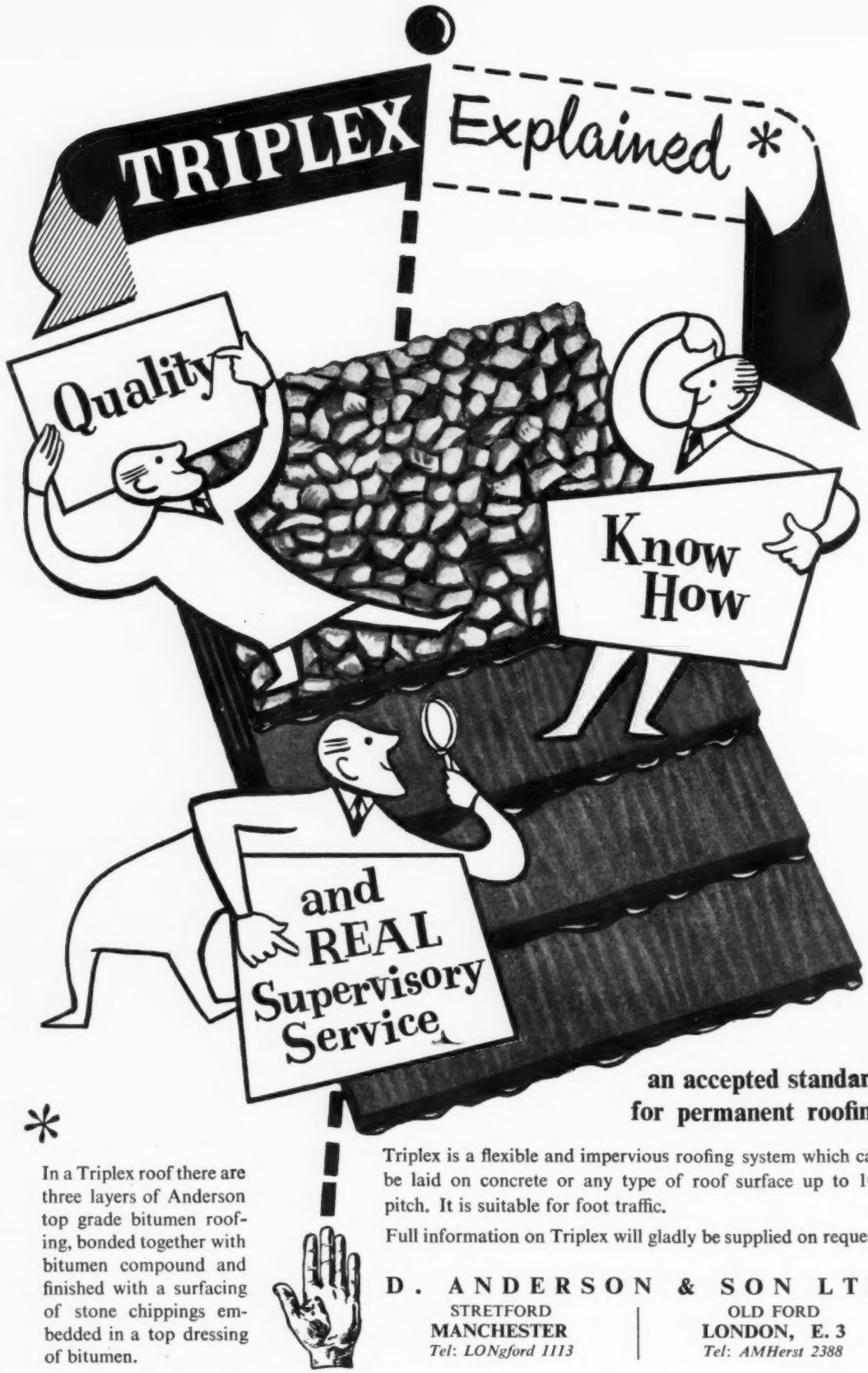
AN ILLUSTRATED BROCHURE showing actual colours, or samples, will gladly be sent upon request.

G. TUCKER & SON LTD.

TUCKERS ROAD, LOUGHBOROUGH, LEICS. Telephone: 2446-7

Also makers of high-class Facing Bricks. *Established in the year* 1850

We have a permanent exhibit at THE BUILDING CENTRE, Store Street, Tottenham Court Road, London, W.C.1.



an accepted standard for permanent roofing

* In a Triplex roof there are three layers of Anderson top grade bitumen roofing, bonded together with bitumen compound and finished with a surfacing of stone chippings embedded in a top dressing of bitumen.

Triplex is a flexible and impervious roofing system which can be laid on concrete or any type of roof surface up to 10° pitch. It is suitable for foot traffic.

Full information on Triplex will gladly be supplied on request.

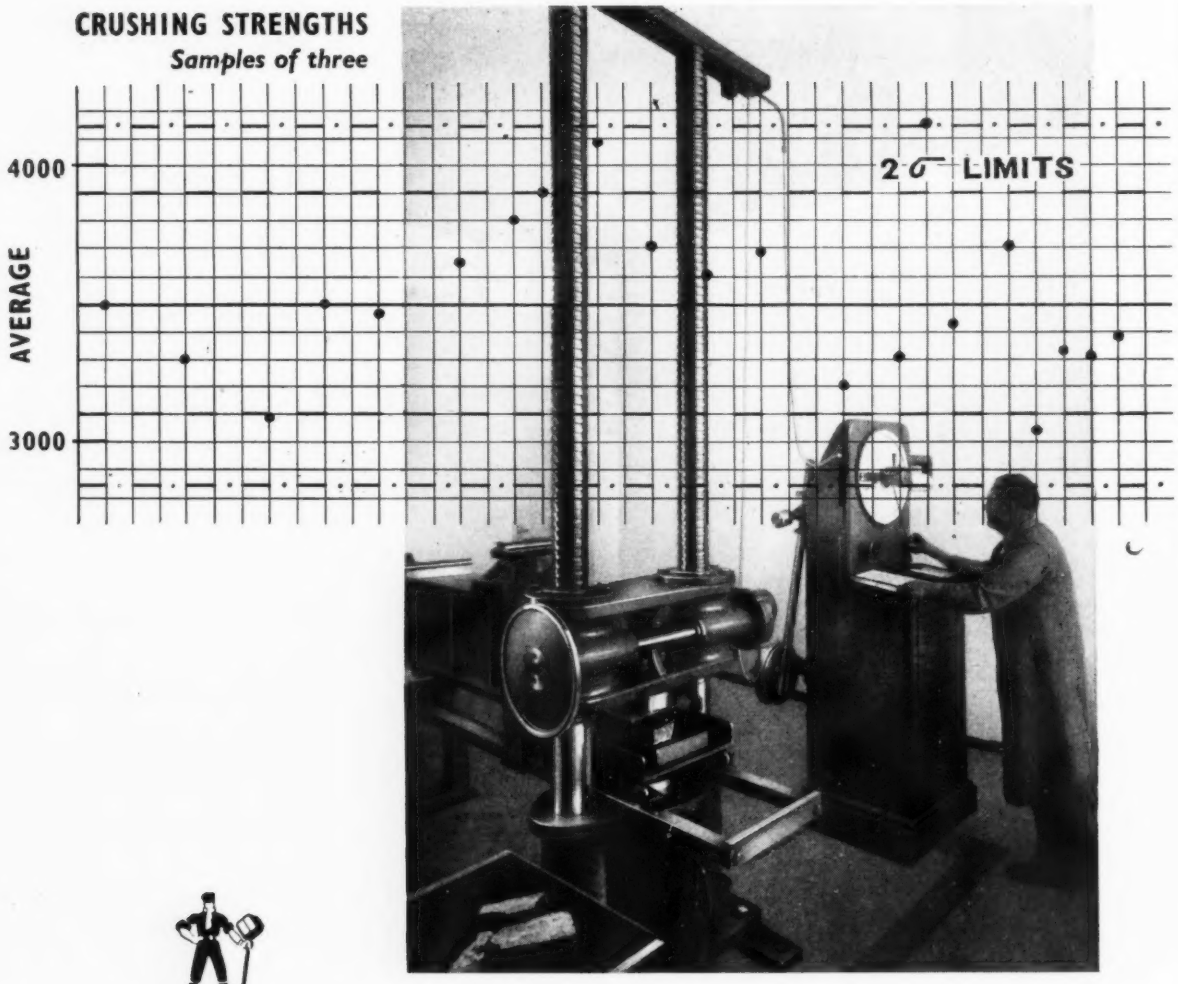
D. ANDERSON & SON LTD

STRETFORD
MANCHESTER
Tel: LONgford 1113

OLD FORD
LONDON, E. 3
Tel: AMHerst 2388

BETWEEN THE PIT AND THE SITE . . . one of the links in the 'Phorpres' service is

. . . QUALITY CONTROL



PHORPRES

WINGS DAY
SEPT. 15th
GIVE FOR THOSE WHO GAVE

Within the laboratories of the Company, random samples of every type of 'Phorpres' product are taken daily for testing to ensure that a high standard of quality is maintained.

Routine crushing strength tests in accordance with the requirements of British Standard 1257: 1945 "Methods of Testing Clay Building Bricks" are carried out on the 200 ton Amsler machine illustrated above. The results of these tests are plotted on quality control charts which show that the average crushing strength of "Phorpres" bricks is likely to lie between 3,000 and 4,000 lbs. per square inch.

LONDON BRICK COMPANY LIMITED in the service of the building industry

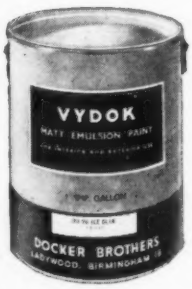
Head Office: Africa House, Kingsway, London, W.C.2. Telephone: HOLborn 8282
Midland District Office: Prudential Buildings, St. Philip's Place, Birmingham 3. Telephone: Central 4141
South-Western District Office: 11, Orchard Street, Bristol 1. Telephone: Bristol 23004/5
Northern District Office: St. Paul's House, 20-22 St. Paul's Street, Leeds. Telephone: Leeds 20771

BY APPOINTMENT TO HER MAJESTY QUEEN ELIZABETH II BRICK MAKERS

LB56

Dockerlux

THE FINEST GLOSS PAINT IN THE WORLD



Vydok

THE PERFECT EMULSION PAINT

Matt or Eggshell

Fillex

DECORATORS' FILLER

Here is a NEW general purpose filling compound, designed specially for the decorator.
FILLEX, which is supplied in ready-for-use paste form, can be used for filling in cracks in plaster and skimming rough surfaces. It is suitable for most surfaces other than wood or metal.

FILLEX

★ is suitable for INSIDE and OUTSIDE work.
★ has exceptional adhesive properties and can even be used on glazed tiles to produce a smooth surface for painting.
★ has excellent keeping qualities (but should be protected from frost).
★ is supplied in 4 lb. and 16 lb. tins.
PRICE: 4 lb. tins at 1s. 6d. per lb. 16 lb. tins at 1s. 3d. per lb.

DOCKER BROTHERS · LADYWOOD · BIRMINGHAM 16

LONDON OFFICE · 17 BERNERS STREET · W.1

Single or Double ?

HILSULATE

Regd. Trade Mark.

DOUBLE GLASS CLEAR PANELS

Light without heat loss—comfort with economy—" HILSULATE " Double Glass Clear Panels are better from every point of view. Their high thermal value (equivalent to 4½" brickwork) enables the modern demand for larger glazing areas to be met without any increased heat loss. As a consequence, less fuel is required and a smaller heating plant, at lower capital cost, maybe sufficient. Comfortable inside temperature can be easily maintained throughout the changing seasons, and condensation is virtually eliminated.

The Panels consist of two panes of clear sheet glass ⅛" apart, continuously sealed along all edges to provide an airtight cavity and fitted with an aluminium surround. They can be supplied in sizes up to a maximum of 80" × 40".

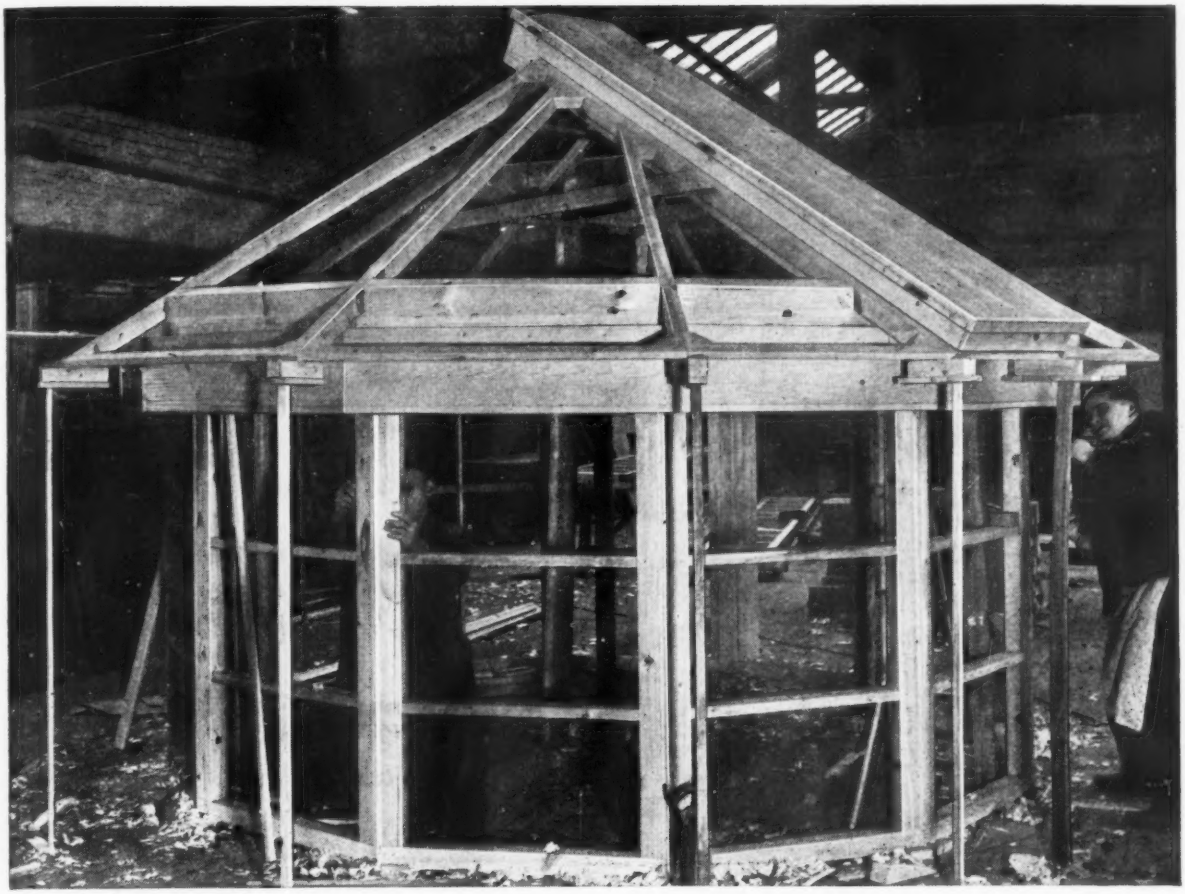
- ✓ *Metal surround protects airtight cavity seal*
- ✓ *Increases daylight without heat loss*
- ✓ *Handled as easily as a single pane of glass*
- ✓ *Can be glazed into any normal window rebate*
- ✓ *Reduces heating costs*
- ✓ *Virtually eliminates condensation*

MANUFACTURED AND SUPPLIED BY

HILLS (WEST BROMWICH) LIMITED

Architects are invited to write for illustrated literature and price list.

ALBION RD., WEST BROMWICH, STAFFS. Tel.: WESt Bromwich 1811 (15 lines). LONDON: CHAPONE PLACE, DEAN ST., W.1. Tel.: GERrard 0526/9.
Branches at Birmingham (Midland 5175), Manchester (Blackfriars 3382), Bristol (24765), Newcastle-on-Tyne (25060), Glasgow (City 5564) and Belfast (26112).



For permanent strength and economy— use 'Aerolite' 300

The telescope housing shown here, is designed for the Quentin Gauge Telescope of the University of Durham. Built entirely of timber, in twelve prefabricated sections, it provides high structural strength from wood of relatively small sections. The only method of connection used is 'Aerolite' 300, a synthetic resin glue which gives a lasting bond of greater strength than the material it joins. This glue is widely recognised in the Building Industry for its many advantages, such as resistance to weathering and to micro-biological attack. Lighter structures of greater strength, the conveniences of prefabricating sections in the joinery shop and the overall economy of this method of construction, have done much to commend the use of timber where heavier materials would otherwise be used.

'Aerolite' 300 synthetic resin glue is available with an extensive range of hardeners. It is unaffected by heat, moisture and bacteriological attack and hardens rapidly at normal shop temperatures. 'Aerolite' can be obtained through all builders' merchants in tins of 2 lbs., 4 lbs., 7 lbs., and in larger quantities if required. Detailed technical information will be gladly sent upon request.

'Aerolite' glues for wood

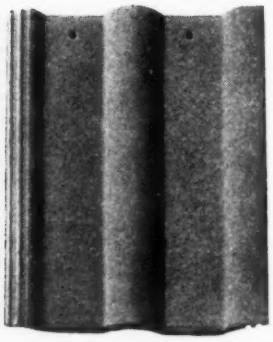
'Aerolite' is a registered trade name

WINGS DAY SEPT. 15th GIVE FOR THOSE WHO GAVE

AERO RESEARCH LIMITED

Duxford, Cambridge. Telephone: Sawston 2121

AP. 264-198



Redland '50'

Redland '50'— roman pattern interlocking tile, for a good-looking roof at a moderate cost. It has the traditional charm of the double roman pattern plus the strength and impermeability of all Redland tiles

Redland tiles

good — for 50 years and more

REDLAND TILES LTD

Moorhouse Nr. Westerham Kent Tel: Westerham 3206/9

A DIVISION OF THE REDLAND HOLDINGS GROUP

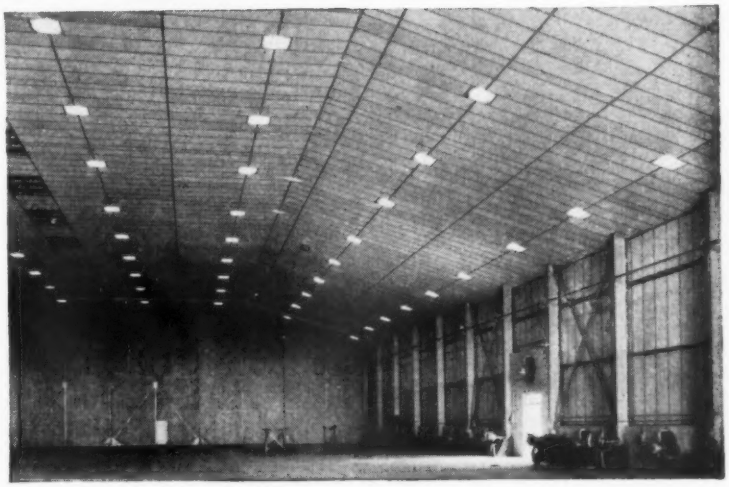
Houses at Potters Bar
Builders: Messrs MacManus

TenTesT 'Rabbit Warren' Acoustic Board on the ceilings, and veneered Sapele Mahogany Acoustic Panels on the walls of the London University Students' Union.

Architects:
Messrs. Adams, Holden & Pearson.

½in. Insulating Board ceiling lining and over-purlin wall lining carried out by TenTesT in a Paint Shop for Messrs. Handley Page Ltd.

Architect:
A. E. Cresswell, Esq., A.R.I.B.A., Handley Page Architects' Dept.



SUPPLIERS OF:—

TENTEST TRADE MARK

INSULATING BOARD

Made in Canada

STANDARD AND PRIME COATED

FINNBOARD

A product of the Enso-Gutzeit Organisation, Finland.

STANDARD AND IVORY FACED

'RABBIT' WARREN ACOUSTIC PANELS

ACOUSTIC PERFECTILES

SUPER 'HORNITEX' PLASTIC FACED HARDBOARD

All types Thermal and Acoustical Insulation fixed by

TENTEST FIBRE BOARD CO. LTD.,

Fiboard House, Oakleigh Gardens, Whetstone, London, N.20.

Phone: HILIside 8801 (7 lines)

Telegrams: Fiboard, Norphone, London.

View of part of The Benjamin Works, Tottenham.

AN ILLUMINATING* ADDRESS

*Our vast range of tungsten and fluorescent fittings supplies a practical solution to most lighting problems.

And for matters that need talking over first, the Benjamin Illuminating Engineering Service — backed by years of valuable experience—provides top-flight advice and recommendations.

These are just two good reasons why you should bring your problems to Benjamin . . . the home of good lighting.

BETTER LIGHTING BY BENJAMIN REGD.

THE BENJAMIN ELECTRIC LTD · TOTTENHAM · LONDON N·17

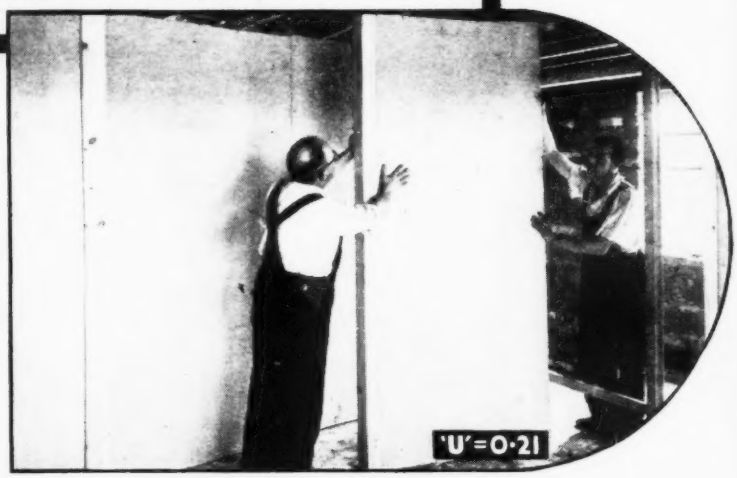
Telephone: TOTtenham 5252 (5 lines). Cables: "Benjalect, Southtot, London"

Birmingham: 5 Corporation St Birmingham 2. Tel: MIDland 5197
Leeds: 49 Basinghall St. Leeds 1. Tel: Leeds 25579

Smee's 56

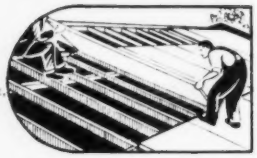
PARTITIONING

Glazed or unglazed; permanent or temporary

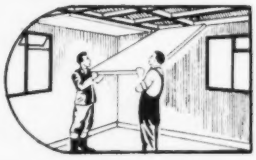


ROOF-DECKING

Under Sheet-metal (Traditional or Patent), Asbestos, Bituminous Felt, etc.



CEILINGS



WALL-LININGS

STRAMIT

— THE TWO-INCH THICK

BUILDING SLABS

— the low-cost dry-construction material, which combines great strength and rigidity with exceptionally good values of thermal insulation, sound absorption and fire resistance

*

THOUSANDS OF TONS ARE USED ANNUALLY IN THE CONSTRUCTION OF FACTORIES, HOSPITALS, SCHOOLS, OFFICES, FLATS AND HOUSES, THROUGHOUT THE COUNTRY

*

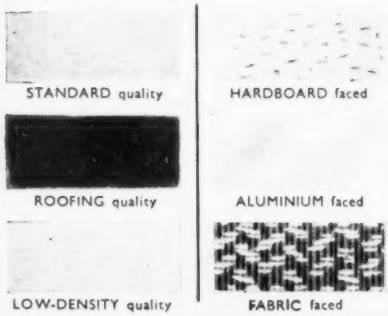
STOCK SIZES:
4 ft. wide x 8, 9, 10 & 12 ft. long

SPECIAL SIZES *(made to order)*:
Any width, of 4 ft. or less, and any length, greater or less than 12 ft.

NOW AVAILABLE IN

3 QUALITIES AND 3 FINISHES

— supplied through leading merchants



For latest details technical data & B.R.S. Reports

FILL IN COUPON AND POST NOW

Please send details of NEW range of STRAMIT Building Slabs:

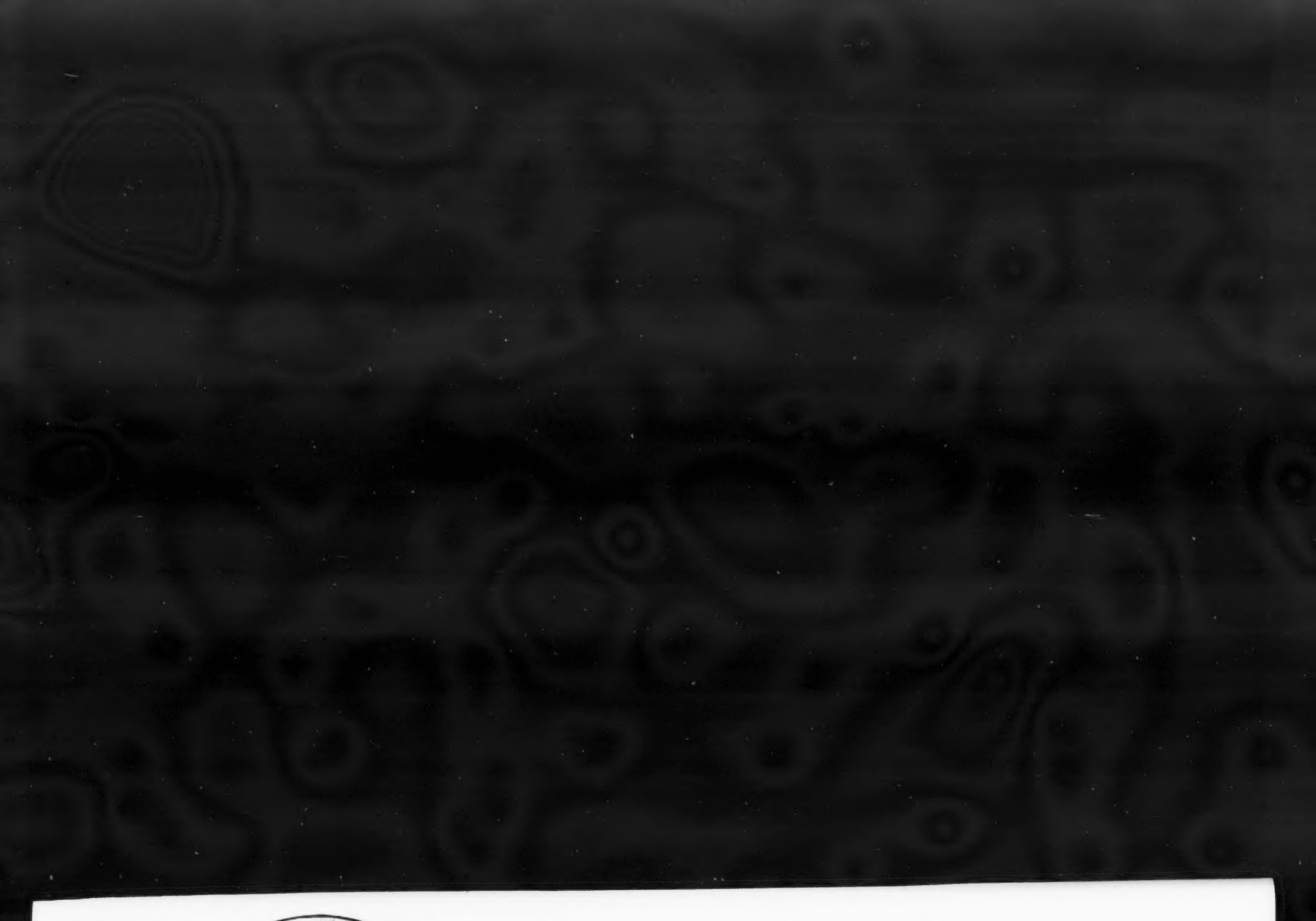
Name of firm.....

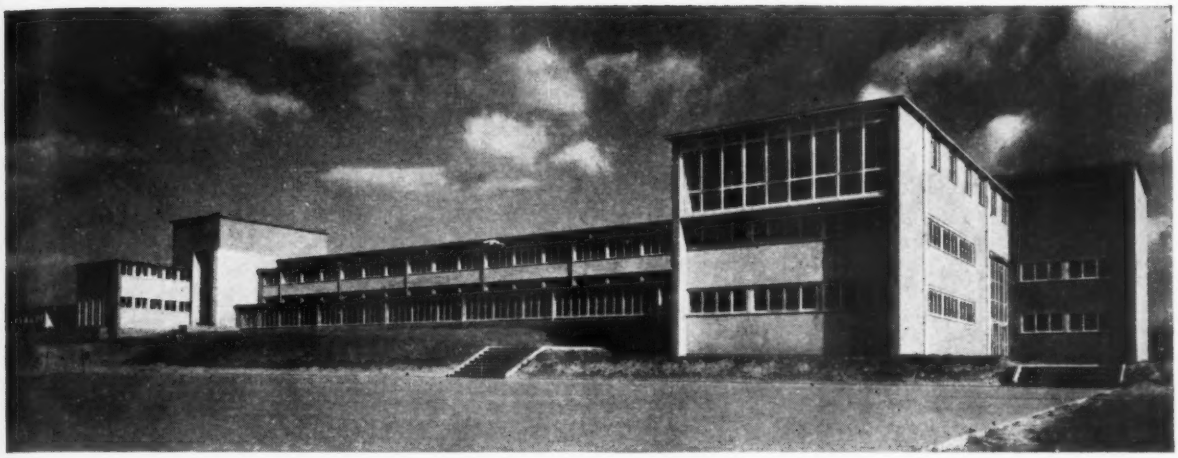
Address.....

.....

For the attention of.....*Status*.....

STRAMIT BOARDS LTD. COWLEY PEACHEY, UXBRIDGE, MIDDLESEX
A.J. *Phone:* **West Drayton 3021**





Murray Primary School, East Kilbride

Architects:— East Kilbride Development Corporation
Contractors:— M. McKenzie Ltd.

Braby metal windows

Braby manufacture a wide range of metal windows and doors in steel, aluminium and bronze, designed to meet most architectural requirements or supplied to specification. The illustrations show some recent Braby contracts where our hot-dip galvanized steel windows and Wallstruct aluminium windows were used.

W.D. & H.O. Wills Tobacco Factory, Glasgow

Designed and erected under the direction of The Chief Engineer of The Imperial Tobacco Company (of Gt. Britain and Ireland), Ltd.
Contractors:— Thaw & Campbell Ltd.

Renfrew Air Terminal

Architects:— Rowland Anderson, Kininmouth & Paul
Contractors:— A. A. Stuart & Co. Ltd.

ONE OF THE WIDE RANGE OF
BRABY
PRODUCTS

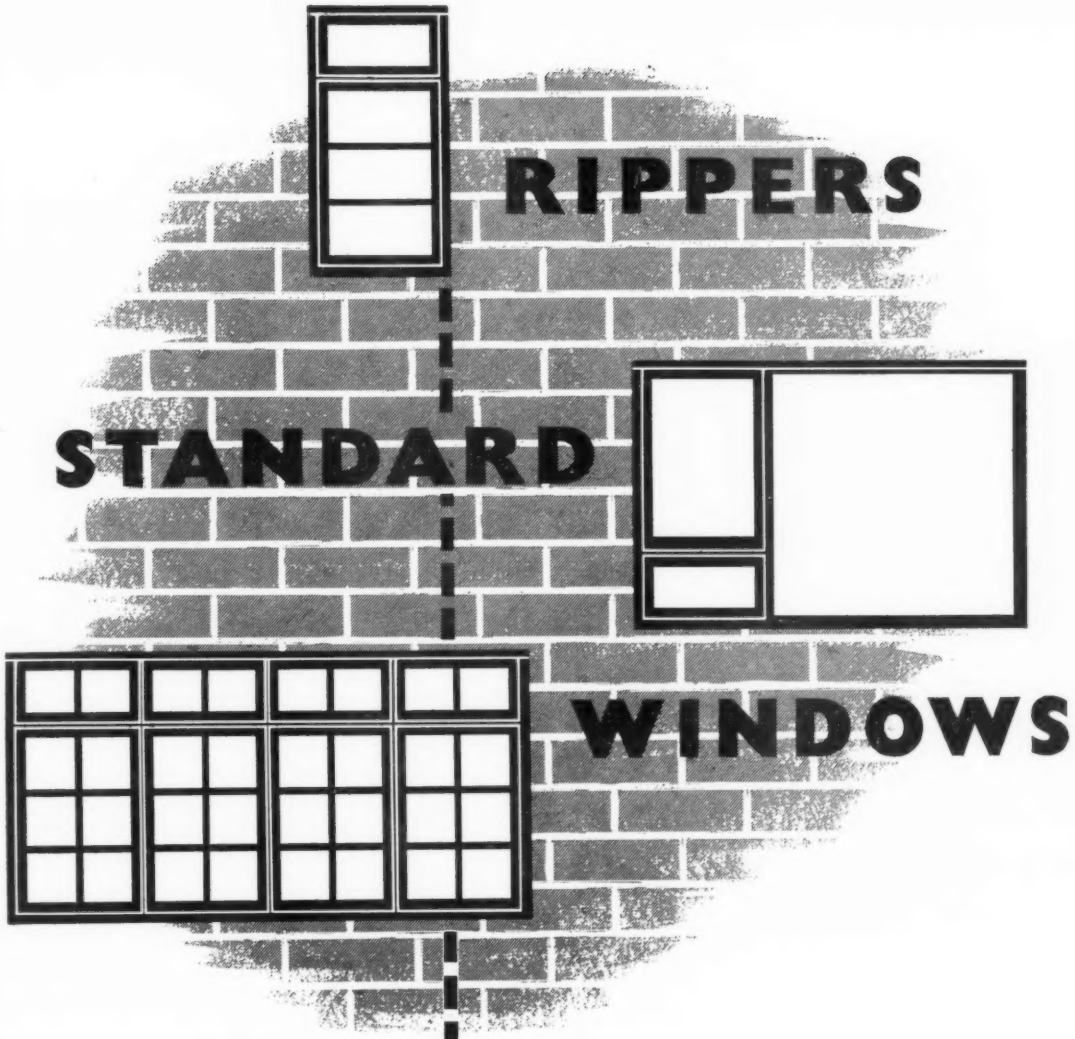
FREDERICK BRABY & COMPANY LIMITED

ECLIPSE WORKS, PETERSHILL ROAD, GLASGOW, N. TELEPHONE: SPRINGBURN 5151

OTHER FACTORIES AT: London Works, Thames Road, Crayford, Kent. TELEPHONE: Bexleyheath 7777
Havelock Works, Aintree, Liverpool, 10. TELEPHONE: Aintree 1721
Ashton Gate Works, Bristol, 3. TELEPHONE: Bristol 64041. And Falkirk

OTHER OFFICES: 352-364 Euston Road, London, N.W.1 (Head Office). TELEPHONE: EUSton 3456
110 Cannon Street, London, E.C.4 (Export). TELEPHONE: MANsion House 6034
Queen's Buildings, 10 Royal Avenue, Belfast. TELEPHONE: 26509
Palace Street, Plymouth. TELEPHONE: 62261

AP266-245



'the best in the business'

When you order windows, external door frames, internal door frames or kitchen units, make sure you buy Rippers—the finest standard joinery obtainable. Over sixty years experience is behind Rippers quality—'the best in the business'. ***Write today for our free Catalogue: it describes over three hundred designs from which endless window combinations can be arranged: and includes descriptions of all our products.***

Apply for your free catalogue to Dept. AJ13/9.

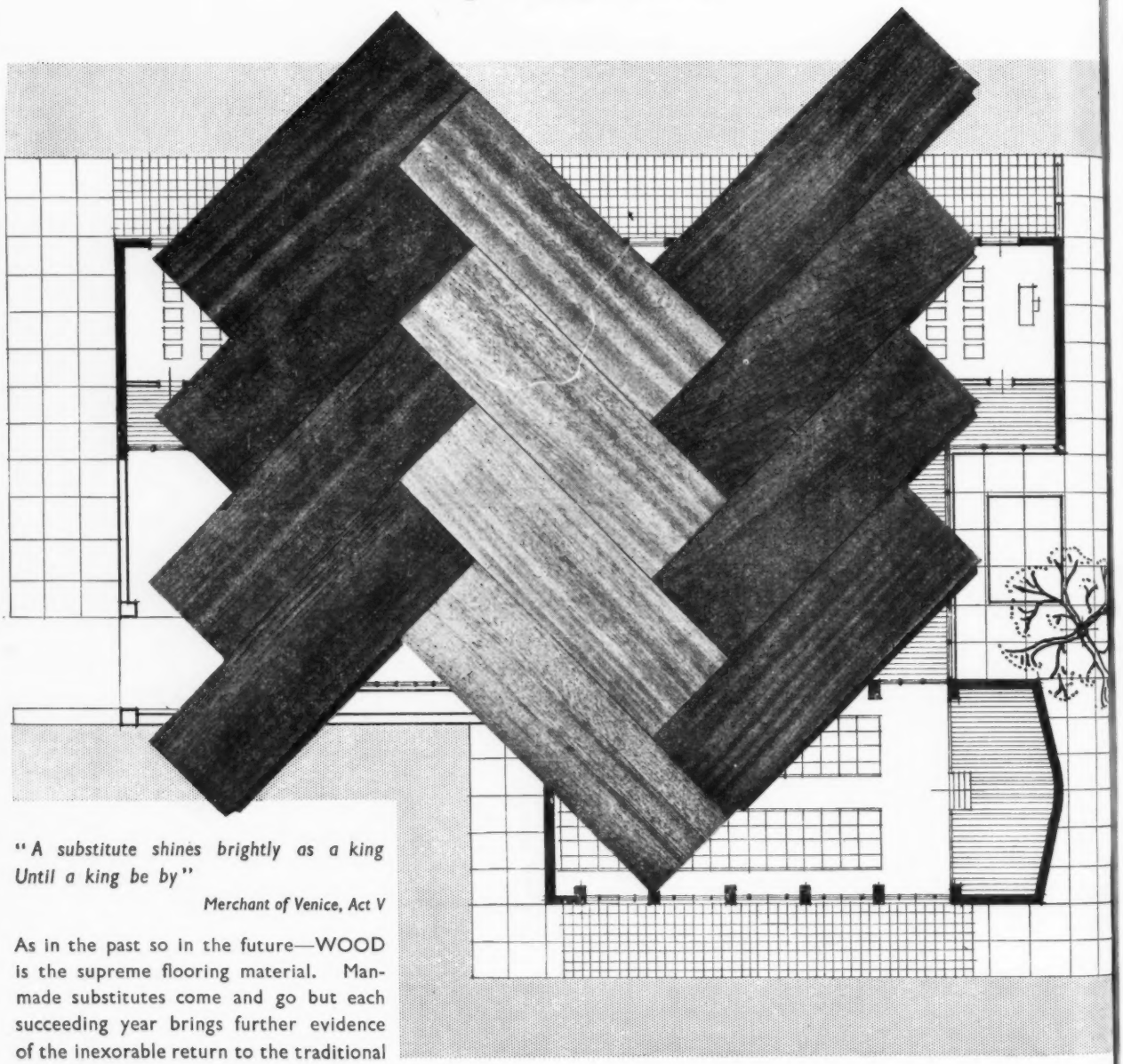
RIPPER WOODWORK

RIPPERS LIMITED

CASTLE HEDINGHAM, HALSTEAD, ESSEX.
TELEPHONE: NO. 191 HEDINGHAM (4 LINES)
TELEGRAMS: RIPPERS CASTLE HEDINGHAM.

LONDON OFFICE: 9 SOUTHAMPTON PLACE, LONDON, W.C.I. TELEPHONE: CHANCERY 8306/7

FLOORS for the future . . . by HOLLIS



"A substitute shines brightly as a king Until a king be by"

Merchant of Venice, Act V

As in the past so in the future—WOOD is the supreme flooring material. Man-made substitutes come and go but each succeeding year brings further evidence of the inexorable return to the traditional HARDWOOD for floors. Many excellent hardwoods are now available at moderate cost which combine BEAUTY, DURABILITY and COMFORT with ECONOMY.

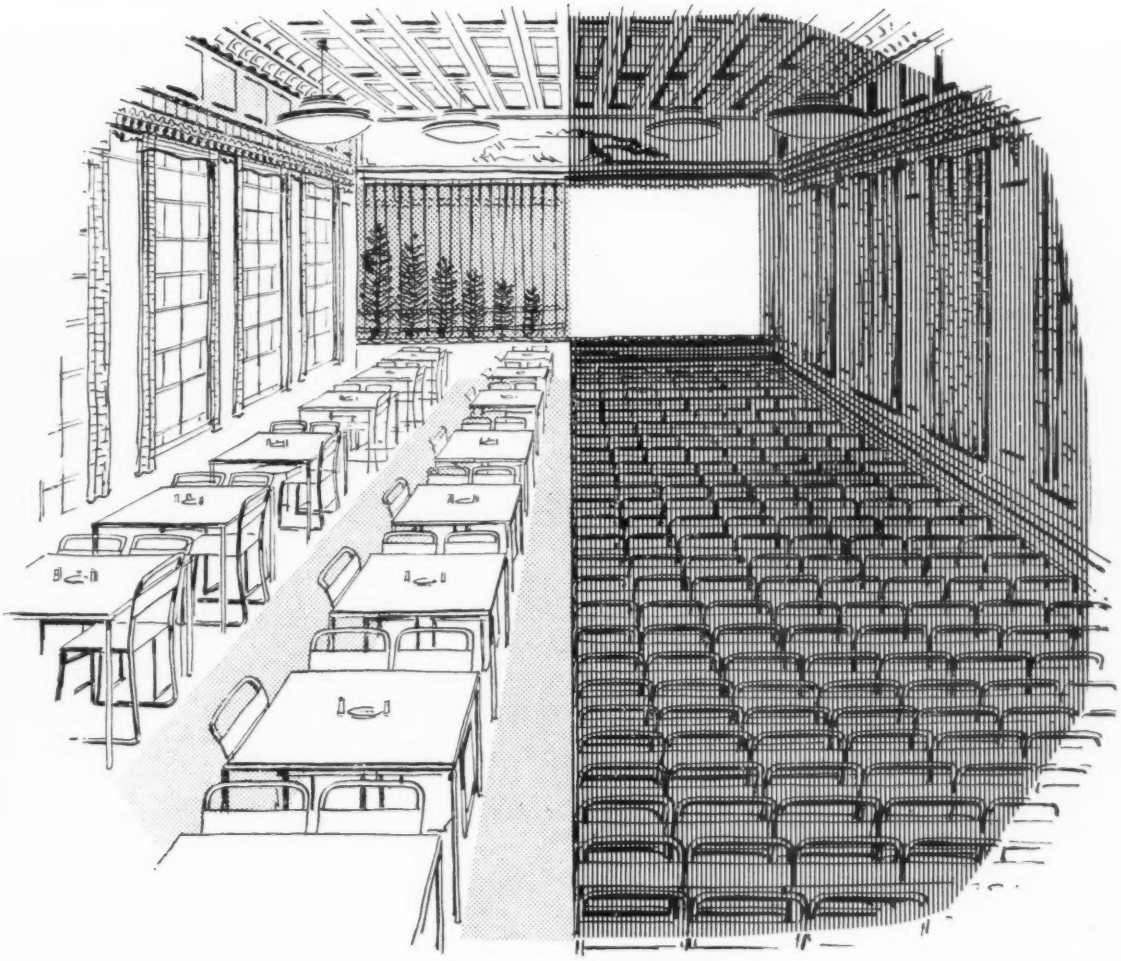
SPECIFY—**MADE IN ENGLAND**

to ensure precision in manufacture, controlled moisture content and stability of the floor.

HOLLIS BROS. LTD.

LEICESTER · **HULL** · **LONDON** · BIRMINGHAM

Canteen *to* Concert Hall



in 15 minutes...

The scientific design of Kingfisher nesting furniture makes this conversion a very simple operation. Tables and chairs can be compactly stacked quickly and easily when canteens are required for other social activities. Nesting furniture by Kingfisher is available in wood or steel. It will last and look good for years to come. Send for details on your particular application and let Kingfisher help.

Kingfisher *Nesting Furniture*

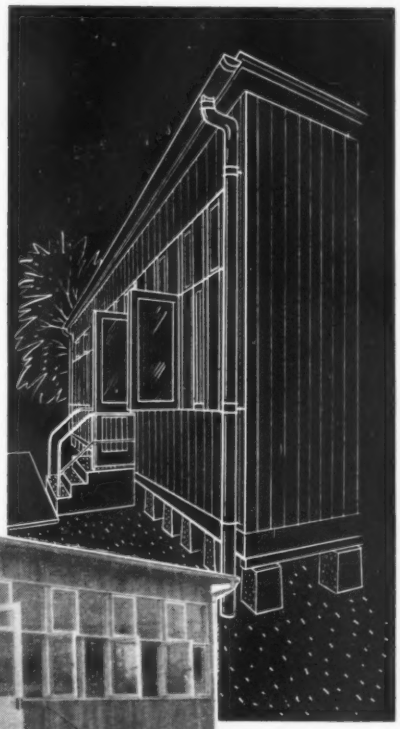
CATALOGUE ON REQUEST TO:

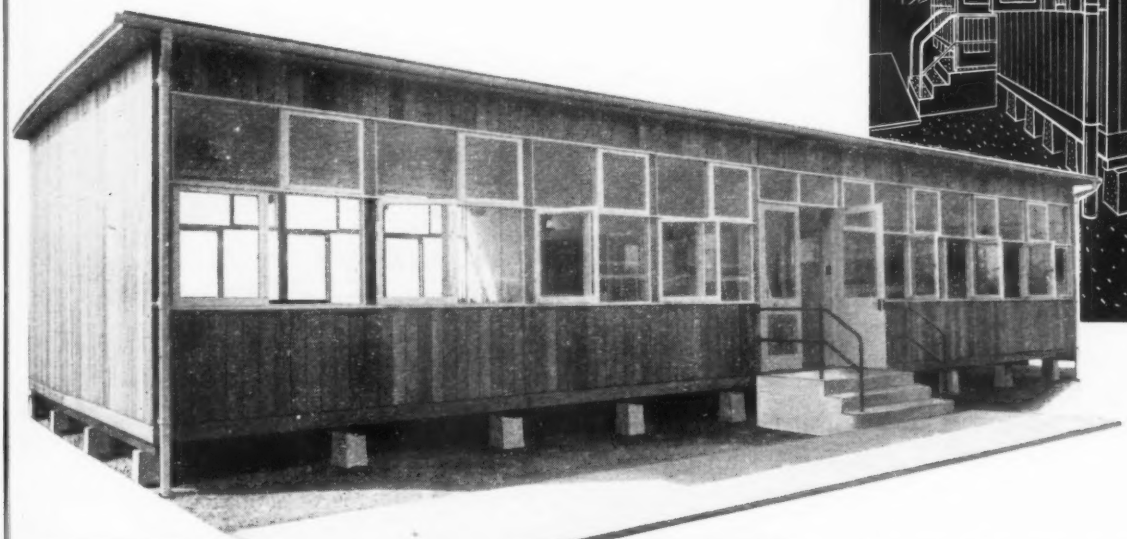
KINGFISHER LTD. · CHARLES STREET AND PHOENIX STREET · WEST BROMWICH · STAFFS.

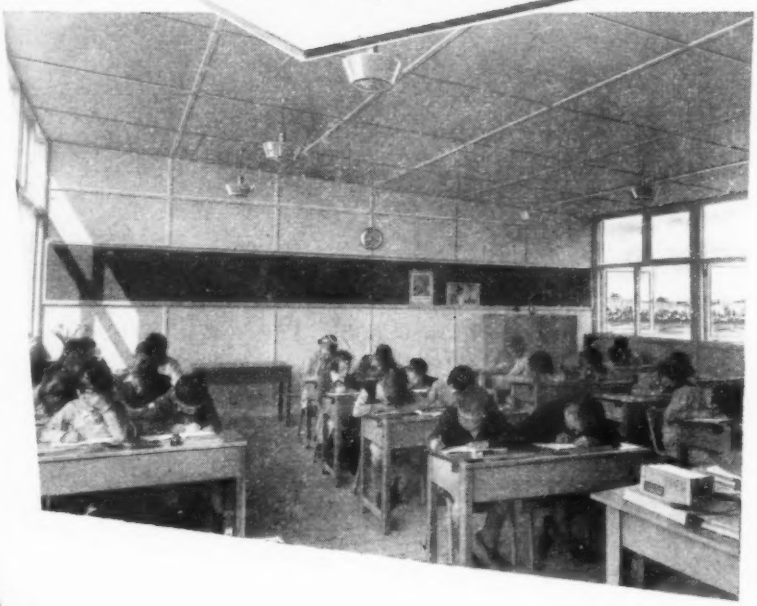
Telephone: Tipton 1631. Telegrams: Kingfisher, Phone, West Bromwich. London: 139 Knightsbridge, S.W.1. Telephone: Kensington 1331

TIMBER GOES TO School

Hip, hip, Hoorah . . . There are one . . . two . . . three . . . four and now Johnny's not having to sit on the floor or Joan halfway through the door.







One, two, three, four—or as many bright, exciting, new classrooms as the situation demands when timber goes to school the **Scotney** way. Timber *has* been to school before, but never in this ingeniously, thoughtful, helpful way as it does today —**UNDER SCOTNEY DESIGN.**

The **Scotney** way is to use timber to provide *SPEEDILY* extra classrooms when and where they are needed, as permanent fixtures or to be moved to other schools.

Dignity, beauty and modern layouts are made possible by **Scotney's** ingenious use of timber in connection with other modern materials. Not only for pleasant well lighted classrooms, but for accommodation in factories, offices, shops and stores. All these buildings get top marks for efficiency and economy, so three cheers for the **Scotney** method for giving us bright new classrooms !

TOM M. SCOTNEY LTD.

(Building Division.)

Designers, builders and craftsmen in Timber and Modern materials

YOU *ARE INVITED to use the facilities offered by our Special Advisory Department for imaginative timber construction, in conjunction with modern materials.*

TOM M. SCOTNEY LTD., DEPT. AJS 50, SAINT IVES, HUNTS. *Tel: St. Ives 3168 (3 lines)*

NEPENTHES—Pitcher Plant. Evergreen perennials. Insectivorous. These plants are aptly named Pitcher Plants, as they have oblong or lance shaped leaves terminating with hollow, cup-like vessels provided with a cap, and containing water. Insects, attracted by the nectar near the rim of the pitcher, wander with fatal ease into the cup, from which there is no escape.

anticipation

In nature the ability to anticipate a future event may mean survival. Anticipation, however, largely depends on previous experience and this the Pitcher plant cruelly denies its unsuspecting victims, who are immediately trapped, should they make the fatal mistake of entering the inviting cup at the end of its leaves.

In industry previous experience and anticipation of the future is also vital. Anticipation of future needs presents a particular problem in the planning of internal layouts for industrial buildings; the allocation of space for individual offices and departments can only be ideal while needs remain unchanged. But business requirements do inevitably change, which means re-allocation of working space, if maximum efficiency is to be maintained.

Conventional walls make re-arrangement a costly and inconvenient affair. The complete answer to this problem lies in the use of pre-fabricated movable walls which can be quickly erected, dismantled and re-erected to any required plan.

Rowe Bros. are specialists in this field of prefabricated movable walls, which in appearance are most attractive and incorporate doors and other accessories. Every assistance is given to Architects who wish to advise their clients on the advantages of movable walls. Full details are available on request.

Rowe MOVABLE WALLS

Illustrated catalogue available on request

ROWE BROS. & COMPANY LTD.
PALL MALL LIVERPOOL, 3 CENTRAL 5401

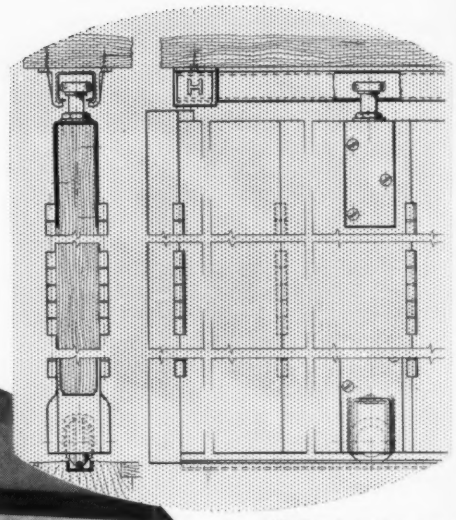
Also at Birmingham, Blackpool, Bristol, Bridgend,
Exeter, Glasgow, London and Vancouver and Toronto, Canada.
Factory at Kirkby, Nr. Liverpool.

A Product of the Rowe Manufacturing Division.

'COLLEGE'
FOLDING PARTITION GEAR

For either *End*-fold or *Centre*-fold leaves
Weight on floor

'College' Rollers for medium weight screens up to 10ft. high Max. weight per leaf 100 lb.
'College' Heavy Dury Rollers for screens up to 15 ft. high, leaves weighing 130 lb. Ball bearing precision mountings, neat B.M.A. finish, quiet in action. Floor Rail can be walked or danced over. Top Guide Channel has safety lips. Simple to understand and fit.
Drawing Office Trained Technical Representatives wait upon Architects anywhere and will if required visit the builder on site. First-class joinery and economy in fixing is within the scope of any competent joinery shop.

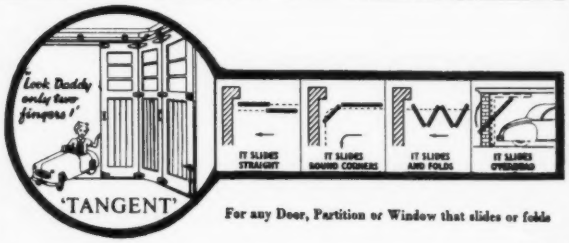


Matthew Arnold School, Staines
Architect:
Middlesex County Architect.
Contractors:
W. S. Try Ltd.

Send for list 955
Catalogue 55
(184 pages) is also
available.

Henderson SLIDING DOOR GEAR

P. C. HENDERSON LTD
HAROLD HILL, ROMFORD, ESSEX
Telephone: INGrebourne 4444



For any Door, Partition or Window that slides or folds

205/H95

k

sp

Catal

sent

SCO

LARI

Bissel

lies)

Plac

AJ

THE ARCHITECTS' JOURNAL

No. 3211 Vol. 124 September 13, 1956

9-13 Queen Anne's Gate, London, S.W.1 Tel. WHI 0611

Subscription rates: by post in the U.K. or abroad. £2 10s. 0d. per annum. Single copies, 1s.; post free 1s. 3d. Special numbers are included in Subscriptions; single copies, 2s.; post free, 2s. 3d. Back numbers more than 12 months old (when available), double price. Half-yearly volumes can be bound complete with index in cloth cases for 30s.; carriage, 1s. extra.

NOT QUITE ARCHITECTURE

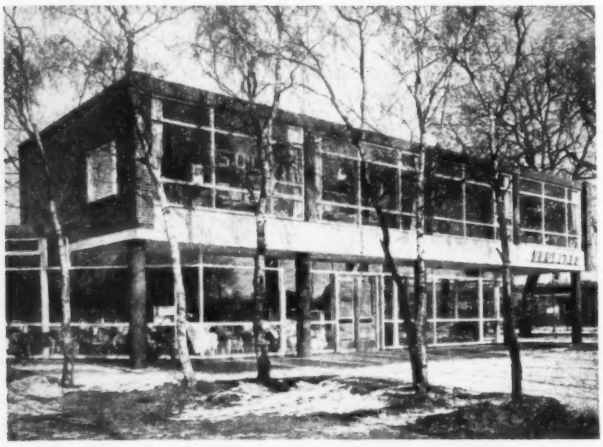
A FARNBOROUGH NEWS-LETTER

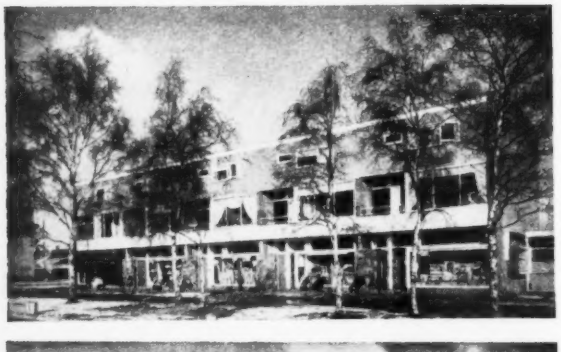
CLOSE, TRANSONIC HARMONIES

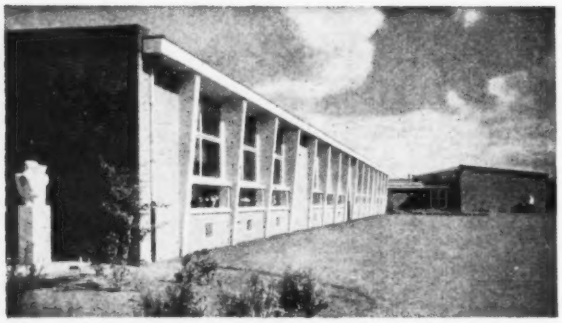
Dress "as for car-racing" seemed reasonable enough, but the black blazer and the flat twill cap that might have been the height of restrained *bon ton* at Silverstone, were the conspicuous badge of dilettantism at Farnborough on a trade day. The rig that was *de rigueur* was a rumpled Burton suit, a beat-up mac and an unspeakable green trilby. It takes craft and patience to get your clothes into that unmistakable tech-man condition, unless, of course, you happen to be a tech-man yourself. They were thick on the ground, and they hadn't really come to do anything so naive as watch the flying. For the most part they were going to peer down air-intakes and hazard guesses at power-outputs, they were going to pour scorn on the quality of other people's riveting, and wonder how AID could bring themselves to pass that wiring. The point where the product left the ground was the point where their interest began to taper off, and many of them couldn't be bothered to look up much, unless aircraft were conspicuously doing something eccentric or audibly transonic.

*

Even so, they had to look up fairly frequently—at some obviously championship aerobatics by Weldon in the Jet-Provost, at a helicopter flying on its side, and the vast Beverley travelling along the runway backwards under its own steam; at Porteous in the Aiglet, renewing his annual mockery of the law of gravity, backwards, sideways, end-over-end, upside-down, everything but inside out, and at Roly Falk dangling the huge,







A Dutch New Town

Among the new towns that have been started on the Continent since the war, and are roughly comparable with the English new towns, probably the least known is Emmen in north-eastern Holland. It was the subject of a talk broadcast by J. M. Richards last week on the Third Programme, which is to be repeated next Wednesday. The chief role of Emmen is to build up a new industrial centre that will provide alternative employment to the declining peat-digging industry. It will also provide a scattered rural population with a much-needed social focus. The architect-planner of the new town, where the first new residential neighbourhood is nearing completion, is F. J. Zandvoort. Above are a number of recent photographs: top, new shops in the town centre (architects, A. C. Nicolai and J. van den Horst); centre left, a furniture store and showroom (architect, J. J. Sterenberg); centre right, flats in the new residential neighbourhood (architect, Y. S. Dijkstra); left, shops with maisonettes over (architect, E. F. Groosman); bottom, a typical primary school (architect, Y. S. Dijkstra).

rapid delta-wing Vulcan so slowly, nose-up past the enclosures that you'd have thought a small boy was kiting it along on a string.

*

And the near-sonic beat-ups. You'd have to be almighty blah not to look up at those. They have a quality of being ultimate, of being at the far edge of physical probability. An aircraft comes in low, flat and fast, but there is no sound of its jets. It's at the far end of the runway, and then suddenly it's past you, jinxing up and down a bit as the noise hits you, the sound dipping characteristically from a rough scream to hot, hairy, hollow thunder as the plane, hurriedly conforming to the laws of perspective, tapers to a dot in the far blue yonder. About four seconds have elapsed, in which time enough paraffin has been burned to run a Primus stove for a month continuously.

*

Significantly, the really quick machinery is quieter. The droop-snoot FD2 was only really noisy when Twiss cut in the afterburner for climbs at about Mach point nine nine nine recurring. With the jet running *au naturel* in level flight it made a loud, but snug, tidy sort of noise, unlike such blunt instruments as the Javelin, which sound as if they are wasting thousands of pounds of thrust in just knocking the atmosphere about. But this was not the only new sound in the air. The four-plane aerobatic Hunter flight, who zip to and fro in the empyrean breathing down one anothers' necks like the Mills Brothers (that dates me!) were getting some extraordinary close-harmony effects. Whether it was their engine-notes heterodyning, or their shock-waves interfering (they were flying horribly close, as well as fast) I don't know, but at moments of stress there were strange transonic yelps, squeals, groans, even sustained organ-tones. Very odd, but at least it shows that aircraft technology is keeping up with Science Fiction. I refer of course to the sound track of *Forbidden Planet* —and people who *still* don't know what I am talking about have only a marginal right to exist in the Supersonic Century.

REYNER BANHAM

FILE THIS WEEK

In the **Industry** (page 374) Brian Grant reports on new methods of insulating asbestos cement sheeting, a Colourglaze finish to asbestos and a low-cost sink unit. John Eastwick-Field and John Stillman continue their series on **Joinery Specification** (page 375). The **Building of the Week** is the primary school in Kensington, by Chamberlin, Powell and Bon (page 381).

The Editor

THE MOW MOUNTAIN

The post-war improvement in the quality of design of the buildings produced by the MOW merits, and has received, praise. Nevertheless, the standard is nothing like high enough, at least as regards the work which the public has been able to see. Although the Ministry's architects' department produces buildings in the contemporary style, or fashion, that is only one external part of the essential ingredients of the modern movement in architecture. The other ingredients can be summarised as efficient functioning—in planning, materials and equipment—value for money, and aesthetic delight. The MOW's architects' department have given little evidence that they are setting a lead in modern architecture, as such a large and important ministry might be expected to do. It does not seem that they have contributed as much to the development of better building techniques and better servicing and equipment as the MOE, for instance, has done. What are the reasons for this failure? An excellent article in *The Economist* of September 1, reproduced in full on page 367, lists most of them. We advise all architects interested in the future of public offices to study this shrewdly probing analysis of official failure. The key to the failure lies in the administration, which is clumsy, complicated and repressive. The MOW's architects' department could be the country's pacemaker for research and development in building, and for quality, speed of erection and value for money. What prevents this? The old cause: red tape; the establishment; the slow-moving machine. The artificial separation of client administrator and architect prevents efficient, enthusiastic co-operation, destroys initiative and gets the MOW a reputation (shared, incidentally by the MOHLG and many other central and local government offices) which scares away good technical men. It is not only the standard of pay which keeps the MOW short of staff.

It is unlikely that the MOW will reply to *The Economist's* attack. But is it possible that some senior civil servants, will realise, when they note that their official technical, advisers are not as good as the equivalent professionals in private practice, that this has arisen through their own inefficient, jealousy-based policy? If civil servants want the best technical advisors they must offer a live programme of

work, responsibility, and *equality*. They then stand a good chance of getting real efficiency, and at no greater cost, either because the good technical man will attach more importance to having an interesting, responsible job than to the amount of money he earns.

ALL'S WELL

Some weeks ago the JOURNAL pointed out that there was some confusion over the answers given to questions asked in the Sydney Opera House competition. The replies were liable to confuse and mislead competitors. ASTRAGAL learns that the competition organizers have wisely written to all competitors telling them, in effect, that when the spirit of the original conditions was contradicted by the answers to questions the answers should be ignored. This is excellent, as the original conditions were, one gathers, very good indeed. Might not the moral to this be that questions should not be allowed in competitions? There were no questions allowed for the ABS's old people's homes competition, and, as far as ASTRAGAL knows, there were no complaints, or failures, on account of this absence. Has anyone any views to the contrary?

CHURCH GUIDE TO PARKS

Having groaned lately about HMSO/MOW guide-books and their uncertain styling, ASTRAGAL is happy to say that a new guide to London's Royal Parks* produced by this unpromising team is much better. It does at least look as if the people behind it knew what they were doing. Whether you like what they are doing is another matter; whether you can approve Richard Church's curious and rather gloomy text is another matter again, but here at least is something which has character—and a character that does seem appropriate to the subject.

*

The Royal Parks can be counted among both the splendours and the miseries of London; there is so much in them that ought to have been left undone, or done a great deal better (*vide* ASTRAGAL'S campaigns about St. James's Park) and they distil at some times of the year an atmosphere of dreariness that would take some beating in fact or fiction. On the other hand, how insufferable London would be without them, and how memorable are the views, say, down St. James's Park lake to the crazy domes of Whitehall, or of Cumberland Terrace seen through the trees of the Broad Walk in Regent's Park. Somehow, both text and pictures catch this ambivalent quality, and the book is worth having anyhow for its useful maps and the information it contains.

THANK KEW FOR NOTHING

While we are in the shrub and duck country, did you see that the retiring Director of Kew Gardens, Sir Edward Salisbury, delivered the parting shot that in fifty years there will be no trees left at Kew? Reason? Usual one. Trees went in mostly about a century since, and they don't live for ever. Government departments insist on regarding trees as a permanent installation, not as a crop, and have failed to make nursery space available to get new saplings started. Couple this with the uproar whenever MOW starts trying to replace old stock in Royal Park avenues, and you have a picture of a government and an electorate that don't deserve the few decent trees we do have. There is a lot to be said for regarding trees as a crop, and both kinds of silliness could be eliminated if we took that view more often. Cut 'em down, says ASTRAGAL, before they fall down, and plant afresh.

*The Royal Parks of London by Richard Church, HMSO 2s. 6d.

A SLUMP

I see that *The Financial Times* has reported a short drop in the number of inquiries which the leading building and civil engineering contractors have been receiving since the middle of the year. The value for the output of work for the second quarter of '56 was the highest ever, but a large part of this output was due to price increases. Housing contributed little towards this record. Local authority housing is dropping, and private housing is running at a slower rate than last year. The main increase has come from industrial and other private work, which has risen by 28 per cent. in the last year. However, some of the larger firms of architects are saying that they have noticed a marked falling-off in new projects in the last few months—the direct result of Macmillan's credit squeeze. Without doubt the industry could do with a squeeze to relieve it of excessive loading—but not too much.

OH MY, PAPADAKI!

"Let us now praise famous men," is a favourite cry of many book-publishers nowadays. They seem to think there is a market in laudatory opuscules at anything up to ten dollars a time. If your adulation of the leading architectural form-givers (or your expense account) will carry overheads of this order, then here is a nicely-contrasted pair of books about a nicely-contrasted pair of contemporary giants—Papadaki on Niemeyer,* and Hilbersheimer on Mies.† The Mies book is a stiff, serious, rather dead-pan affair, as befits its subject, without, alas its subject's genius. It overlaps with Philip Johnson's well-known study of Mies, but gives rather better, and very much fuller, coverage of the more recent buildings from the Farnsworth House onwards—including the fabulous Architecture Building at IIT, perhaps the most Miesian building there ever will be.

*Oscar Niemeyer. Work in progress by Stanco Papadaki. Chapman & Hall 80s.

†Mies van der Rohe, by Ludwig Hilbersheimer, Paul Theobald $10 (no English price announced).

Niemeyer's more florid sense of form gets a more rhetorical treatment in Papadaki's book, which is an interim volume on Niemeyer since 1950. The architecture is dazzling, poetic, eloquent and all that—there can be no doubt that Niemeyer is one of the most original architects of our time, even if his talents do run away with him on occasions. The text, alas again, is gushing, pompous, inflated and not quite English — random sample: "Lyricism is primarily a presence, a manifestation and an engagement of a presence, and the strong, the irresistible desire to express such an engagement. This is the poet's condition, but, for a builder, it will be necessary to by-pass the possible and enter the field of all the co-possibles."

*

It looks as if New Brutalist prose will have to look to its laurels—especially since Papadaki has discovered something called The New Giantism.

SENIOR, LECTURER

The Town and Country Planning Summer School, by all reports, has been excellent. A full account, ASTRAGAL learns, will appear in due course in the JOURNAL. Reference must be made, however, to Robert Gardner-Medwin's splendid paper on town centres. Simple stuff for you sophisticates of the Core, but absolutely essential reading for all local government officials and town councillors.

*

The palm for lecturing, ASTRAGAL learns, must be given to Derek Senior —a mere journalist—for a paper titled, succinctly: Words. He showed, in brilliant fashion, how planning is frustrated, or has failed, in this country through the misuse, or non-use, of the written word. Does it sound far-fetched? Well, I'm told that excerpts will be published in next week's issue, so read it for yourself.

MORE MUMFORD

What a curious and difficult man is Lewis Mumford—difficult, that is, to analyse. *Culture of Cities* was one of the seminal books of our century; so also, though not everyone would agree, was *The Condition of Man*. Thereafter Mumford seemed less sure of himself, seemed to be trapped more and more in the American dilemma—the rejection of materialism by a culture fundamentally materialist. Two new books will neither add to nor detract from Mumford's reputation.

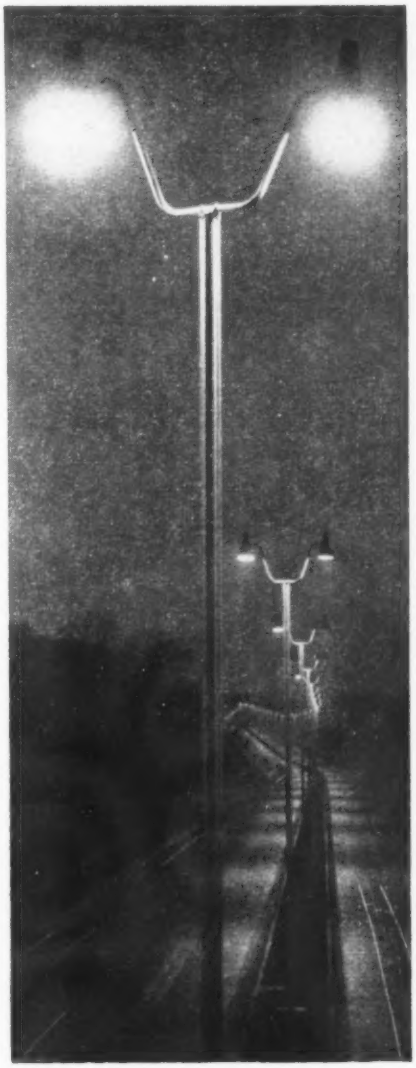
*

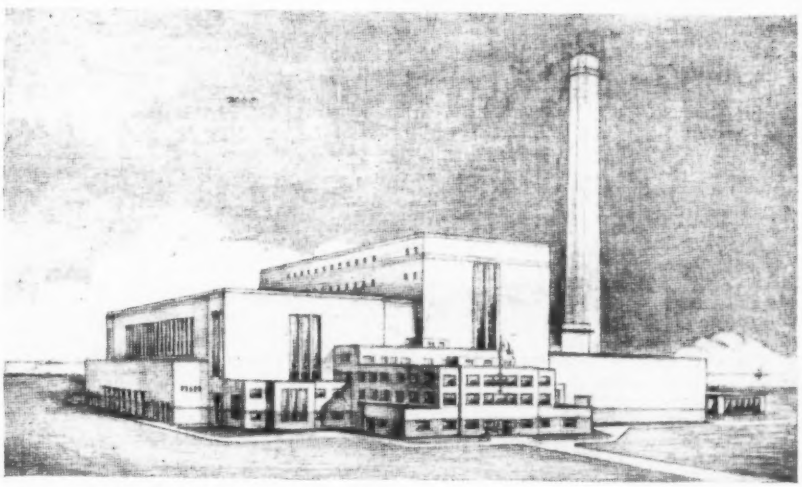
*From the Ground Up** is a collection of the bright, discerning, but necessarily ephemeral, architectural essays that appeared in "The New Yorker." *The Human Prospect*†—also a scissors and paste job—is weightier but only shows that Mumford, like others before him, finds it harder to think fundamentally about the present than about the past. The pious Mumfordite will, however, acquire the book for the sake of the odd scraps of charming autobiography.

ASTRAGAL

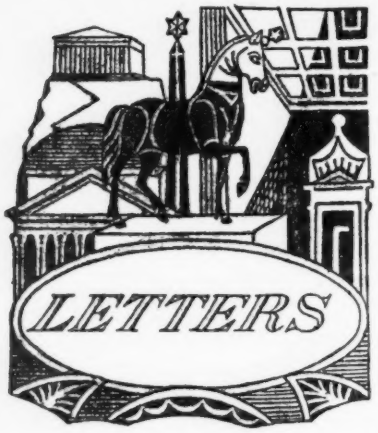
* Secker and Warburg 10s. 6d.
† Secker and Warburg £1. 1s.

As readers will see in a news note on page 368, Professor R. Gardner-Medwin criticised the design of modern lamp standards in this country when he spoke at the Town and Country Planning Summer School, at Nottingham. Here, in contrast to the sort of thing he had in mind, is an example of main road lighting of pleasant design on the western "autoroute," France (architect: Lopez).





A sketch of a new generating station under construction at Great Yarmouth, designed by the Eastern Division of the Central Electricity Authority. The building is steel-framed, and clad with brickwork. "The cladding," states THE BULLETIN, *the staff magazine of Richard Costain Ltd., who are the contractors, "internally is faced with Fisons white bricks and externally in hand-made Colliers primrose bricks to a total of about 4 million." Commenting on this uninspired design a correspondent writes: "so much for the Beaver Report, R. Furneaux Jordan's articles in* THE ARCHITECTURAL REVIEW *and the* FINANCIAL TIMES, *Sir John Maude's appointment to the Ministry of Fuel and Power and other fond hopes."*



R. B. Turner, A.R.I.B.A.

Raymond Moxley, A.R.I.B.A.

A. and P. Smithson, A.R.I.B.A.

R. D. Butterell, A.R.I.B.A.

"Hopeful"

V. G. P. Weake, *Director, Pamphonic Reproducers Ltd.*

Joinery Specification

SIR,—The articles by John Eastwick-Field and John Stillman on Joinery Specification which have appeared in your issues of August 16 and 30, bring one or two observations and questions to mind on which possibly there could be some amplification.

Article No. 1 refers somewhat disparagingly to what is considered to be the usual standard of specification writing for joinery and it is assumed that the authors have examples to support their comments, but surely an architect of competence and integrity who is specifying only what he is prepared to insist upon having, is much more careful in his specification writing than is implied. This article later stresses the importance of the architect knowing the full implication of his requirements, but in article No. 2 it is stated that it is customary for the specification to require the contractor to make good any shrinkage or warping at the end of the maintenance period. Such a specification requirement is itself surely verging on the impracticable and would, perhaps, be better stated as follows:—

> "The arrangement, jointing and fixing of all joinery work shall be such that a shrinkage in any part and in any direction shall be compensated in the joints and shall not impair the strength and appearance of the finished work.
>
> All joints between mouldings shall, where practicable, be scribed."

It is, of course, recognized by the craftsman that in jointing up any piece of work, compensation must always be allowed for movement across the grain since timber is always liable to "move," either to shrink or expand, in accordance with changes of temperature and humidity.

Article No. 2 later stresses the importance of ensuring a correct moisture content for timber at the time it is taken into use. The advantages of this are obvious, but it would be wrong to assume that the moisture content will remain constant during and after the timber is worked. As soon as a "new face" on any piece of timber is opened up, it immediately becomes susceptible to the prevailing atmospheric conditions and it is, of course, for this reason that any good joinery specification requires that framed work shall be put together and loosely wedged up as early as possible after the contract is let, the object being to allow a period of second seasoning as long as possible before final adjusting and gluing up. This would probably seem rather old-fashioned to the modern joinery manufacturer, but it is, nevertheless, a good principle and even more necessary with kiln drying than with natural seasoning.

Sample Specification (*b*) in article No. 2, after specifying moisture contents, states "and these moisture contents are to be maintained until the building is finished." Assuming that the joinery work as specified is framed together in a workshop that is maintained at conditions of temperature and humidity appropriate to the requirements of the work on hand, there would appear to be some difficulty in maintaining such conditions on the building itself during the remaining weeks or months required for its completion. Changing weather conditions, apart from the effects of other trades such as the plasterer, will surely make the requirement of such a specification clause impracticable.

It would appear that many of the problems now experienced with joinery work may be attributed to artificial seasoning, which inevitably takes some of the "nature" out of the material, as compared with natural seasoning and to the rapidity with which joinery has now to be produced, very often allowing little if any time for second seasoning.

R. B. TURNER.

Manchester.

Reply from John Eastwick-Field and John Stillman:—We would like to think that your correspondent is right and that architects are very careful in writing specifications: we believe, nevertheless, that there is good reason to emphasize how important it is that they should be so if only for the benefit of students and for the less conscientious architects. If an architect specifies that all shrinkage and warping shall be made good he can, presumably, insist upon it: but also presumably contractors have learned to include a sufficient sum in their pricing to cover the average risk in which they involve themselves when working to this clause. We would agree that it could well be relaxed if one felt that a corresponding reduction in price would be made: otherwise there is no reason to abandon a traditionally-accepted clause which is only *verging* on the impracticable and is a safeguard to the architect and client.

We discuss the question of putting the work together loosely on page 375, and we also refer to the difficulty of maintaining the moisture content until the building is finished; we do not, however, think that it would be beyond the bounds of possibility to reorganize the present procedure, which is admittedly bad so as to make this clause practicable.

We agree that many of the difficulties are due to the rapidity with which joinery has to be produced; but we do not subscribe to the familiar arguments against kiln seasoning and our views on this were expressed in our article No. 2 "Movement in Timbers."

Success For The BBB

SIR,—The Pilot Scheme of the Bristol Building Bureau has now closed. During the six and a half weeks it was open, it was visited by over three thousand architects and building technicians. Fifty-six manufacturers and service organizations contributed displays. The MOW and the RIBA provided special exhibitions.

The Pilot Scheme has established that there is a genuine need for a Bureau in Bristol. To this end the Committee proposes to make itself more representative and to open a permanent Bureau in much larger premises as soon as possible.

RAYMOND MOXLEY.

Bristol.

Berlin Swan Song

SIR,—The Berlin Exhibition is the swan song of the old style physical planning, CIAM Charte d'Athenes style, English "Town Planning," Beaux Arts "Plan de Mass"; it just folds them all up.

But there is an alternative, which is being developed by the new generation inside CIAM itself.

(1) "The ecological approach." Doing the right thing—if necessary destructive—in the *particular,* Human, Physical and Built, situation. (Growth and Change.)

(2) Control of development in a much freer collaborative way. Urbanists having an Attitude rather than a Plan, developing the community through a briefing technique. (Cluster.)

(3) Developing a technique of social prognosis particularly as regards to communications and power. (Mobility.) Detailed knowledge of the actual facts of the situation make 1 and 2 possible, and ultimately, make the community comprehensible.

Maybe, one of our New Towns or Redevelopment Areas could let an international team (not the All-Stars) try and develop this new technique. We have all the necessary legal and financial powers. Why not use them positively for a change?

ALISON AND PETER SMITHSON.

London.

You Can Read It

SIR,—Easily legible roadsigns seem to be few and far between in this country. Oxfordshire County Council deserve praise for this example which has recently appeared on a new stretch of double track road south of Oxford. The design appears to be

inspired by Swiss and French examples and has a dark blue background.

The only possible criticisms are that it is placed a little too high to be readily picked out in a headlight beam at night and the supporting poles might have merited a little more consideration.

R. D. BUTTERELL.

London.

It Wasn't Me!

SIR,—ASTRAGAL'S remarks in last week's AJ, under the heading "A Journal of Industrial Achievement," have been brought to my notice by more than one of my professional colleagues who know that my firm have acted as architects to Fisher & Ludlow Ltd. for many years, and I have consequently been "credited" with the design.

In point of fact the sketch you printed was prepared for them, I am informed, by an enthusiastic amateur for the sole purpose of inclusion in the article for the magazine mentioned.

I feel sure that when the time comes to carry out the work the directors will take every care to see that the visual qualities of the building are worthy of this most important site.

I trust you will find space in your columns to correct this misunderstanding and that you and your anonymous spy will now have more peaceful nights.

"HOPEFUL."

Fie To Scandinavia

SIR,—With reference to the article on built-in high fidelity equipment in the AJ for August 23, I cannot agree with your comments that Scandinavian designs can teach us a lot about presentation of radio and gramophone equipment. If you look at the photos which you have printed of the Scandinavian built-in units, they are shown with all doors closed, thus not giving any idea whatsoever of the actual equipment used, whilst in the British photographs taken during the Radio Show, the sliding doors and fitted doors were purposely left open to show the public exactly how units can be fitted in. Another thing that is noticeable in the Scandinavian photo is that the speaker involved can by no means cope with true high fidelity equipment. Another most vital point which you seem to have overlooked is that the idea of built-in high fidelity is to incorporate it in the standard furniture used in this country.

V. G. P. WEAKE.

London.

OBITUARY

Michael Ventris

Michael Ventris, O.B.E., was a perfectionist and an idealist, and lived and worked more closely to his ideals than anyone I have met. After saying that, there is little more to add. He had a brilliant analytical mind, which made him one of the AA's most accomplished students and potentially one of the profession's best architects. In the last few years he achieved international fame in deciphering the early Greek tablets from Mycenean sites. This year he accepted the AJ Research Board's Fellowship in order to study the subject of "Information for the Architect"—a task for which he was most ably equipped.

In thirty-four years he had undergone and achieved much. During the war he was a navigator in Bomber Command. Before and after war service he studied at the AA, and for four years he worked in the Development Group of the MOE. In addition he designed, with his wife, the house in which he lived near Hampstead Heath—a house which showed the same sensitive care for detail as did his former flat in Highpoint, where he introduced so many students and architects to modern design.

Last week young Michael Ventris—accomplished, reserved, invariably admired and liked—was killed in a motor accident. He leaves a wife, and two children.

THE EDITOR.

We announce with regret the death of Michael Ventris, OBE, ARIBA, the first holder of the AJ's Research Fellowship. He was killed in a motor accident near Hatfield last Thursday. The Editor pays tribute to this accomplished young architect and antiquary on this page.

N E W S

ALLIED SOCIETY

The Architect as Captain

Last week the Essex, Cambridge and Hertfordshire Society of Architects took the unusual course of holding its council meeting and general meeting at the AA, 34-36, Bedford Square, London, it appears, is an easier place for everyone to get to than somewhere geographically more central. President Paul Manger welcomed the Press (*R.I.B.A.J.* Editor Noel Musgrave, and *The Builder's* Ian Leslie were present) and the distinguished speakers.

Richard Sheppard spoke as chairman of the *Ad Hoc* committee dealing with the architect's responsibilities and professional relationships. His speech is hard to summarise, due to the fact that on reaching particularly significant passages he usually asked for them not to be reported. However, he indicated that he realised that no one read reports, *Ad Hoc* committee ones, or others, not even the members of the RIBA Council. He admitted to being delighted with the RIBA's A.G.M. of two years ago which "voted the council down." In this very room, in 1934, as a student he had voted the AA council down. He believed in a healthy spirit of opposition. He went on to describe the new social conditions in which the architect works today, and this was his main theme, very tellingly and sincerely delivered. Patronage, he pointed out, had passed into the hands of committees, and committees were not concerned with æsthetics, like 18-century patrons, or morals, like 19-century patrons, but were interested only in performance. He said that 60 per cent. of the profession was school qualified, a comparatively new phenomenon. He approved of the school-trained architect, because schools aimed to produce the complete man. With the right grounding at a school an architect could go on learning all through life. He concluded by emphasising that 60 per cent. of the profession was now in salaried employment, so that a new professional structure was coming about. The present day consisted of changing techniques, changing social relations and changing relations within the profession. In order to know how to deal with the latter changes a great deal of information was needed, and to this end they had created the post of secretary of professional relations at the RIBA.

R. O. Foster spoke next on the growing practice of group working. He thought that profit sharing, and the recognition of assistants' work by naming them were items which helped to produce conditions in which good work could be done. The alternative was the plan factory. He thought it a pity that so many teachers were not in practice, and that it would be unfortunate if architectural teaching became a profession in itself. He thought all architects should take a more active interest in schools. He suggested that the reliance on schools had gone too far. He welcomed a better co-ordination of the education of architects and builders.

Clifford Culpin then spoke on his office organisation, which he, also, asked should not be reported, though it is hard to know why, as nothing particularly intimate was revealed. He was followed by R. Owen Vine, the society's honorary secretary, who described his practice: "... three partners, twelve staff ... we work on a layer system. Design layer, working drawing layer ..." Within the layers were specialist's on bye-laws "or on the artistic side."

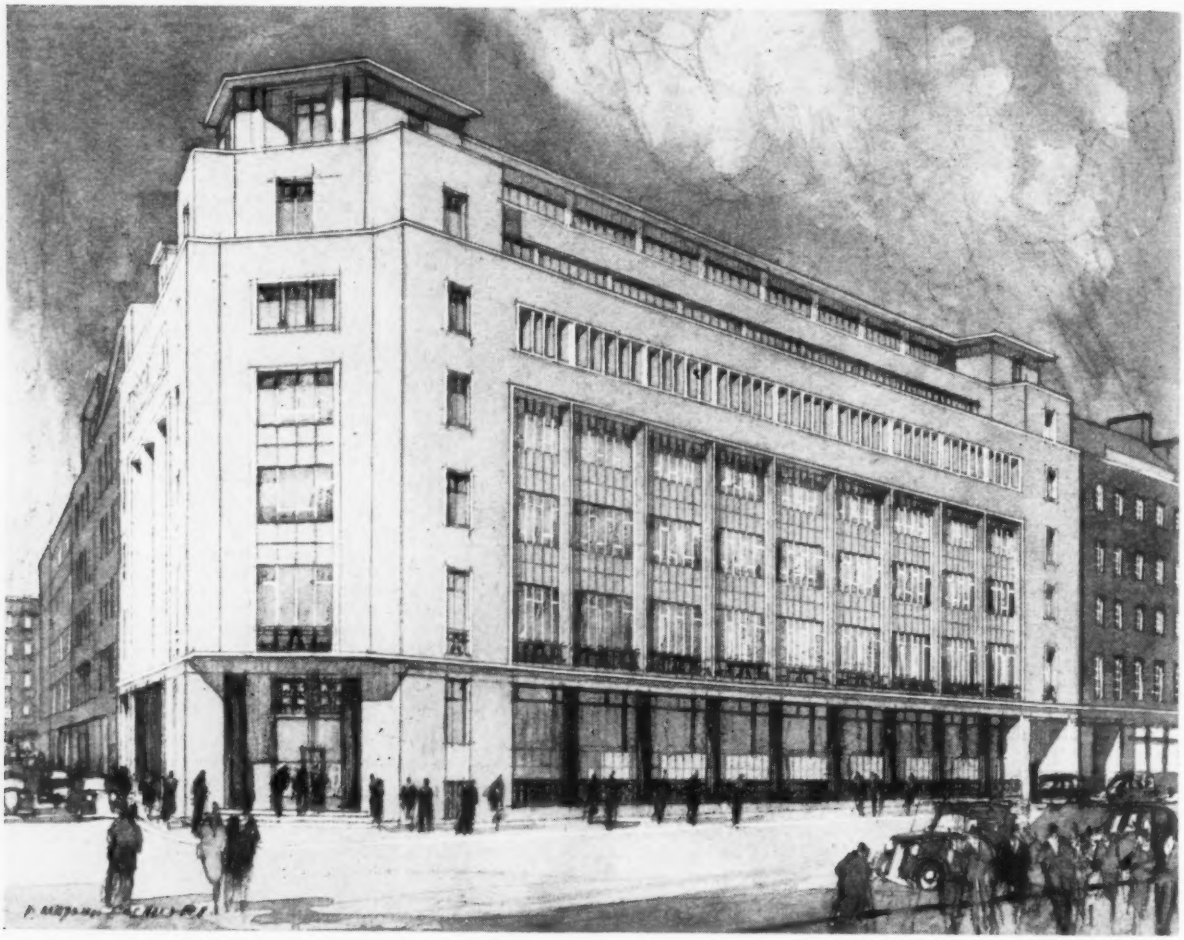
The next speaker was D. N. Sutcliffe, who complained that unqualified draughtsmen in aeronautical and engineering offices earned more than architects' assistants. He thought that assistants were not so much worried about remuneration, however, as about the frustration they suffered in practising their art. He thought some architects' designs were as out of date as the biplane. He was followed by F. G. Frizzell (a partner of Howard Thobb & Partners), who emphasised that design was only one facet of an architect's job. Cost and administration, he instanced, were other facets. As regards training, he pointed out that "you've got to be quite sure that the architecture from the schools is as good as the biplane of 20 years ago." Later in the evening A. A. Macfarlane and F. G. Frizzell spoke on the responsibilities of the architect on the site.

MOW

Control of Building Costs

The following article which appeared in the *Economist* for September 1, is the subject of this week's editorial on page 363.

The Ministry of Works is a department whose importance tends to be strangely underrated; not least by the Government itself. And yet, seen from outside, the Ministry should surely be near the centre of the campaign for economies in Government spending. Its importance does not lie merely in the £40 to £45 million of taxpayers' money that it spends each year; it lies in the fact that, with a technical staff of over 5,000, the Ministry is officially the Government's main repository of building expertise. There are two disturbing points about this Min-



Lloyds Chambers, Crutched Friars

Architects: Messrs. Joseph F.F.R.I.B.A. Contractors: McLaughlin & Harvey Ltd.

The **BISON** *contribution always gives concrete advantages*

In 11 weeks from January 27th to April 16th this year —including a period of 4 weeks of almost continuous frost—we carried out on this contract

5,800 cu. ft. of encasure

25 flights of staircases

5,900 sq. yds. of precast flooring

These figures were achieved in an 8 storey building and roof erected in two phases and the work was completed only 10 days after the steelwork was finished.

CONCRETE LIMITED

LONDON Green Lane, Hounslow, Middlesex. Hounslow 2323
LEEDS Stourton, Leeds, 10. Leeds 75421
LICHFIELD Dovehouse Fields, Lichfield, Staffs. Lichfield 2404
FALKIRK Etna Road, Falkirk. Falkirk 1930

istry that should strike the outside critic straightaway. First, the professional and technical staff employed by the Ministry has increased threefold since 1937-38, and the fees paid by it to outside consultants have increased from £5,000 a year to some £650,000 a year; in the same period the work done, allowing for the rise in building costs, has only doubled. Secondly, in one field of public spending on building there has been a dramatic improvement in the last six or seven years: the cost of building a new school has been reduced by about 50 per cent. in that period. But there seems to be no evidence of a similar reform in the cost of buildings under the more direct control of the Ministry of Works.

Unfortunately, outsiders are badly placed to ask why, and they will not get much help from the efforts of the Select Committee on Estimates, which included some criticisms of the Ministry in its recent fifth report, but which did not attempt to probe what one would have thought was the main question before it: a comparison between the Ministry's costs for new building work and those achieved elsewhere. (It concentrated much more on the less important differences between the estimated costs of one or two projects and the actual costs incurred.) Yet the fundamental question—does the project represent good value for money?—must be capable of some rational analysis. Since the committee was not led along this path, outside critics had better set out along it on their own.

Crudely stated, control of building costs depends in the first instance on the answers to two questions. How many square feet of accommodation are needed for a given purpose? And how much should be spent on each square foot? The first of these questions, diligently pursued, seems to have led to most of the economies achieved by the Ministry of Education in the past seven years. About three-fifths of its saving on school building, or 30 per cent. of the average 1949 cost, has been achieved by economies in planning. A 1949 secondary school provided perhaps 110 square feet place; a 1955 school 73 square feet. This reduction was not achieved merely by cutting off post-war frills; nor, certainly, by disregarding educational standards in a crude economy campaign. No responsible authority would now consider very much more than the present 73 square feet to be educationally necessary. There is no reason to suppose that schools are a unique case, merely because they are a relatively homogeneous one. The Ministry of Education can point to similar savings in teachers' training colleges and technical colleges; the Nuffield Trust research unit, comprising medical and other specialists as well as architects, has pointed the way to the same sort of economies in hospital building; the London County Council and the Building Research Station have both helped to initiate the movement towards a more rational control of building costs. But the name of the Ministry of Works seems to be significantly missing from the list of pioneers.

On the second question, that of cost per square foot, the Select Committee on Estimates did flush out one useful criticism. The "savings" that the Ministry of Works made in the cost of the Whitehall Gardens scheme of Government offices, mainly by substituting at a very late stage cheaper finishes for those originally specified, rightly came under its lash. It is true that this block was started in a hurry when requisitioned property had to be given up, and that grandiose pre-war designs therefore had to be used; but it is simply not good enough, either in a public or a private scheme, for the architect first to design "regardless" and then, when the tenders come in, to cut out or modify those items in the specification which happen to be capable of alteration at the last minute. That this practice should still show itself under the Ministry's direct control is depressing. It has long been known that the traditional method of estimating building costs in terms of cost per cubic foot is inadequate. If the architect is to budget with reasonable accuracy he must be able to compare costs of the various means of providing each element in the building; and he must decide how best to allocate the money between those elements. Hence the development of the new technique of quantity surveying covered by the term "cost study," which was discussed at this year's conference of the Royal Institute of British Architects. What part is the Ministry of Works taking in this development?

It is here that the outside critic seems to come up against the root of the problem. It is highly probable that the Ministry of Works is taking no part in the development of modern techniques of economic architecting, because the present system of government building is not organized to take advantage of them. The key to economical building is a genuine sharing of responsibility from the policy level downwards. The experts, acting for the user of the building, must be merged with the administrative and technical organizations concerned with its design and erection. Only in this way will the functions of the building be considered objectively, and a rational analysis be made of the value of each square foot of accommodation. Otherwise, the expert representing the user is supreme; and unless he is a rare and exceptional person, he seeks in a new building what he has previously known and used in an existing one, with extra space to meet needs which were not met before.

Government building is not at present organized to produce this assimilation of experience and responsibility. A Government department that has ordered a building defines its requirements and agrees an estimate before the work is started, but the Ministry of Works is responsible for efficiency and economy in design and building. Responsibility and control are, in most cases, dispersed among five bodies. For example, a research station will be responsible for defining its requirements; the DSIR for negotiating with the Ministry of Works and the Treasury; the professional organization of the Ministry of Works for drawing up plans to meet the stated requirements and estimating the cost; the administrative side of the Ministry of Works for negotiating with the DSIR; and one of the Supply divisions of the Treasury for considering both the case for the project and the estimated cost. The Select Committee on Estimates not only accepted this administrative maze as "long-established policy," but claimed that use of the Ministry of Works for design and building allowed other departments "to concentrate on their primary duties."

This phrase, in this context, seems to have very little meaning. Is it not desirable that more responsibility for their own building work should rest with the separate departments? No doubt the Ministry of Works should remain responsible for government office building and act as agent for other departments whose building commitments are small and occasional. Probably it should also keep most of its maintenance responsibilities. But certain departments, including the Home Office (with 23 major projects now at various stages of design and construction for prisons alone), the Post Office (£5 million spent each year on new buildings and alterations), the DSIR (41 major projects completed since the war) and the Ministry of Supply (£13 million for "new works, additions and alterations" in 1956-57) have building programmes that seem large and continuous enough to justify their being responsible for design and construction themselves.

Two objections may be raised. If there were a reduction in the building programme of one of the departments, would redundancy be more difficult to deal with than in the vast Ministry of Works machine? It ought not to be; and if there is any general reduction in the Government's building programme, there will be redundancy at the Ministry of Works in any case. Secondly, would it be more difficult for the Treasury to control a number of building departments? It is difficult to see why, for different types of projects are now considered separately by the different Supply divisions, and the Treasury already has to consider building projects put forward by departments other than the Ministry of Works (for example, the works of the service departments and the hospital building programme). But this second objection does uncover a more far-reaching question: is the Treasury machine capable of carrying out a sufficiently searching scrutiny of such large blocks of public investment—not by detailed administrative supervision and re-checking of one architect's work by another, but by improved standards of control? A small and carefully selected central team of administrators, architects and quantity surveyors could establish reliable building standards, initiate more advanced techniques of planning and costing control, and offer stimulating leadership in the search for better value for money. The Ministry of Education has shown what can be done. One of the tasks confronting the new leaders of the Civil Service should be to consider whether similar steps ought now to be taken at the centre of the machinery of government.

NOTTINGHAM

"Lamps Like Gallows" says Summer School Speaker

When Professor R. Gardner-Medwin spoke at the Town and Country Planning Summer School, at Nottingham recently, he criticised the design of modern lamp standards.

Professor Gardner-Medwin, who is Roscoe Professor of Architecture at Liverpool University, said more damage had been done to landscapes by badly-designed lamp standards than by any other item of modern road equipment. The concrete ones often looked like giant gallows or question marks. He also wished that lighting engineers would agree to ban sodium lights from public places. "They make us all look like deathly demons in hell."

HOUSING

Figures for July

In July 24,995 houses were built in Britain, against 25,589 the previous July. The total for the seven months of 1956 is 169,207 (against 181,439). Since the war 2,408,857 permanent houses and flats have been built.

DIARY

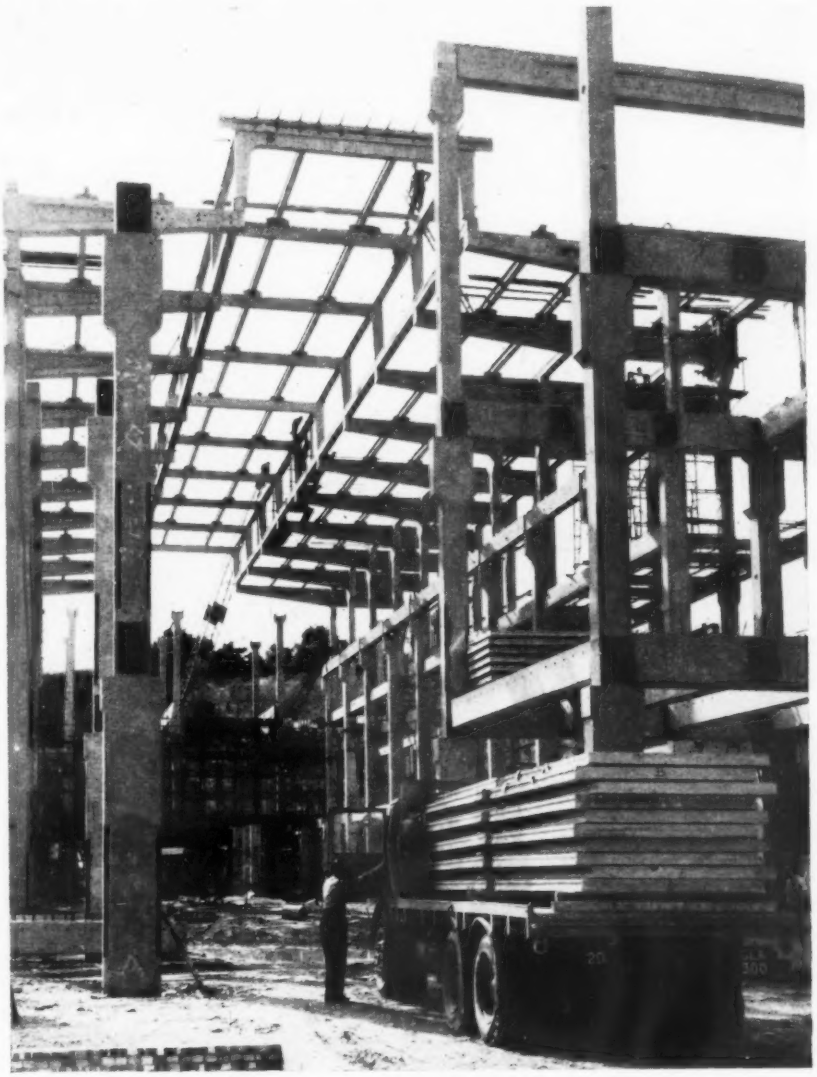
The Precinct of St. Paul's Cathedral. Sir William Holford. At the ICA, 17-18, Dover Street, W.1. 8.15 p.m. SEPTEMBER 13

House of Ideas. Exhibition of house designed by Kenneth Capon for *House & Garden.* At the Tea Centre, Lower Regent Street, S.W.1. Monday to Friday, 10.30 a.m. to 6.30 p.m. Saturday 10 a.m. to 1 p.m. Admission free.
UNTIL SEPTEMBER 18

Britain Builds for the World. Exhibition sponsored by NFBTE. At Booking Hall, Charing Cross Underground Station, W.C.2.
SEPTEMBER 18—OCTOBER 9

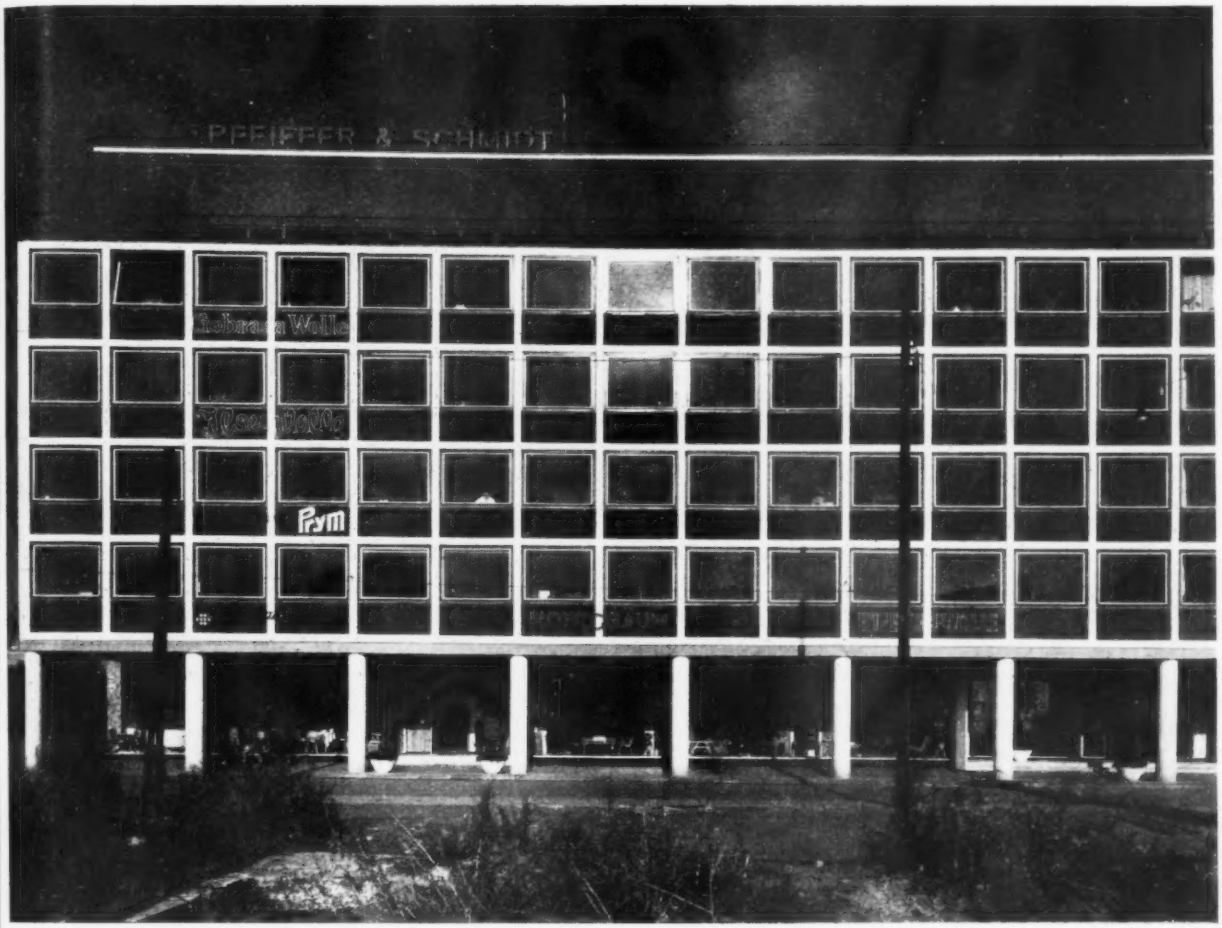
Designers at Work. Display illustrating the work of the COID's record of designers. At the Design Centre, 28, Haymarket, S.W.1. 9.30 a.m.—5.30 p.m.
UNTIL SEPTEMBER 29

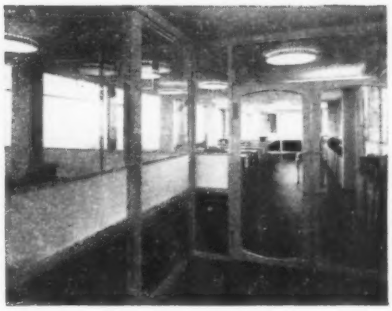
PAPER MILL UNDER CONSTRUCTION NEAR GRAVESEND



When Farmer and Dark started to design the tissue mill now under construction for the Bowater Paper Corporation at Northfleet, near Gravesend, Kent, they realised that in view of the short building programme and the slowness of deliveries of constructional steelwork, a prestressed concrete structure would have to be used. The main structural elements are precast—either normal reinforced concrete or pretensioned prestressed concrete on the Hoyer system. The framing of the conversion section of the building is of more or less normal layout on a 30 ft. × 24 ft. or 20 ft. grid; that for the machine hall consists of pairs of columns on each side of the hall, which itself is 62ft. wide and 200 ft. long and accommodates a 20T travelling crane. The roof construction consists of precast cantilever beams, carried in the forks of the inner main columns and held down by the external columns, the inner ends separated by a 22 ft. wide monitor light in the form of precast portal frames. All columns throughout are reinforced concrete, precast in one length at Iver (Bucks) and transported by road to the site: the longest columns are approximately 71 ft. long and weigh about 18 tons. Beams in the conversion section are all prestressed, secondary floor beams being carried in special metal brackets which are bolted to the main beams with special high tensile bolts. Both floors in the conversion section are of precast pallette construction with an in situ *topping, saving dead-weight and shuttering. Elsewhere, all floors are* in situ *because of the number and variety of fixings, holes, etc., required for the clients' plant. All purlins throughout are 14 in. deep and prestressed. The decision to precast the main parts of the structure meant that early decisions had to be made on details of many items which would not normally have been necessary so early in the contract: for example, all cladding details were required in order that fixings for the cladding rails and their supports could be made in the precast columns and beams. All floors are designed for a super load of 3 cwt./sq. ft. except one floor in the pulp preparation house, which is designed to carry tanks weighing approximately 60T each. The reinforced structural frame is to be clad externally with an envelope of patent glazing, incorporating opaque coloured glass spandrel panels to cover inner walls up to sill level and floor depths. The glazing bars are at 2 ft. 0½ in. centres to allow a standard 2 ft. width of glass to be used. The height of the patent glazing is 32 ft. This envelope of patent glazing is surrounded at a higher level by a 9 ft. band made of alachromed aluminium sheeting and similarly by a band 9 ft. deep beneath the patent glazing. This cladding covers all the floors from + 16.00 level to the roof. The ground floor is walled entirely in 11 in. cavity brick walling in purple Uxbridge flints with black pointing. The roof comprises corrugated aluminium decking units with 1 in. cork vapour barrier insulation and with three layers of roofing felt in bitumen. The final roof finish has granite chippings. Internally, the concrete frame is exposed. In the pulp preparation and machine house the columns are rendered with coloured cement glaze. The machine house has an acoustic suspended ceiling; end walls are lined with acoustic tiling.*

SHOPS AND OFFICES IN BRUNSWICK, GERMANY





This reinforced concrete block of shops and offices in Brunswick, Germany, was designed by Professor Friedrich Wilhelm Kraemer. It is in a bomb-destroyed quarter which is being reconstructed. On the ground floor are shops and showrooms (two ground floor entrances are shown above, left and centre). The remaining floors house stock-rooms, sales rooms and offices (one group of offices is shown above right). The facade is painted white. There is neon lighting on the sandstone roofing. The building is centrally heated from the municipal heating system.

ZINC DUST ... for Paints

The steelwork of America's famous Mt. Hope Bridge is guarded by zinc paint. Erected in 1929, it is 5,000 feet long and is subjected to the most severe weather conditions. Zinc metal has been applied in the form of a zinc dust pigment in the priming paint and time has proved its excellent qualities.

IMPERIAL SMELTING

U.K. MEMBER OF THE CONSOLIDATED ZINC CORPORATION LIMITED

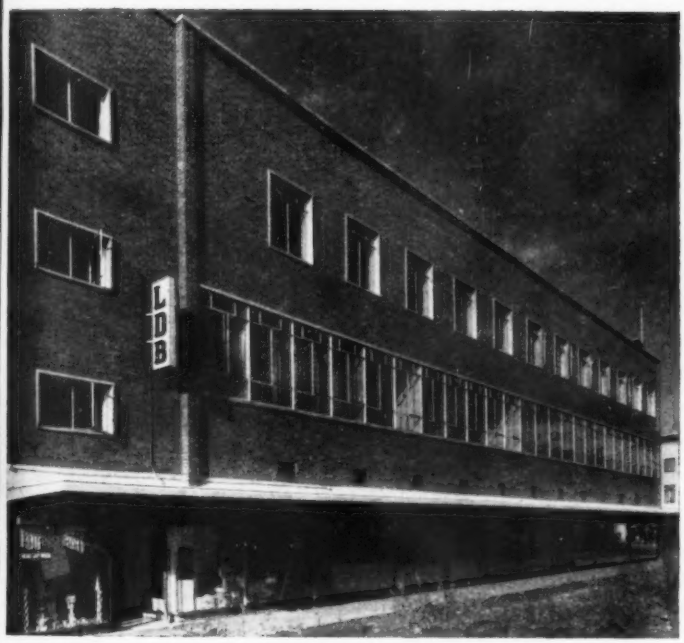
For mechanical protection and electro-chemical defence against CORROSION

Corrosive conditions demand positive action. Only a zinc metal coating gives maximum protection to iron and steelwork. Zinc rich paint with a pigmentation of 92% to 95% provide this vital protection; its action is electrolytic; even if the paint film should be damaged the underlying metal is still protected by the adjacent zinc particles and the spread of corrosion is arrested. Zinc rich paint is non-toxic and is applied with ease whether for new work or for renovating. Specify a Zinc Dust from the Imperial Smelting range for use in your Zinc Rich Paint formulations. We will gladly supply a list of Zinc Dust paint manufacturers on application.

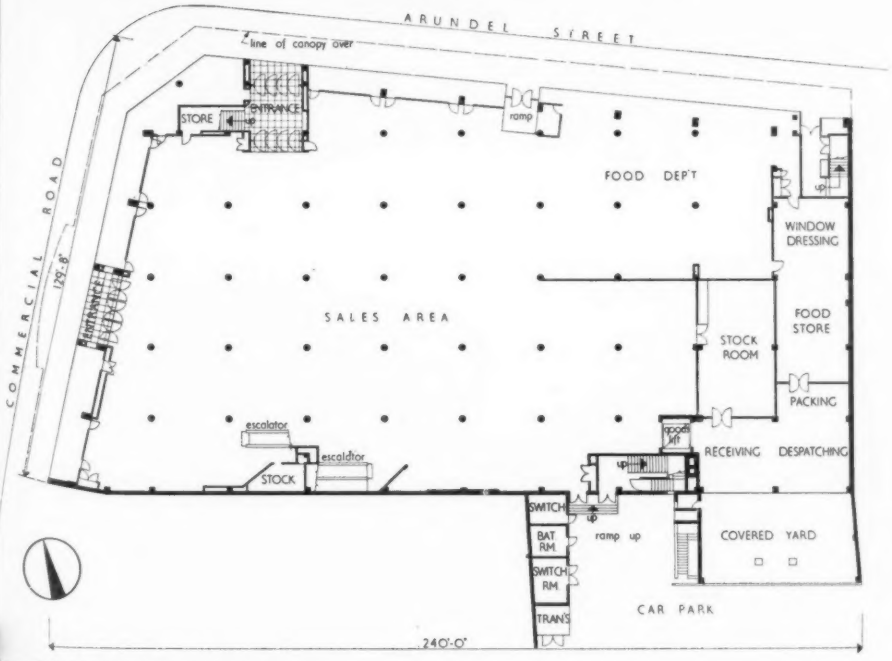
IMPERIAL SMELTING CORPORATION (SALES) LIMITED · 37 DOVER STREET · LONDON W.1

DEPARTMENT STORE, ARUNDEL STREET, PORTSMOUTH

The department store illustrated on this page and on page 373, is the first to be published in the JOURNAL *with a full cost analysis. The store, which replaces original premises destroyed during the war, is seen from the north, right, and from the east, below. Bottom right, from the corner of Arundel Street and Commercial Road.*

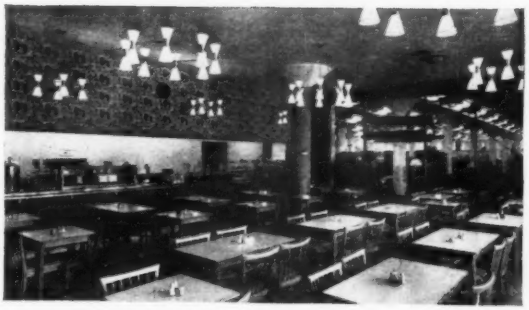


The architects—T. P. Bennet and Son—planned the store so as to produce a maximum free area for sales within the total building compatible with the City Corporation's very stringent requirements with regard to fire protection. In view of the difficulties of foundations at any depth in this part of Portsmouth, the basements of the old premises were mainly used to support the new foundations, and no digging into ground below water level was necessary. The frame is reinforced concrete mushroom construction which enables building to be completed without beams and gives a flush ceiling throughout without the unnecessary expense of false ceilings. The bay sizes are generally 21 ft. 0 in. by 22 ft. 0 in. and the superimposed loading, 100 lb. per sq. ft. The external facing is of Portland stone in Commercial Road and of facing bricks on the frontage to Arundel Street. In order to avoid radiators, which are both inefficient and inconvenient in departmental



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

DEPARTMENT STORE IN PORTSMOUTH continued



store layout, the main heating is buried in the concrete slabs at ceiling level. The general lighting throughout the sales areas is a mixture of tungsten and fluorescent to give as accurate a reproduction as can be obtained with artificial light, and additional illumination is provided so that at all times brightness level on the goods is above that of the general room. Two escalators have been installed from ground to first floor and one to second floor. A special feature of the store is the "Air Door" to the Commercial Road entrance, top. The main doors are arranged to slide behind the show windows, leaving a clear opening 20 ft. wide. Heater batteries over the opening, prevent draught and maintain comfort conditions in cool weather. The air enters under the soffit and is extracted through floor grilles. This installation was the first of its kind in England. Above left, cafeteria on the second floor, above, part of the ground floor haberdashery department. Sub-contractors on page 396.

COST ANALYSIS

Total ground floor area of superstructure	25,771 sq. ft.
Total floor area (excluding basement)	75,357 sq. ft.
Total floor area of basement	2,141 sq. ft.
Storey height of basement	13 ft. 4½ in.
Tender date	June, 1953
Tender cost of superstructure installations and finishings	£248,378
Tender cost of foundations and basement	£39,865
Tender cost of ancillary buildings and external works	£4,144
Gross total cost	£292,387
Cost per ft. super of floor area including basement	£3 15s. 6d.
Cost per ft. cube including basement	4s. 2d.

Element	*Cost per sq. ft.* s.	d.
Preliminaries and insurances, contingencies	6	7½
Work below ground floor level	10	3½
External walls and facings	2	10½
Internal load bearing walls, internal partitions	1	8½
Frame, upper roof const. and staircase roof	13	11½
Roof lights		2
Floor finishes	2	0
Windows and doors (ext.)	1	8½
Doors (internal)		8
Roof coverings		11½
Wall finishes	1	5
Built-in finishes	1	8
Ironmongery		5½
Plumbing (external)		1
Plumbing (internal)	1	6½
Sanitary fittings		3
Gas installation		2
Electric installation	4	4½
Heating installation	4	0½
Ventilation	3	7½
Drainage		5½
Glazing		3½
Decoration	1	6½
Paved areas		8½
Special sound insulation, Special thermal insulation		4½
Lifts (including shaft) and motor room	7	0
Escalators		9
Shop front and shop entrance doors	3	10½
Kitchens, fittings	1	1½
Total	75	5

technical section

THE INDUSTRY

This week Brian Grant describes new methods of insulating asbestos cement sheeting, a Colourglaze finish to asbestos and a low cost sink unit.

Left: a sink unit in porcelain enamel, selling at £23 13s. 6d. Below and below left: a double skin asbestos sheet roofing with fibre-glass infil giving a U value of 0·16 to 0·18.

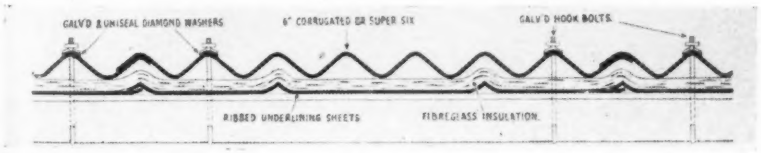
DEVELOPMENTS IN ASBESTOS CEMENT

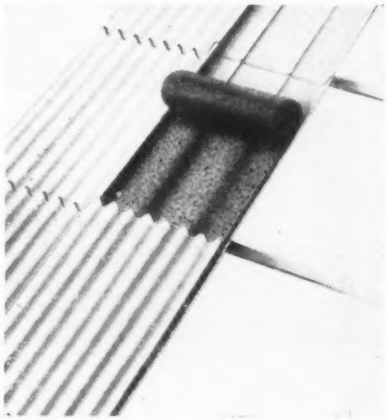
Two asbestos cement manufacturing firms have recently evolved methods of reducing the heat losses through roofs by adding a layer of bitumen bonded glass fibre. Universal Asbestos have introduced a range of four types of double-skin roof which themselves have U values between 0·5 and 0·65 compared with about 1·2 for a single-skin roof, and these methods of insulation can be further improved by the interleaving of a 1 in. layer of glass fibre which reduces the U value to between 0·16 and 0·18. The standard procedure is to fix the inner layer of sheets first and the insulating fibre glass is then unrolled over this layer immediately before the application of the outer skins, the entire sandwich being finally secured with the usual hook bolts. The drawing shown below shows 6 in. corrugated sheeting with a ribbed under-lining which, unlined, would have a U value of 0·65, or 0·17 with the glass fibre blanket added. This type of construction has a weight of 52 lb. per square yard and the estimated cost is £10 6s. 0d. per 100 sq. ft. (*The Universal Asbestos Manufacturing Co. Ltd., Tolpits, Watford, Herts.*)

Turners have also introduced a bitumen bonded fibre-glass in-filling for use with their Combined sheets, and claim that during a heating season of 18,000 hours, the reduction in heat losses should produce an annual saving of over 8 tons of solid fuel per 1,000 sq. ft. of roof area. On these grounds, the cost of the in-filling should be recovered within the first year and in new buildings an immediate saving should be possible as the capital cost of the heating system could be reduced. Turners are also producing a Colourglaze finish, available in a standard range of fourteen colours which have high resistance to corrosion and thus do not readily fade or wear. The painting of asbestos cement has never been an easy problem as the material itself requires several months to weather and must then be properly primed and finished with a chlorinated rubber base paint: even then the appearance of the paint deteriorates in industrial atmospheres and regular repainting is needed. The new Colourglaze finish is bonded to the asbestos cement and makes no difference to the cutting and fixing of the material. It is now available on roofing products, rainwater goods, and soil pipes, and asbestos cement bath panels are also produced with a double gloss finish. (*Turners Asbestos Cement Co. Ltd., Trafford Park, Manchester, 17.*)

NEW SINK UNIT

The above photograph shows a new Culsynk unit with a double draining board which sells at the low price of £23 13s. 6d. Sink and draining boards are sound deadened and are finished in porcelain enamel in various colours and the cabinets are stove enamelled. Standard colours are white, cream, blue or green and the cabinet doors can, if necessary, be in different colours from the frame. (*Leisure Kitchen Equipment Ltd., 149, Regent Street, London, W.1.*)





technical section

13 MATERIALS: TIMBER

Design and practice of joinery, 13

by John Eastwick-Field and John Stillman

JOINERY SPECIFICATION 3

In their first article on Joinery Specification,* John Eastwick-Field and John Stillman considered the general clauses and the specification of timbers themselves; in their second article† they went on to consider moisture content and the specification of the other materials which figure in a joinery specification; this week they conclude by describing the parts of the specification which deal with workmanship and manufacture and by proposing a new heading entitled "procedure."

* August 16, 1956.
† August 30, 1956.

Workmanship and Manufacture

The average joinery specification says very little about the interpretation of architects' drawings, method of manufacture, quality of workmanship: that is, about the kinds of joints to be used and their design and degree of accuracy.

The items traditionally included in specifications deal with allowances for planing; with the work being "framed up in a workmanlike manner," and with "the work being prepared and framed as soon as posssible after the contract is signed, but not glued and wedged until the joinery is needed for fixing."

We think that this part of the Specification should give a clearer indication of exactly what is required.

Drawings

The degree to which joints and detailed methods of construction are shown on architects' drawings varies considerably, and whether they are shown or not, the manufacturer frequently alters them, either to suit his particular machine technique or preferences, or because he does not approve the methods shown.

Whilst it may be reasonable for him to do this, and indeed the architect may allow in the specification for him to suggest alterations, the specification should state that the architect requires to see the joiner's full-size setting-out drawings before the work is begun, so that he may have an opportunity of approving any modifications which are being proposed. We suggest that a clause dealing with this should be included under "procedure."

Conversely, if a component has been carefully worked out and the architect does not wish *any* alterations to be made, he would do well to say so.

If the architect shows nothing but profiles, he has no option but to make use of some general clause asking for the work to be done according to "the best traditions of the trade."

Dimensions

It is an accepted practice, which we suggest should be followed, that the members are referred to in specifications by their nominal sizes, preferably with the prefix "ex," and the specification should state what allowance can be made for planing. The architect's full-size drawings indicate the *finished size*, the reduction for planing having been made.

The overall dimensions shown on the architect's drawings for joinery other than that which is to be built in as the work proceeds, are usually considered to be subject to verification by measurement on the site, since traditional building is often not accurate. This invariably causes delays because in fact by the time the measurements can be taken the joinery is required on site: furthermore, it makes nonsense of the clause asking for "the work to be framed up at the commencement of the job."

It is not common practice, but there does not seem to be any reason why the joinery should not be made without checking on site but allowing a tolerance in the overall dimensions of $\frac{1}{16}$ in. or $\frac{1}{8}$ in. either way. This would not be difficult for the joiner, but it would be necessary to impress on the general contractor the importance of building accurately.

SAMPLE SPECIFICATION:

1. *Dimensions and Tolerances.*

Alternatives:

(a) All dimensions are to be checked on site before manufacture is commenced.

(b) No dimensions are to be taken on site. The components are to be manufactured strictly to the overall dimensions given on the architect's drawings. A tolerance not exceeding $\frac{1}{16}$ in. will be permitted.

2. *Allowance for planing and finishing.*

In softwood $\frac{3}{32}$ in. will be allowed for each wrought face, from the nominal size of the section specified. In hardwood $\frac{3}{32}$ (or $\frac{1}{16}$) in. will be allowed on two faces from the nominal thickness of the board specified. The architect's full-size *details indicate finished sizes and are to be adhered to.*

3. *Method of construction.*

Alternatives:

(a) The joinery is to be constructed exactly as shown on the architect's details. Where joints are not specifically indicated, they are to be the same as joints shown on the drawings for similar positions of use.

(b) The manufacturer is to be responsible for the sound construction of the components, using the recognised forms of joints in appropriate positions. The architect's drawings are intended to show the final appearance of the work rather than the complete construction.

technical section

(c) The work is to be manufactured according to the best traditions of the trade, to the satisfaction of the architect.

(d) The components are to be constructed with joints as set out in the Schedule below :

e.g. Double hung sashes.* *Jambs, heads and cills shall be scribed and framed together with combed joints of not less than two laminations per member to provide four glued joints. Dowels shall be not less than ¼ in. diameter wood dowels.*

Jambs and heads shall be provided with parting beads as shown.

External and internal linings shall be securely nailed to jambs and heads, and be mitred at intersections and scribed and shaped at junctions with sills.

Sills shall be sunk, weathered and rebated all as shown.

Sashes shall be scribed and framed together with either morticed and tenoned joints or combed joints, glued and nailed together with rustproofed nails of the lost-head type.

Sashes shall be grooved at back as shown for sash balances.

The meeting faces of the meeting rails shall be recessed as detailed.

Sash bars shall be scribed and tenoned into mortices in the sashes. Vertical bars through-tenoned and wedged.

All frames and sashes shall be assembled accurately and cramped together so as to be square and flat and all surfaces exposed to view shall be true, clean and smooth finished from the machine.

* Description taken from British Standard 644, Part 2.

Design and Quality of Workmanship in Joints

Part 2 of BS 1186 lists the most important joints and gives precise requirements for their design and accuracy of manufacture. It also gives requirements for gluing of joints (giving a choice of four different types of glue) and surface finish for the completed joinery. Since it would be impracticable to set out in full such requirements in a normal specification, this is a valuable standard for use where there is any doubt about the quality of manufacture to be expected. It must be emphasised, however, that the standard does not say which joint is to be used in any particular position because that information is covered in other standards dealing with the design of individual components.

SAMPLE SPECIFICATION:

Joints are to be designed and executed to comply with the requirements of BS 1186, Part 2. All glued joints for both external and internal use are to be put together in synthetic resin adhesive.

Add if required: all edge to edge joints are to be joined with cross-grained tongues.

Finish

The requirements for the finish of joinery in BS 1186, Part 2, reads as follows:

" Unless otherwise specified, surfaces of joinery intended to receive the final decoration shall be such that if properly finished with a matt paint, imperfections in manufacture will not be apparent." This formula can obviously be adapted to give a reasonable indication of the quality of surface finish which is required.

SAMPLE SPECIFICATION:

Alternatives :

(a) All joinery to be finished with a clean wrot face. Surfaces of softwood intended for painting or clear finish shall be such that if properly finished with matt *paint, imperfections in manufacture will not be apparent. Surfaces of hardwood for a gloss or matt transparent finish shall be such that when so finished imperfections in manufacture shall not be apparent.*

(b) The surfaces to be treated with a gloss transparent finish are to be scraped and sanded in such a way that after the filling and polishing specified, the texture of the surface of the wood will not be apparent.

Fixing on Site

The division of the old " Carpenter and Joiner " trade specification into its two parts presents the problem of deciding which is to include site fixing. As mentioned previously, the tradesman in the factory has different talents from his namesake on the site. In fact such work is usually done by the rare tradesmen who are actually carpenters *and* joiners, having had experience in both sides of the trade. Since bad fixing can do much harm to joinery, we suggest that it should be included in joinery rather than the carpentry section.

SAMPLE SPECIFICATION:

Alternatives :

(a) Joinery intended to be painted is to be fixed by nails. Nail heads are to be punched below the surface and filled with lead paste filler in external work and a leadless paste filler in internal work. Joinery intended for polishing is to be secretly fixed. Heads of screws are to be let in and pelleted in the same wood and with matching grain.

(b) Fixing screws are to be let in and filled with a paste filler carefully tinted to match the wood.

Preservative Treatment

It is now common practice to treat structural timbers with preservative ; at least where built into walls. As discussed in Article No. 7,* it is desirable to treat joinery in the same way. Creosote or other highly coloured liquids cannot be used because they would discolour the paint or finish, even if only used on backs of frames. However, there are many clear pre-

* December 15, 1955.

technical section

servatives on the market which do not have this disadvantage. One manufacturer has introduced a variety of a well-known preservative (available both coloured and clear) containing waxes and resins which are claimed to seal the wood and to reduce considerably the absorption of moisture before the joinery is fixed and painted.

SAMPLE SPECIFICATION:

Unless the timber is impregnated with preservative, or unless otherwise specified, the backs of frames to be fixed in walls and all other bedding surfaces are to be painted with two coats of preservative before priming.

Knotting and Priming

It is generally accepted that joinery to be painted should be primed on all faces before fixing and that it should be brushed on rather than sprayed. There are, however, two schools of thought as to where it should be done—that which requires the work primed before despatch from the factory to give it as much protection as possible against the absorption of water (although priming is known to be little value in giving this protection), and that which requires it to be done on site after inspection by the architect or clerk of works. The latter gives a better chance of inspection before any defects are covered by priming and possibly gives the architect more control over the priming used. Our opinion is that unless some other protection against moisture is used, such as the preservative mentioned above, priming should be applied in the factory to give some resistance to moisture during transit and temporary storage on site. Good priming in fact is not opaque and does not cover defects except perhaps very minor ones.

Good priming paint is very important.

SAMPLE SPECIFICATION:

All work shown on the Schedules to be painted is to be treated with knotting as necessary and given one brush coat of priming to all faces. Surfaces to be joined are not to be primed.

Add if required: In addition to priming, all bedding surfaces are to be given two coats of oil paint.

Procedure

This heading is not one that is normally found in specifications, but in our view it is useful to collect together under it all the clauses dealing with the order in which various operations are to take place, and such administrative points such as the protection of work during transit, and the making good of defects.

We have discussed the procedure for the interpretation of the architect's drawings: we have also made reference to the clause which is often inserted about framing up work loose at an early stage. There is, however, an argument in its favour for "traditional" framed and panelled doors, which need not await measurement on site and where the wide boards used in their construction are liable to shrinkage and warping, especially since the door as a whole is unrestrained when hung. The object, of course, is to be able to replace any defective members before the door is glued up, but in our view it is not a requirement which is applicable to other kinds of joinery.

A note should be included under "Procedure" as to when and where priming, painting, polishing and preservative treatment are to be carried out.

Too often good joinery is spoilt by being brought to the site too soon—when it suffers from the damp and from mechanical damage. It is most important to see that this does not happen, and it is also important for the architect to be quite clear in his own mind which parts of the joinery are expected to be built in and which are to be brought to the site after plastering is complete. It is no good instructing the builders to keep the joinery off the site if in fact he cannot fit it in after plastering. In this connection architects should be acquainted with the trade expressions "first fixings," which comprise work that is "built in," and "second fixings," the bulk of the joinery work which is fixed later.

The specification should always include a clause pointing out the necessity for protecting the joinery, particularly against dampness, in transit and on the site, and clear directions should be given as to what is considered adequate. The examples, Fig. 1, of the rate of absorption of moisture, taken from figures obtained by the FPRL, show how very important this matter is, particularly with any joinery having a low moisture content.

SAMPLE SPECIFICATION:

(i) Drawings.

Alternatives:

(a) Work is not to commence until the architect has approved the manufacturer's full-size setting-out drawings. Suggestions which the manufacturer may wish to make for modifying the construction and joints shown on the architect's drawings will be considered when the shop drawings are examined.

(b) No deviation is to be made from the architect's details without his written approval.

(ii) Inspection.

Facilities are to be given for the architect to inspect all work in progress in shops and on the site.

(iii) Framed doors.

Framed and panelled doors are to be prepared as soon as practicable after the work is ordered, put together loose and stored in conditions of heat and humidity similar to that of the completed building. When re-

technical section

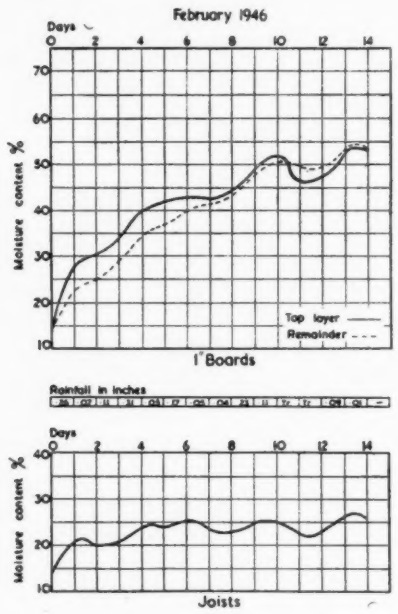


Fig. 1: variation in the moisture content of Scots pine stored in the open. (From Moisture Changes in Timber Exposed to Normal Weather Conditions *by W. C. Stevens and R. E. Hodge (FPRL); "Timber News.")*

Fig. 2: the bottom of a window board removed during alterations to a house. The window wood is badly affected by dry rot although it did not show on the surface. The house was built about 30 years ago and the back of the frame had not been protected.

quired for fixing, any warped members are to be replaced and any shrinkage is to be made good before gluing up.

(iv) Preservative treatment.

Alternatives:

(a) The treatment is to be carried out after machining and before the components are assembled.

(b) The treatment is to be carried out after the components are assembled and before priming.

(v) Priming.

Joinery which is prepared for painting is to be knotted and primed before the work is despatched to the site. Where adjustments are made on site the priming is to be made good.

(vi) Painting.

The bottoms of doors are to be painted the full number of coats specified before the doors are hung.

(vii) Transparent finishes.

The joinery is to be given the first coat of finish before being despatched to the site.

Add if required: The panels of framed doors to be french polished are to be polished before the doors are assembled.

(viii) Time for delivery.

None of the joinery is to be delivered until it is required for fixing in the building. Joinery which does not require to be built in as the work proceeds is not to be brought to the site and fixed until the building is enclosed, and the heating is in operation.

(ix) Transport and protection.

The joinery is to be kept under a waterproof cover during transit and is to be similarly covered and kept clear of the ground on the site.

*It is to be handled and stacked carefully to avoid damage.**

(x) Make good defective work.

Should any shrinkage or warping occur or any other defects appear in the joiner's work before the end of the maintenance period, such defective work is to be taken down and renewed to the architect's satisfaction and any work disturbed in consequence must be made good at the contractor's expense.

* When the joinery is taken in charge by the general contractor he will be expected to provide boxing and other temporary coverings to protect the joinery from damage and a suitable clause should be included in the general contractor's specification.

Description of Particular Components to be Made

This should include schedules of doors, windows and cupboards.

Practice

To summarize what we have said throughout these articles about the various stages in the architect's work in the production of joinery, we give below a table which also shows the four main ways of approaching the problem.

A. Indicate joinery required on small-scale plan (probably $\frac{1}{8}$ in. scale).

System 1: Applicable to housing and similar work.

technical section

Fig. 3: simple framing for a "built in" cupboard fixed before the plastering is done.

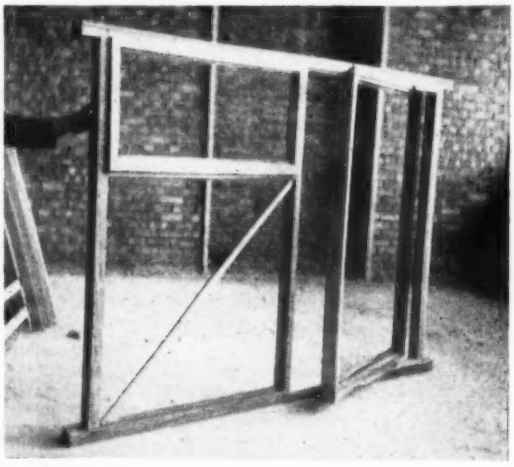


Fig. 4: the appearance of a hardwood window before delivery to the site. The hinges are fixed but not the fastenings. The diagonal brace is a temporary means of keeping the frame square before fixing.

Fig. 5: corner of window frame "built in" to an external wall. A slate sill is to be inserted under the bottom member. This emphasises the need to protect the backs of such frames which cannot of course be inspected or repainted once fixed.

Write list of components to British Standard sizes and designs and quote B.S. for each component, e.g., storage fitments, draining boards, wood windows and doors, stairs, skirtings and mouldings, etc. Submit for tender to manufacturer specializing in this kind of work.

System 2: Write brief notes with sketches showing any details which influence the architectural character and send them to a trusted specialist manufacturer to whom you are prepared to give freedom in interpreting the design, without doing any detailed drawings or specification. It is presumed that the manufacturer would then discuss the work with you at various stages so that you would benefit from knowledge and craftsmanship. Although you would be able to obtain a firm price before committing yourself, there would be no element of competition.

B. Prepare draft ½ in. and F.S. details together with a draft specification and schedules. Consider the kinds of timber to be used and, if necessary, visit a timber yard.

System 3: Assuming that the work is to be put out to tender to joinery firms for inclusion as a p.c. in the main contract, the architect can take the opportunity of discussing the work before tender with the technical representative of one of the firms he is asking to quote, so as to ensure that the details are workable, and the sizes chosen are appropriate and the method of construction economical. This may seem unfair but it has become a common practice in this and other trades where the degree of technical knowledge required for design has become such that architects cannot be expected to keep abreast of it. Submit to tender.

System 4: If the joinery is to be included in the work to be tendered for by the general contractors who might in any event sublet it, the architect will not have the same opportunity for consultation, and he will have to complete his detailing and submit his drawings with specification notes to his quantity surveyor.

Notes on Tendering

Common with invitations to all subcontractors and suppliers to tender, it is important to make clear:

(*a*) whether the work is to be supplied, or supplied and fixed,

(*b*) what form of contract will be entered into: architects wanting a particular form of contract such as the RIBA form to apply to subcontractors should say so and should beware of large areas of pale type on the backs of quotations laying down quite other conditions!

(*c*) the appropriate discount for cash to be included for the general contractors (under RIBA contract 5 per cent. for suppliers, 2½ per cent. for subcontractors),

(*d*) by what date the tender is required.

(*e*) what period for delivery is required from the date of order.

It cannot be emphasized too much that on receipt of tenders the architect should read them and study

technical section

them carefully, checking them against his specification. It frequently happens that, without drawing one's attention to it, the firm quotes for something different from what one has asked for. For large jobs one should send tender forms to be quoted on so as to avoid this possibility. The RIBA issue a special printed tender form.

Inspection

As many inspections and visits should be made as possible, and during the course of the work the architect should have: approved the timber in the shop; examined the shop drawings; seen samples of polishes and veneers; examined and approved the ironmongery; inspected the work under construction to see that it complies with the drawings; inspected the building-in; and we confess that, even if all the recommendations in this article have been adopted, it will undoubtedly be necessary to list the defects at the end of the maintenance period!

JOINERY SPECIFICATION CHECK LIST

Scope of the Work
Supply or supply and fix.
Inclusion of fixings, finishes and ironmongery.

Materials—Timber
Hardwoods. species. to BS or commercial grade.
Softwoods. species. to BS or commercial grade.
Quarter sawn or flat sawn.
Samples for approval.

Moisture Content of Wood
According to BS or to figure quoted.
Conditions of use.

Other Materials
Plywood, blockboard, chipboard.
Wood veneers, plastic veneers.
Nails, screws, hinges, dowels and straps.
Ironmongery.
Glues.
Preservatives and paints.
Knotting, cellulose, varnish, plastic polish, french polish, wax polish.

Workmanship and Manufacture
Dimensions and tolerances.
Allowance for planing and finishing.
Method of construction.
Design of joints.
Standard of finish.
Fixing to grounds and plugs.
Preservative treatment.
Knotting and priming.
Transparent finishes and polishes.

Procedure
Drawings.
Inspection.
Framing of doors, i.e. putting together loose.
Treatment with preservative, priming etc. at workshop or on site.
Delivery after heat on.
Protection during transit.
Make good defects.

Description of Particular Components to be Made
(incl. schedules of doors, windows, cupboards and ironmongery).

Particular Items
Use of British Standard units
windows and skylights
sills and window boards
glazing beads
draught stripping
doors
folding and sliding doors
door frames and linings. architraves
shoes or dowels for door frames
cupboards and sink units
staircases and balustrades and handrails
skirtings, picture rails and trim
pipe casing, duct covers, access panels and trap doors
draining boards
fascias
mat well linings
mantelpieces and fire surrounds
hatches
shelving
work tops
fuel store boards
bath panels
boxing to tanks
battens for coat hooks
pelmet boards
fixing blocks for cabin hooks, brackets, etc.
notice boards
weather boarding
panelling
insulating board linings.

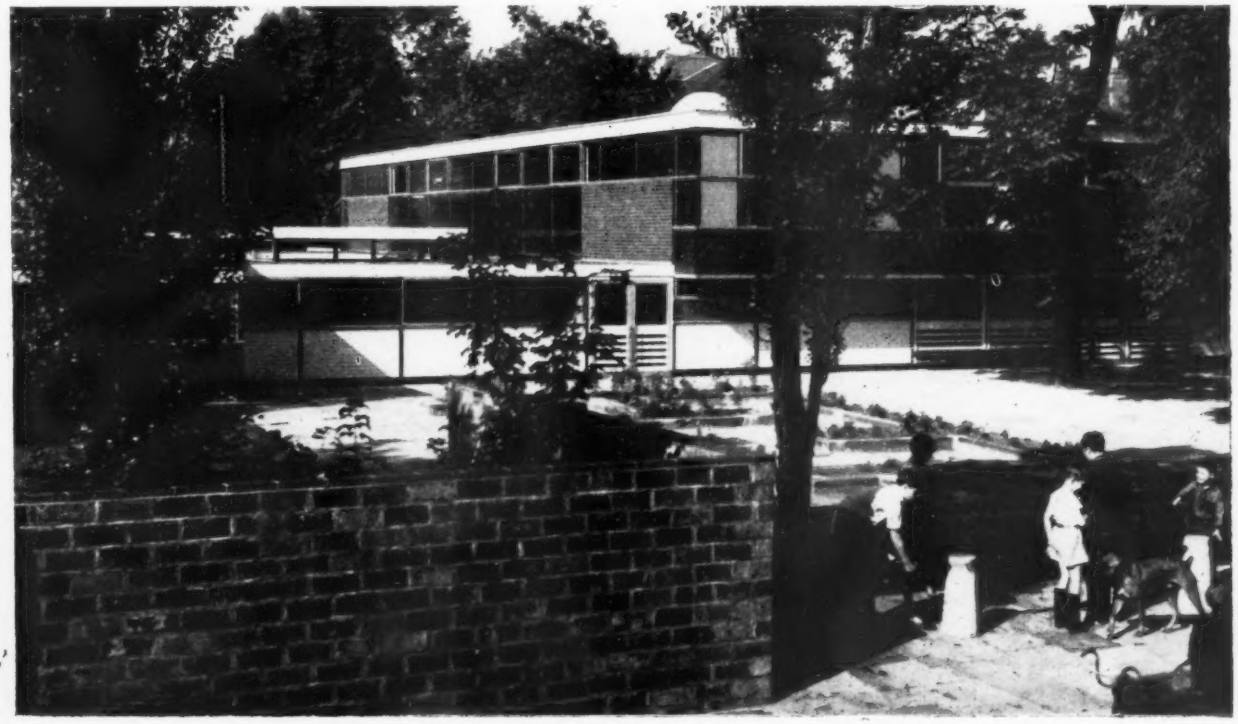
PRIMARY SCHOOL

in SOUTH BOLTON GARDENS, LONDON, S.W.5

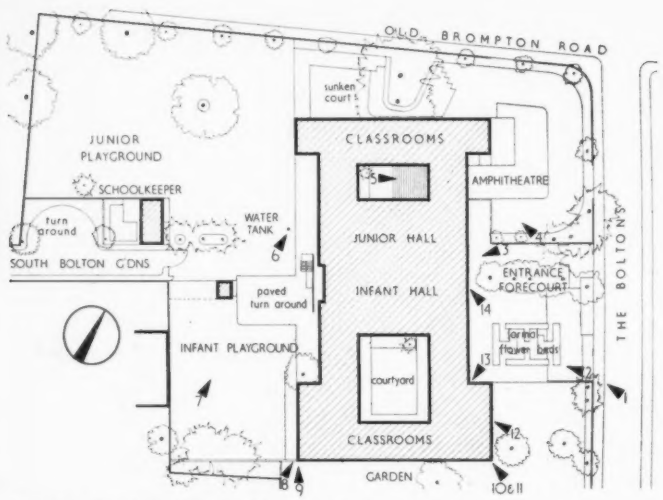
designed by CHAMBERLIN, POWELL and BON; assistant-in-charge, G. A. AGABEG assistants, J. F. CONNAUGHTON, R. K. CHISHOLM and M. NEYLAN; consultants, structural, D. LAX and W. H. WILLATTS; heating, H.J. KNOX; electrical, JOHN HEARSON and CO. quantity surveyors, DAVIS, BELFIELD and EVEREST

The Bousfield School, designed for the LCC, is boldly coloured, graceful and sensitively detailed, and is a welcome addition to the South Kensington scene. Meticulous structural detailing and disarmingly simple integration of frame and panels has earned it the epithet of "Japanese" in the popular press. Certainly, in matching technical thoroughness, aesthetic conviction and human proportions, the architects have produced a building with quiet authority and considerable charm.

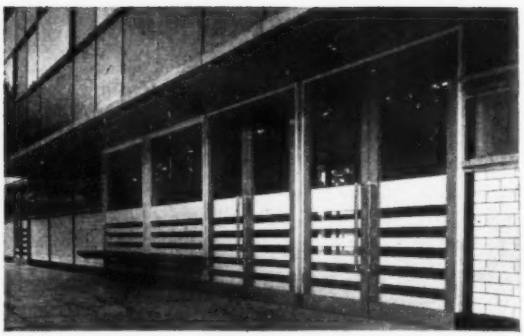
Viewpoint 1, from the south-east.

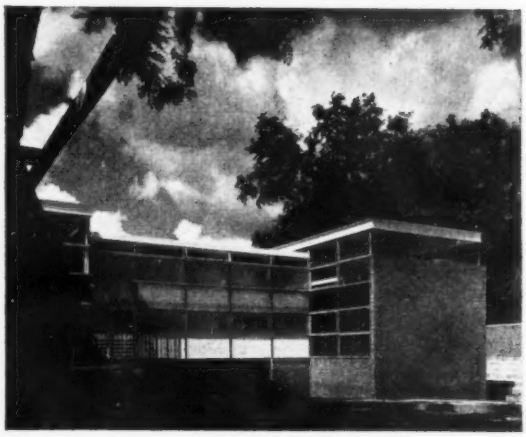


building illustrated

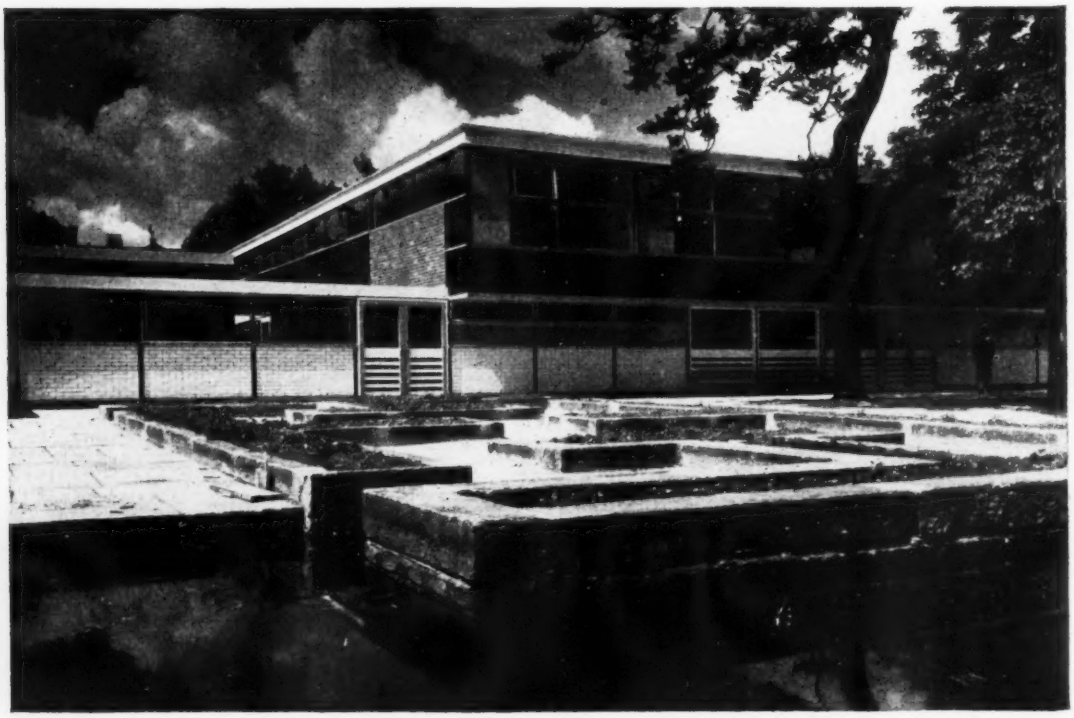


Key plan showing photographic viewpoints

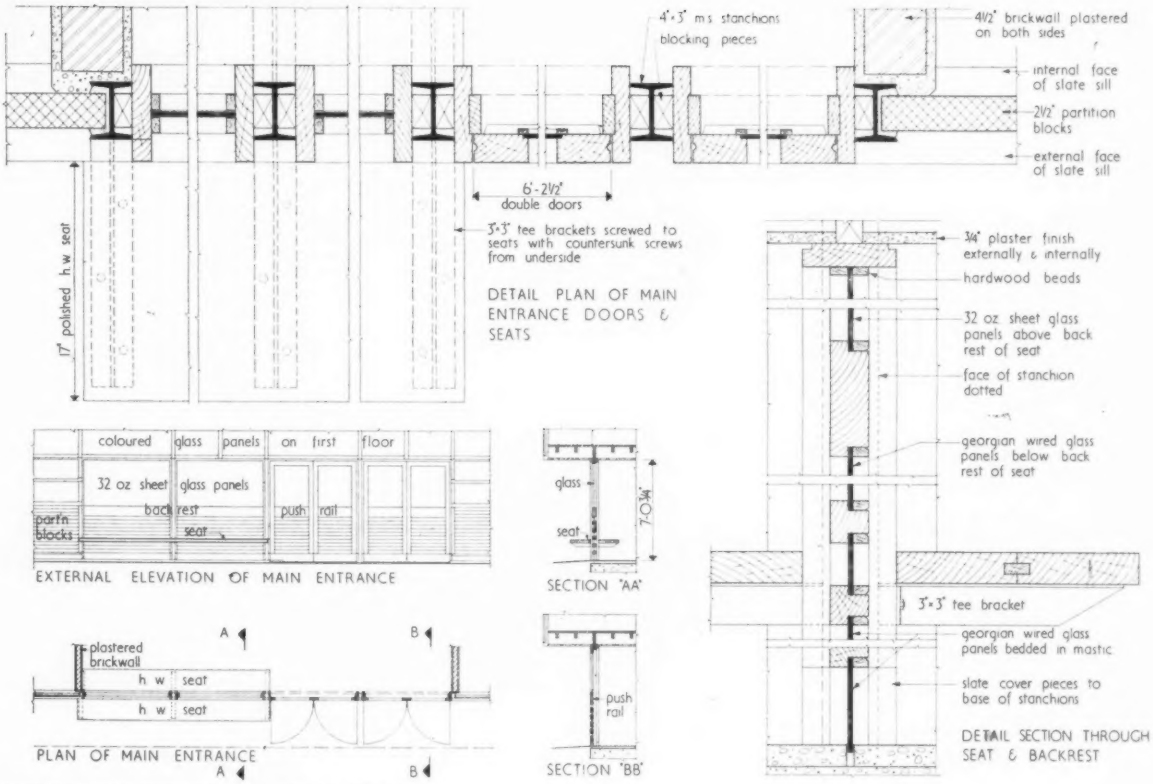




Below, the east facade, viewpoint 2. The boundary wall is replaced at the entrance by a shallow ornamental pond which forms a physical barrier between The Boltons and the school. The structural skeleton, though closely related to the cladding skin, is nevertheless the regulating factor throughout the whole building. It is exposed both inside and outside and, without being aggressive, it controls plane and space and is itself controlled by a grid which satisfactorily relates human dimensions, planning requirements and structural economy. The foil will be completed with small scale ornamental planting in the strip flower beds. A detailed planting layout is being prepared by the LCC Parks Department and will be submitted to the architects for their approval. Top right, entrance doors on east facade, viewpoint 3. Materials: ground floor, white glazed bricks. Upper floor, spandrel panels of coloured glass. General: exposed steel columns painted black: exposed steel fascias painted white: aluminium glazing frames, natural finish. The main band of obscure glass at first floor level is coloured deep blue: the sections running from upper floor window sill to eaves are primrose yellow. The cladding to the first floor, which projects over the main entrance will be illustrated as a Working Detail in a later issue of the JOURNAL. Above, viewpoint 4, south face of junior school with cloakroom connecting link left, from top of amphitheatre steps.

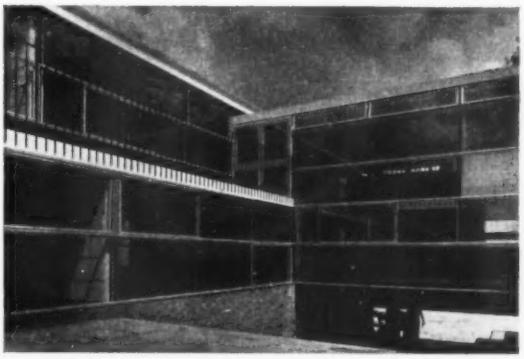


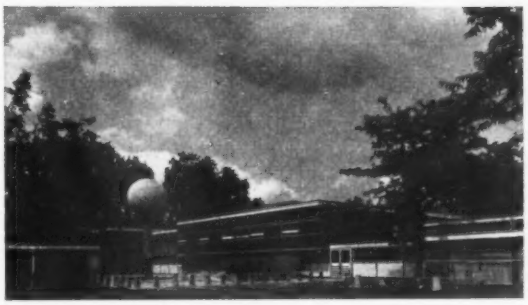
building illustrated



Details of main entrance [Scale: ½" & 1" = 1' 0"]

Right, south face of Junior school, viewpoint 5, with cloakroom connecting links on right. Steps running under link lead to amphitheatre. Impeccable structural detailing achieves a calm simplicity enriched by inter-reflection and interpenetration. The colour scheme is distinguished. Colour is applied accurately and sensitively to enhance and define a room or space. "Structurally" the colour is used both rhythmically and contrapuntally. The purely "functional" aspect however is to some extent ignored—or rather, the admission of light to the building is not always as carefully considered as it might be. Particularly worrying are:—1. The frequent use of clerestories in rooms with low ceilings. 2. The sharp ungraded line between ceiling, window head and sky. 3. The internal face of stanchions which is painted dead black. All these conditions can give rise to severe glare in ordinary circumstances. In this building, however, glare rarely occurs—due largely to the architect's constant awareness of the site, its large trees and the well developed forest trees in surrounding gardens. The conception of the external wall as a glass skin protected from strong sunlight and high sky glare by a combination of sky cover from trees and venetian blinds is by and large successful. By careful handling of these factors the architects were able to allow window sections and the colour scheme to be freed (to some extent) from the job of light grading. On the right, viewpoint 7, general view from south-west. Infants school on right, halls and first floor dining, centre (with kitchen below and boiler room in basement). Rails and bollards define kitchen yard and prevent vehicles overrunning playgrounds.



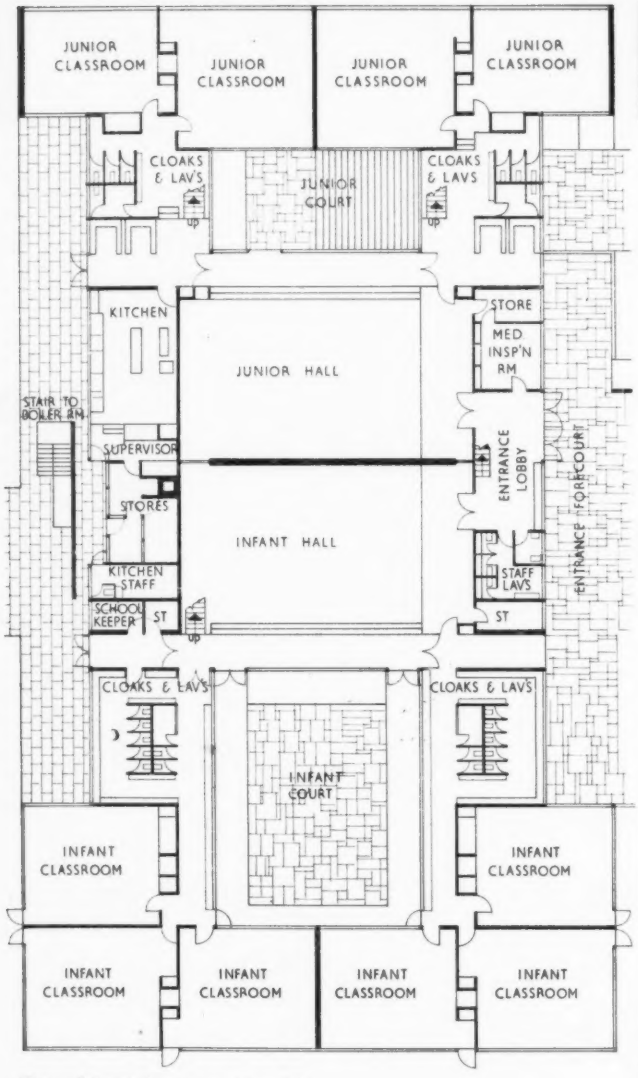


PRIMARY SCHOOL

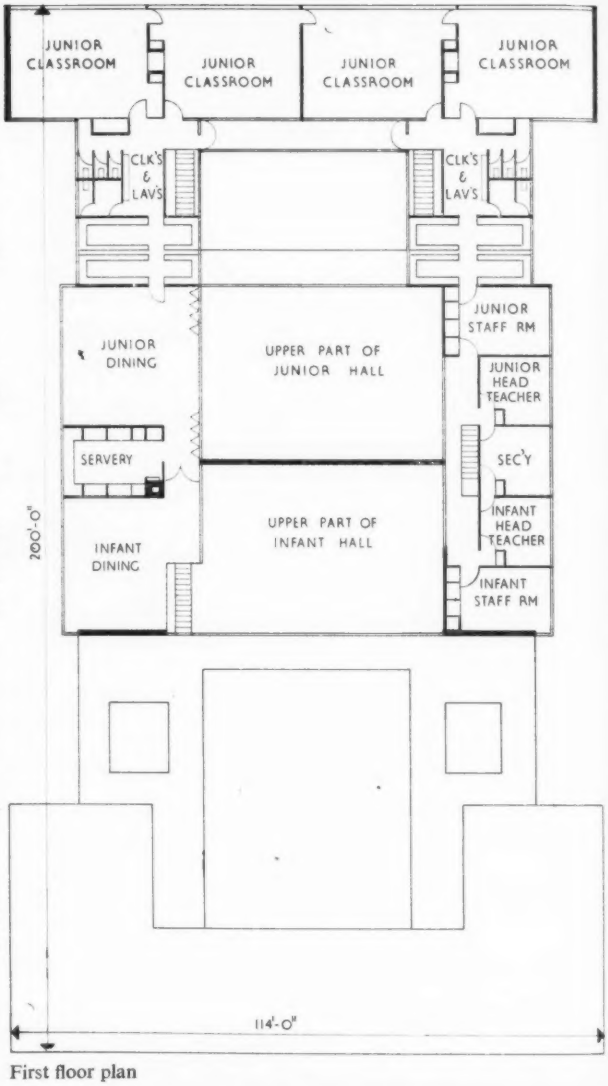
in SOUTH BOLTON GARDENS, S. W. 5

designed by CHAMBERLIN, POWELL and BON

building illustrated



Ground floor plan [Scale: $\frac{1}{32}$" = 1' 0"]



First floor plan

PRIMARY SCHOOL

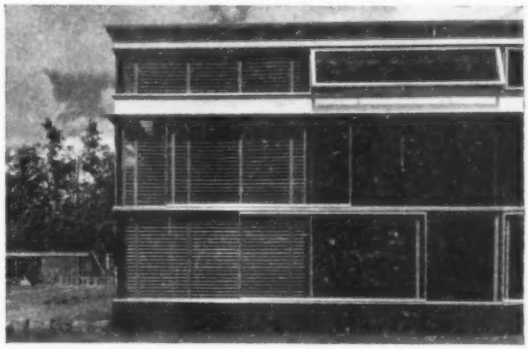
in SOUTH BOLTON GARDENS, S. W. 5

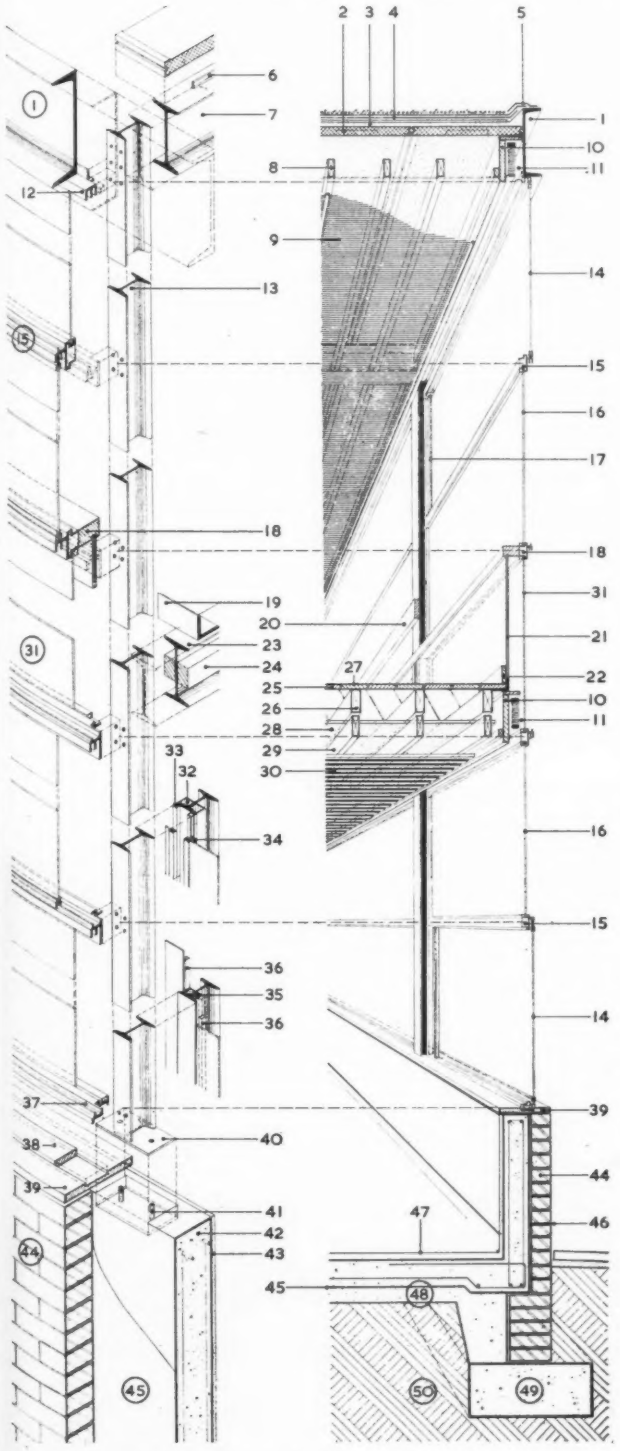
designed by CHAMBERLIN, POWELL and BON

Right, viewpoint 6, cold water storage tower which is constructed of reinforced concrete. The globe, which has an external diameter of 11 ft. 2 in. and an overall height of 30 ft., is painted primrose yellow and the column is white. This tower is designed frankly as an architectural foil.

building illustrated

Right and below right, viewpoints 8 and 9, detail of single-storey classroom showing standard 4 in. × 3 in. column and cleanly detailed semi-curtain walling. Column spacing is 6 ft. 8 in., sills at 3 ft. 4 in. and 6 ft. 8 in. The integration of physical requirements and anthropometrics with structure and screens produces clarity of part and of whole which is amplified by the clean use of colour. Horizontal sliding windows are 6 ft. 8 in. × 3 ft. 4 in. (lower panes are wired), controlled ventilation being obtained by top-hung hoppers. Single-storey cladding will be illustrated as a Working Detail in a later issue.



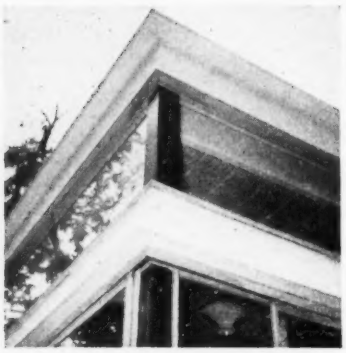


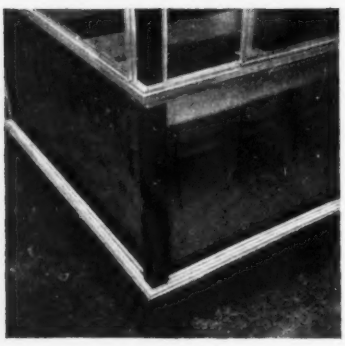
Structural details, junior classroom block

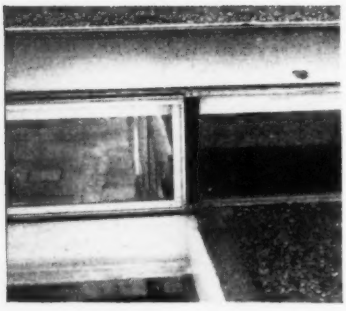
KEY

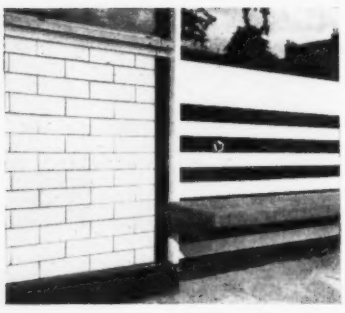
1. White painted 15 in. × 4 in. rolled steel channel fascia bolted to flange of mullion stanchions.
2. 6 ft. 8 in. × 2 ft. 0 in. × 2 in. thick wood-wool slabs with pressed metal tongued and grooved reinforcing edges, spanning between and resting on top flanges of steel beams set at 6 ft. 8 in. centres.
3. ½ in. thick cement and sand screed.
4. 3-ply bituminous felt roof finished with ¼ in. granite chippings.
5. Bituminous felt flashing secured to top flange of channel fascia with bituminous joint.
6. 6 in. × 1½ in. × ½ in. steel flats welded to top flange of roof beams at intervals to locate wood-wool slabs.
7. 9 in. × 4 in. rolled steel roof beams site welded to flange of stanchion mullions.
8. 4 in. × 1½ in. ceiling joist.
9. Wood mat ceiling fixed to ceiling joists by staples; edges secured with quadrant or half-round beads.
10. 1½ in. thick softwood lining to blind box.
11. Venetian blind.
12. Aluminium section bolted to steel fascia providing rebate for fixed glass and guide for top edge of horizontal sliding sashes.
13. Black painted 4 in. × 3 in. rolled steel stanchion mullions.
14. 32-oz. sheet glass in aluminium frame forming horizontal sliding sash.
15. Aluminium transom section bolted to stanchions providing rebate for fixed glass, bottom track and top guide for horizontal sliding sashes; softwood batten fixed within aluminium section for use as pin-up rail.
16. Fixed sheets of 32-oz. glass.
17. Oval section aluminium tube forming handle for sliding window.
18. As 15 but with softwood sill added
19. 3½ in. × 3½ in. steel angle.
20. 6 in. × 1½ in. timber guard rail opposite opening windows.
21. ¼ in. plywood painted.
22. 3 in. × ¾ in. softwood skirting, painted.
23. 10 in. × 4½ in. rolled steel joists site welded to flange of stanchion mullions
24. 4 in. × 3 in. timber bearers bolted through web of floor beam; felt strip on top of bearers to improve sound insulation.
25. 1 in. nominal tongued and grooved softwood boarding laid diagonally.
26. 5 in. × 2 in. softwood floor joists spanning between and resting on bearers fixed to beams at 6 ft. 8 in. centres.
27. P.V.C. floor covering laid on thin latex levelling screed, total thickness ⅛ in.
28. ½ in. asbestos insulation board.
29. 4 in. × 1½ in. ceiling joists.
30. Slatted ceiling formed out of 2 in. × ¾ in. softwood battens spaced ½ in. apart, nailed to ceiling joists; battens primed with oil paint, finished emulsion.
31. Blue vitreous enamel-backed rough cast.
32. Softwood battens fixed by screws through web of stanchion mullions.
33. Aluminium channel with felt packing to form stop for sliding sash fixed by wood screws through flange of stanchion to softwood batten.
34. Aluminium vertical edge of sliding sash.
35. Fixed softwood battens as 32, forming rebate for fixed glazing.
36. Hardwood glazing beads pinned to softwood battens.
37. Aluminium sill section.
38. Hardwood batten screwed to slate sill.
39. Slate sill 6 ft. 7⅞ in. overall, cut to fit round stanchion section.
40. 9 in. × 4½ in. × ½ in. thick steel base-plate welded to 4 in. × 3 in. stanchion.
41. Rag bolts set in pocket left in reinforced concrete upstand wall to receive stanchion base.
42. Reinforced concrete upstand wall.
43. ⅜ in. plaster finished with emulsion paint.
44. 4½ in. facing brickwork.
45. Damp-proof course.
46. Bituminous felt damp-proof course.
47. ⅛ in. thick blue synthetic resin. Bonded in situ floor finish.
48. 3 in. thick blinding concrete.
49. Concrete strip foundation.
50. Unexcavated ground.

building illustrated









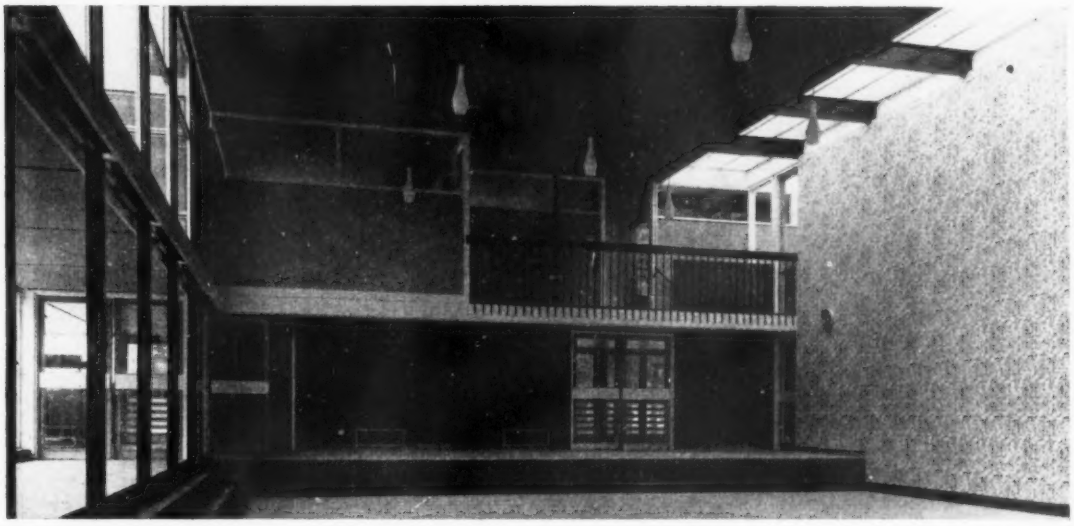
Above left and left, viewpoints 10 and 11, corner detail of single storey construction. Standard column offers fixing for top hung hopper, sliding window and fixed glazing. All frames are in natural finish non-corrosive aluminium alloy. The standard blind box can be seen behind clerestory window. Above, viewpoint 12, close-up of junction between internal brick partition and external screen. Below left, viewpoint 13, change of level between infants' classroom and cloakroom link—eaves of link are formed of "U" r.s.j. with flanges inside the building and is notched over and welded to the "L" r.s.j. (9 in. × 4 in.) with flange turned out. Top layer of three-ply roofing felt rides over flange of r.s.j. and is stuck down. Roof finish is ½ in. granite chips. Bottom left, viewpoint 14, junction of glazing and glazed brick with standard r.s.j. stanchion at entrance. Concrete plinth painted black with flush slate sill. 2½ in. glazed brick butted into r.s.j. Softwood frames are dimensioned to reflect brick coursing. They contain narrow strips of wired glass and form a backrest for the polished strip hardwood seat. Bottom right, stair to Junior classrooms. 10¾ in. × 2¾ in. strings, 1¾ in. × 3 ft. 6 in. treads and 5¾ in. × 1¾ in. handrails are all in hardwood. Finish is one application of oil and three coats of wax polish. ⅞ in. diameter tie rods below each tread. Balusters of ⅝ in. square m.s. screwed to stringer.

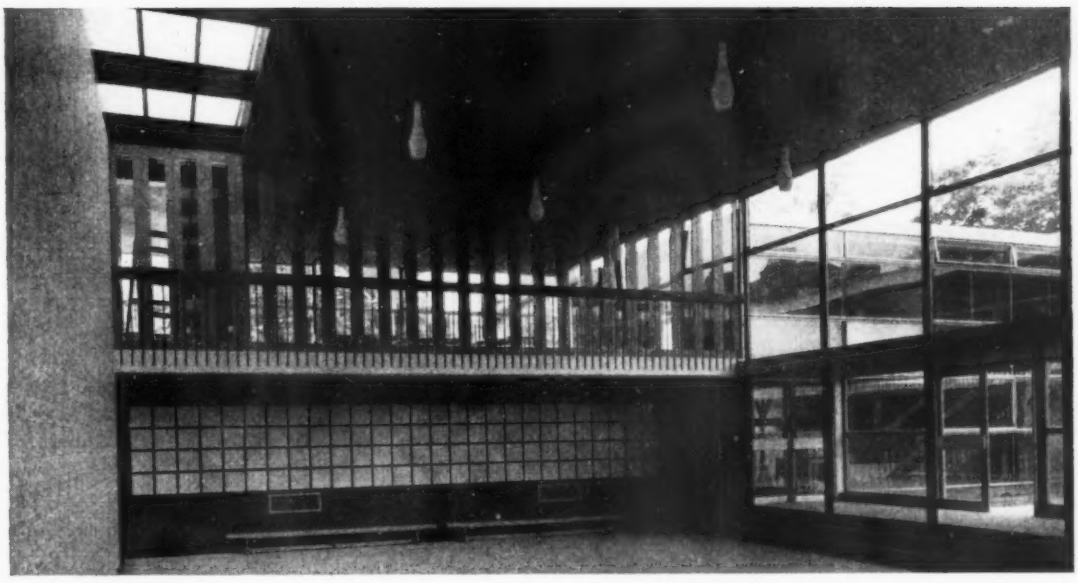
PRIMARY SCHOOL

in SOUTH BOLTON GARDENS, S.W.5

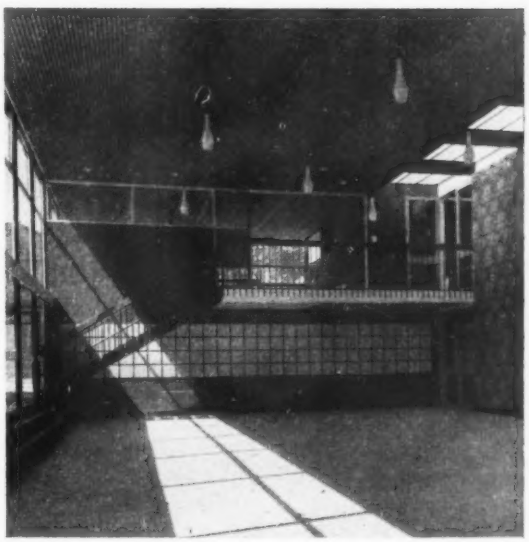
designed by CHAMBERLIN, POWELL and BON

building illustrated

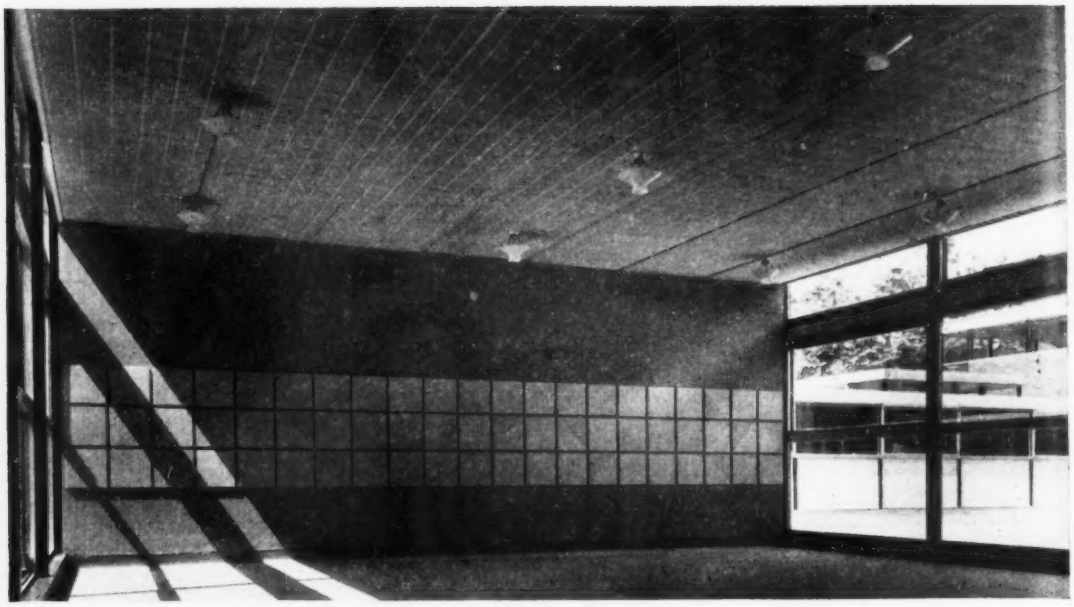


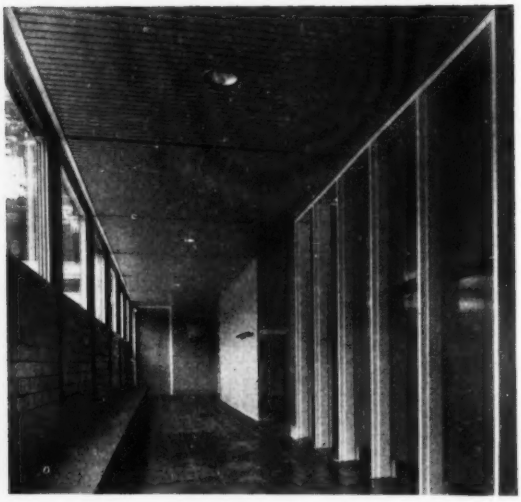


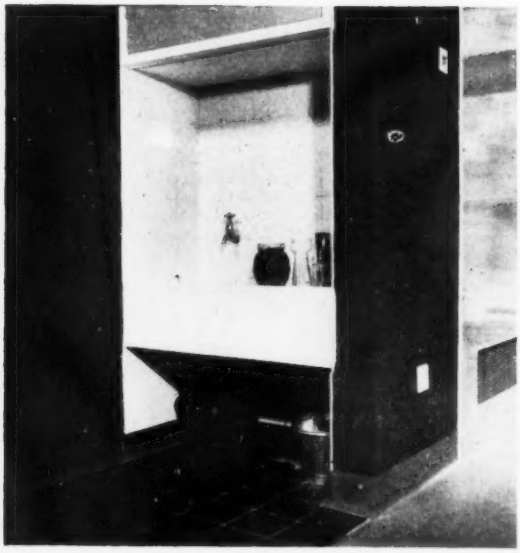
Top, junior assembly hall looking east. Doors below staff gallery connect with main entrance so that stage acts as circulation. Above, junior hall with glazed sliding-folding screen giving on to junior dining room. When these are folded the dining room acts as a balcony. This screen will be illustrated as a Working Detail in a later issue of the JOURNAL. Right, infants' assembly hall. Stairs from side aisle lead to dining room which is divided from balcony by a sliding glazed screen (shown three quarters open). Perforated fibreboard tiles on far wall and the 6 ft. 8 in. wide band of open slatted ceiling (which allows woodwool roof slab to act as a sound absorbent) damp down an otherwise very high reverberation period. The main pendant light fittings are backed up by concealed fluorescent strip housed behind panel at side-aisle roof level. Fluorescent strip is also concealed along ceiling closure to roof light. These two indirect sources, apart from adding to the general level of light, also give preferential light to the steps and the side wall. Recessed reflectors both above and below the balcony add sparkle.



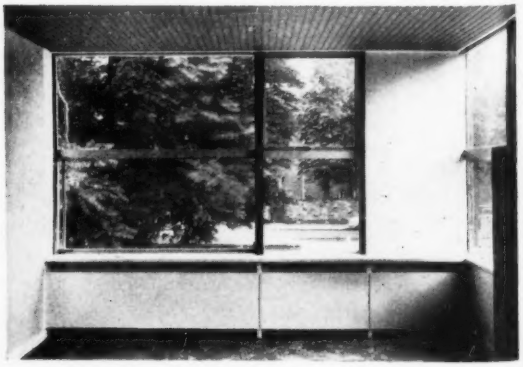
building illustrated







Above, typical infants' classroom: ceiling is of 3 ft. 4 in. wide rolls of matting stapled to ceiling bearers. The mat is made of $\frac{1}{16}$ in. diameter softwood rods stitched together with cotton. This cheap and good looking finish allows the wood-wool roof slab to act as a sound absorbent. The mat is self-coloured and treated with a fire retardant. Light fittings are Perspex and conform to MOE regulations regarding cut-off, surface brightness and specular reflection. The perforated tiles add sound absorbent, pattern and pin-up surface. Left, circulation and cloak connecting entrance to infants' school. Floor, blue quarries, external wall, white glazed bricks. Slatted ceiling (yellow) gives sound absorption. The grouping of 14 light switches on far wall achieves economy of wiring with little sacrifice in usefulness. A cloak-room fitting will be illustrated later as a Working Detail. Below left, sink unit in infants' classroom. Quarry tiled floor is carried through from corridor to form an easily cleaned area. On extreme right is the recirculated warm-air unit. Below, detail of window wall in infants' staff room. The room is four modules wide. The window wall consists of: top left, a 6 ft. 8 in. width of fixed glass, fixed inside external flange of r.s.j. Below it a 6 ft. 8 in. wide horizontal slider set outside external flange of r.s.j.



analysis

PRIMARY SCHOOL

in SOUTH BOLTON GARDENS, S.W.5

designed by CHAMBERLIN, POWELL and BON

CLIENT'S BRIEF: his stated requirements

The London County Council required a two-form entry Junior Mixed and Infants school for 560 children to be planned in two departments, Infants and Junior. All classrooms to have a sink and each assembly hall to have a fixed stage and a store of 100 sq. ft. In addition, certain accommmodation was to be common to both departments; dining room for 285 children and staff, secretary's office, medical inspection room, entrance hall with waiting space and cloakroom, cleaner's store, boiler room with fuel store and a school keeper's house.

SITE: topography, surrounding, access planting

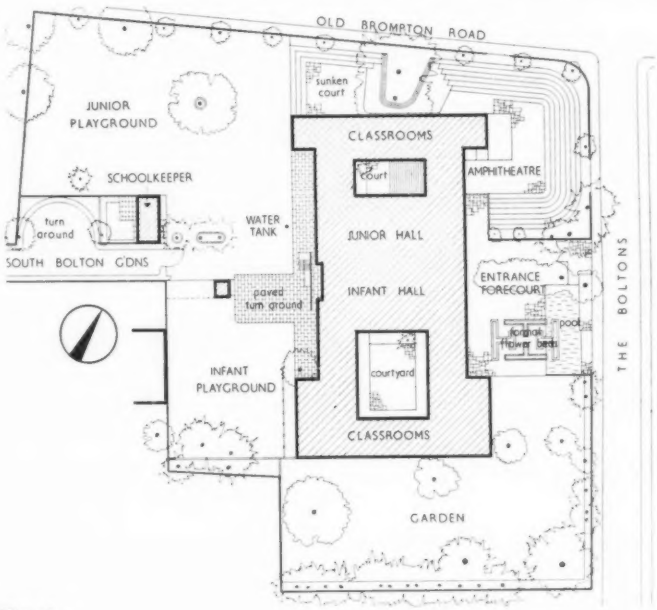
Area, 2 acres. Surroundings. The site is in one of the most urbane and exclusive sections of South Kensington, surrounded by free-standing villas, Georgian town-houses, mews cottages and inter-war brick blocks of luxury flats. Access. Old Brompton Road on north; the Boltons on east; Little Boltons on west with approach to school site by South Bolton Gardens. Planting. The site was riddled with ruins of semi-basements and had a static water tank, a ruined cottage and mounds of rubble. It was split in two by a minor road (South Bolton Gardens) and had very well developed trees belonging to the gardens of bombed houses. The semi basements and static water tank have been turned into service ducts and an amphitheatre. The school keeper's house is sited near a ruined cottage and the rubble areas are now playgrounds. The main and service entrances are directly on the line of South Bolton Gardens. The site therefore has been exploited with great care and very unusual sensitivity. Practically every tree of value (plane, acacia, mulberry, ilex, pear, poplar and may) have been preserved and an existing 6-in. terracotta block wall has been continued round the boundary in red facing bricks. Eighteen new trees have been planted, mainly along the boundary wall to Old Brompton Road.

PLAN: general appreciation and relation of units

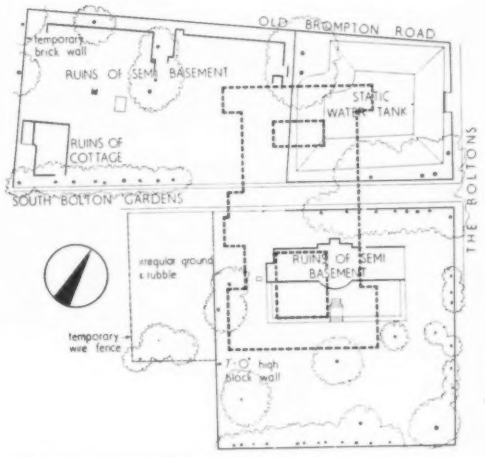
The plan at first glance appears symmetrical, even dogmatic. Closer inspection of the site and a knowledge of the brief, however, shows that the apparent symmetry is merely a convenient framework which serves to relate the various parts together. It arises quite naturally from the site and the programme. The two halls with boiler house, kitchen and dining rooms to the east end entrance and staff rooms to the west, are placed centrally. To the south six single-storey infants classrooms are arranged round a paved court. All classrooms are lighted from two sides. To the north a smaller court with steps down to the amphitheatre separated the two storey Junior block from the hall.

MAIN CONSTRUCTION: general appreciation

Of particular interest is the close integration of the structural frame with the external cladding and of the structural frame with the planning. All components are related through a 40-in. planning grid and a 5-in. vertical grid and the building is largely prefabricated. A standard 4-in. by 3-in. r.s.j. stanchion is used throughout the building and is placed generally at 80 in. centres round the building. Fixed glazing and fixed coloured glass are contained within the depth of the stanchion. Horizontal sliding windows are mounted on the outside face. All room dimensions are multiples of 40 in.—usually measured to centre lines of partitions or frame. In elevation the major vertical dimensions occur at distances apart of 20 in., 40 in. and 80 in. Apart from the concrete substructure, brickwork and plastering of brick walls, nearly all the construction is dry. The steel frame, aluminium and glass cladding, woodwork, roof panels and all joinery were fabricated off site.



Site plan



Site before development showing the school planned to avoid cutting down existing trees.

	cost per sq. ft.	s	d
	preliminaries and insurance	2	1½
	contingencies	2	11½

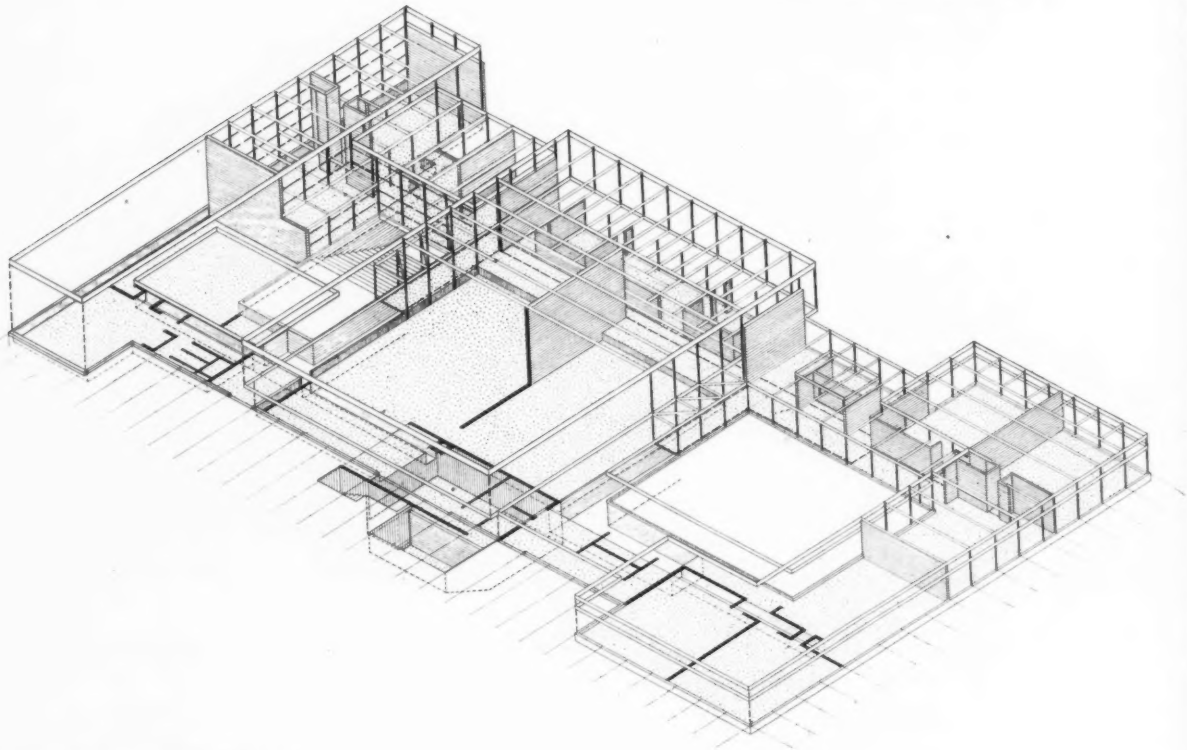
STRUCTURAL ELEMENTS

Work below ground floor level: foundation type, basement	*Location*	*Materials*	*Finish*	*Reasons and comments*		
4-in. r.c. slab. Resting on 9-in. brick walls and or mass concrete foundations. Cold bitumen emulsion d.p.m. on 3-in. blinding on 6-in. (average) hardcore	Throughout	Slab interlaced with mesh reinforcement	Screed. Concrete edge beam upstand fair-faced and bitumen painted	Excess top soil carted off site		
				work below ground floor level	**10**	**0½**

analysis

External walls and facings	*Location*	*Materials*	*Finish*	*Reasons and comments*	s	d
Upstand	Up to slate sill	Fair-faced concrete	Painted black	To emphasize dark plinth and to form a base for the springing of all the exposed stanchions. Avoidance of corrosion at base		
End walls	Junior block up to 13 ft. 4 in. above plinth	Sand-faced brick				
Fixed glass	Ground floor up to window sill	Georgian wired				
Coloured glass	First floor spandrel panels	Colour fused to back of glass. Glazing backed with air space and ½-in. plywood		A covering to floor beam structure		
Brick panels	Ground floor cloakrooms	White glazed brick				
				external walls and facings		6½

Frame or load-bearing elements	*Location*	*Materials*	*Beam spans*	*Column grid*	*Reasons and comments*	s	d
Exposed steel frame with load-bearing brick bracing. Columns 4 in. × 3 in.	Assembly halls	Rolled steel joists	33 ft. 4 in. maximum	6 ft. 8 in.	The 6 ft. 8 in. grid suits the planning concept and produces a light and economical structure		
	Classrooms and circulation areas		23 ft. 4 in.				
					frame or load bearing element	5	5¼



Isometric projection showing structure

Upper floor construction	*Location*	*Materials*	*Finish*	*Reasons and comments*	s	d
Timber floor joists wedged between r.s.j's	Throughout first floor	5 in. × 2 in. joists spiked through felt pad to 3 in. × 2 in. softwood batten bolted to r.s.j.	P.V.C. sheet floor finish on lightweight screed on 1-in. nominal diagonal boarding spiked to floor joists. All steel beams not visible primed before finishes applied	Finish, screed and pads give good sound insulation. Asbestos sheets are fixed to underside of wood joists in two-storey block to provide fire check between floors		
				upper floor construction		8

Staircases	*Location*	*Materials*	*Finish*	*Reasons and comments*	s	d
Hardwood	Main entrance lobby, infant dining room and first floor junior classrooms	H.W. strings 10¾ in. × 2¾ in., treads 1¼ in. × 3 ft. 6 in. and handrails 5¼ in. × 1¼ in., with ⅞-in. square m.s. balustrading, with ⅞-in. diameter tie rods under each tread	One application of oil and finished with three coats of wax ploish. Balustrades and tie rods; gloss black oil paint	Tie rods act as stiffeners against movement in timber		
Height: floor to floor 8 ft						
				staircases		10¾

analysis

					s	d
Roof construction	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Rolled steel structural beams with timber roof joists wedged between at right angles	On all roof areas. Main halls	12 in. × 5 in. r.s.j's	3-ply bituminous roofing felt with ¼-in. granite chippings on ¼-in. levelling screed on 2-in. reinforced woodwool slabs on 4 in. × 2 in. roof joists wedged to r.s.j's	Lightweight construction		
	Infant circulation areas	5 in. × 3 in. r.s.j's				
	Elsewhere	9 in. × 4 in. r.s.j's				
				roof construction	2	10¼
Rooflights	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Patent glazed roof lights	Over main halls, 6 ft. × 8 in. width on either side of 13½ in.	Aluminium frames with ¼-in. Georgian wired rough-cast glass	Natural	No maintenance		
				rooflights		1
Windows	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Transomes, sill and head members supporting horizontal sliders, top hung ventilators, fixed glazing and fixed coloured glass	Continuous throughout elevations	Corrosion resisting aluminium alloy	Natural	The windows are patent type but special sections were designed for the building. No maintenance required		
				windows	4	3¼
External doors	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Framed glazed doors with 3-in. horizontal battens	Main entrance and entrance to Infant and junior blocks	Softwood with ¼-in. Georgian wired polished plate glass	4 coats gloss paint (external quality)	Horizontal battens planted out door frame to echo horizontal courses of glazed bricks at every alternate course		
				external doors		2½
Glazing	*Location*	*Materials*	*Finish*	*Reasons and comments*		
6 ft. 8 in. × 3 ft. × 4 in. sliding windows	Throughout	¼-in. Georgian wired polished plate below 3 ft. 4 in. 32-oz. clear sheet glass		Prismatic glass for privacy in cloakrooms. Coloured glass covers floor thickness		
6 ft. 8 in. × 1 ft. 8 in. top hung ventilators		32-oz. clear sheet glass				
Fixed glazing		Prismatic No. 2 sheet glass. ¼-in. coloured				
				glazing	1	6

PARTITIONING

Internal partitions	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Floor to ceiling panels	Staff rooms	Patent dry panel 2½ in. thick consisting of two sheets of plasterboard separated by an egg-crate core of cardboard	Skin coat plaster. 2 coats emulsion paint	Panels used on first floor to save weight		
Solid	General	4½-in. brick	Plastered. 2 coats emulsion paint			
				internal partitions	1	2¾
Screens	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Folding sliding screen	Junior dining room overlooking hall	Soft wood framed doors, ¼-in. Georgian wired polished plate to handrail height. Bottom rollers	Gloss oil paint	Folding screen designed to enable Junior dining room to be used independently either for dining or teaching or as balcony to hall. Glazing used to retain the effect of visual transparency of the building		
Sliding screen	Infant dining room	Softwood frame. Polished plate glass	Gloss oil paint	Sliding screen serves a roughly similar purpose for Infant school		
				screens		5¼
W.C. doors and partitions	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Flush doors	All cloakroom areas	¼-in. external-quality plywood framed in hard wood frames	Gloss oil paint			
				W.C. doors and partitions		5½
Internal doors and partitions	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Framed glazed doors	Circulation and first floor staff rooms	Soft wood, ¼-in. Georgian wired polished plate glass	Gloss oil paint	Glazed principally to maintain and enhance the lightness and transparency of the building		
				internal doors		7½
Ironmongery to internal doors	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Mortice dead locks and pull handles	Glazed doors	Aluminium	Silver anodized			
Mortice latch locks and lever handles	Flush doors	Aluminium	Silver anodized			
				ironmongery to internal doors		6

analysis

FINISHES

Floor finishes	*Location*	*Materials*	*Finish*	*Reasons and comments*	s	d
Wood strip	Main halls	East African olive	Plastic seal	12s. 4d. Softwood tongued and grooved		
Mastic	Ground floor classrooms	Resin bonded painted on to screed	Wax polish	15s. 11d. Resinoid plastic		
Tiles	Ground floor circulation areas	6 in. × 6 in. × ⅜ in. blue quarries	Oiled and polished	28 s. 1½d. Quarry tile 29s. 2d. Continuous plastic		
P.V.C. sheet	First floor			51s. 7d. Hardwood strip floor		
				floor finishes	**3**	**2½**

Ceiling finishes	*Location*	*Materials*	*Finish*	*Reasons and comments*		
" Wood mat "	Infant classrooms and first floor Junior classrooms		Natural, treated with fire retardant	The " wood mat " ceiling consists of ⅛ in. diameter		
Soft wood slats separated by ½ in. gap	All circulation areas, dining rooms and Junior classrooms on ground floor		Emulsion paint	Flexible softwood stitched with cotton. This and the slats offer no resistance to the passage of sound which is then absorbed by wood-wool roof slab. T. and G. boards used where no acoustic treatment is needed. Both are dry construction and good looking		
T. and G. boards	Main halls, under balconies, entrance hall and staff-rooms		Emulsion paint			
Plaster	Kitchen and infant lavatory blocks		Gloss and emulsion			
				ceiling finishes including acoustic treatment	**3**	**8½**

Decorations	*Locations*	*Paint types*	*Munsell or other ref.*	*Colour scheme and comments*		
Exposed stanchions and fascias	External/internal	Hard gloss oil	Black stanchions, white fascias			
Classrooms	Plastered surfaces	Emulsion paint	Archrome 6 and 19	(Brick red and yellow)		
Ceiling in halls, dining and staff-rooms	Slats and boards	Emulsion paint	Archrome 4	(Orange)		
Ceilings in circulation	Slats	Emulsion paint	Archrome 26	(Lime)		
Glazed and flush doors, sliding screens	Circulation, and classrooms	Hard gloss oil	Archrome 20	(Grey)		
				wall finishes		**7**

Decorations	*Location*	*Paint types*	*Munsell or other ref.*	*Colour scheme and comments*		
W.C. doors, boys	Infant and junior lavatories	Hard gloss oil	Archrome 33	(Bottle green)		
W.C. doors, girls			Archrome 39	(Dark blue)		
French doors	Infants classrooms	Hard gloss oil	Archrome 15	(Lemon yellow)		
All door linings and framing members	Soft wood skirting boards	Hard gloss oil	White			
				decorations	**1**	**6**

FITTINGS

Cloakrooms	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Purpose made locker seats, shoe compartments, hat and coat hook rails	Infant and junior cloakrooms	Hard wood	Oiled and wax polished			
				cloakrooms		**7¼**
				other fittings		**9¾**
				kitchen equipment		**3¾**

SERVICES

Rain water disposal	*Location*	*Materials*	*Finish*	*Reasons and comments*		
R.W.P's discharge internally into sealed and trapped gulleys in ducts under floor slab	Throughout	Cast iron		All down pipes have been concealed in vertical and horizontal ducts with access panels and covers provided for maintenance		
				rain water disposal		**1½**

Plumbing internal: waste disposal	*Location*	*Materials*	*Finish*	*Reasons and comments*
Single pipe system in two storey block	Junior lavatory block	Cast iron soil pipes. Copper wastes, traps, anti-syphon pipes and feeds where exposed		

Hot water storage	*Location*	*Materials*	*Capacity*	*Reasons and comments*
Calorifier	Boiler room	Galvanised sheet steel	500 galls.	

analysis

Cold water storage	*Location*	*Materials*	*Capacity*	*Reasons and comments*	s	d
Spherical water tank	Free-standing near kitchen on west side of school	Sprayed concrete on m.s. mesh and reinforcement bars for tank. R.C. column	3,000 gallons			
Plumbing: Sanitary fittings	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Individual basins, rimless w.c.'s and urinals	All cloakrooms	Fireclay	White glazed	Strong, good design		
				plumbing internal, sanitary fittings	**1**	**8½**
Heating installation: heat exchanger type	*Location*	*Criteria temp.*	*Air change rate*	*Reasons and comments*		
Cabinet type recirculated air convectors	Throughout	170° F. mean and not more than 20° F. drop through unit		Neat and efficient installation; is used in hot weather as a cooling unit		
High level plain pipe coil and finned tube heater	Additional heating in main halls					
Boiler type and capacity	*Location*	*Heat load and fuel type*	*Stoking method*	*Reasons and comments*		
598,850 b.t.u.'s	Two in boiler room for space heating		Automatic underfeed stoker	Solid fuel requested by by clients		
One in boiler room for domestic hot water			Automatic underfeed stoker			
				heating installation	**6**	**6½**
				gas installation		**½**
Drainage: type of system	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Main sewer collects soil and rain water	Existing sewer runs west to east under building (South Bolton Gardens)	Length of brick sewer under building replaced by 12 in. diameter cast iron pipes		Requirement of the Borough of Kensington		
Drain types	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Main soil pipes in ducts collect both soil and rain water through vented sealed gulleys	In ducts running in a north-south direction in building	Cast iron		Existing basements utilised as ducts		
				drainage	**2**	**1½**
Electrical installation: source and fitting type	*Location*	*Illumination level*	*Quality*	*Reasons and comments*		
Tungsten	Throughout	10 lumens per sq. ft. maintained at working plane (teaching spaces)	A fairly large number of low wattage fittings giving a bright but glare-free environment			
Wiring and switching types	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Cable in conduit	Internally	Conduits threaded through pre-drilled holes in steel. Both conduit and copper-sheathed cable run to required positions in ducts		Conduit required by client		
Wiring and switching types	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Copper-sheathed cable	Externally and in boiler house					
				electrical installation	**2**	**8¾**
Lifts	*Location*	*Capacity and speed*	*Motor room position*	*Reasons and comments*		
One manually operated food lift	Serving on first floor from kitchen	For loads of 1½ cwt.				
Paved areas	*Location*	*Materials*	*Finish*	*Reasons and comments*		
Outdoor play areas	West of school	Tar paving				
Internal open courts		York stone pavings (found on site)				
Sunken court	North of Junior classrooms	York stone pavings (found on site)				
Service road	Between Infant and Junior play areas	Tarmacadam				
				paved areas	**3**	**4½**
				total cost per sq. ft. of floor	**62**	**2½**

analysis

RATIOS

Area of enclosing walls / Total floor area	= ·553 / 1	Total roof area / Total floor area	= ·502 / 1

COST DETAILS

No. of form entries	2	Net cost	£84,482
No. of places	560	Net cost per place	£150
Floor area (sq. ft.)	27,171	External works	£17,505
No. of sq. ft. per place	48	Gross cost	£101,987
		Gross cost per place	£182

COST COMMENTS

The transformation of a London bomb site into a new school has produced unusual site difficulties not normally encountered in this type of project and these factors have been reflected in the following elements:

(*a*) Work below ground level includes site clearance, demolition and preparation for heavy mass concrete and reinforced-concrete slab-type foundations.

(*b*) Drainage costs include for the replacement of an existing brick sewer with 12-in. diameter cast-iron drain pipe across a line of the site.

(*c*) Paved area costs show the architectural difficulties in dealing with the problem of site works. Some materials found on the site have been used.

The emphasis on dry construction for most of the building has produced a number of unusual types of construction, finishes, e.g., patent partitions, wood-mat ceilings, screens, etc. Unfortunately they are grouped together into one cost per sq. ft. and it would be necessary to break down each element into various types of construction including decoration before comparative costs can be obtained. For example, it would be interesting to know the individual costs of each of the four types of ceiling shown in the analysis at the overall cost of 3s. 8½d.

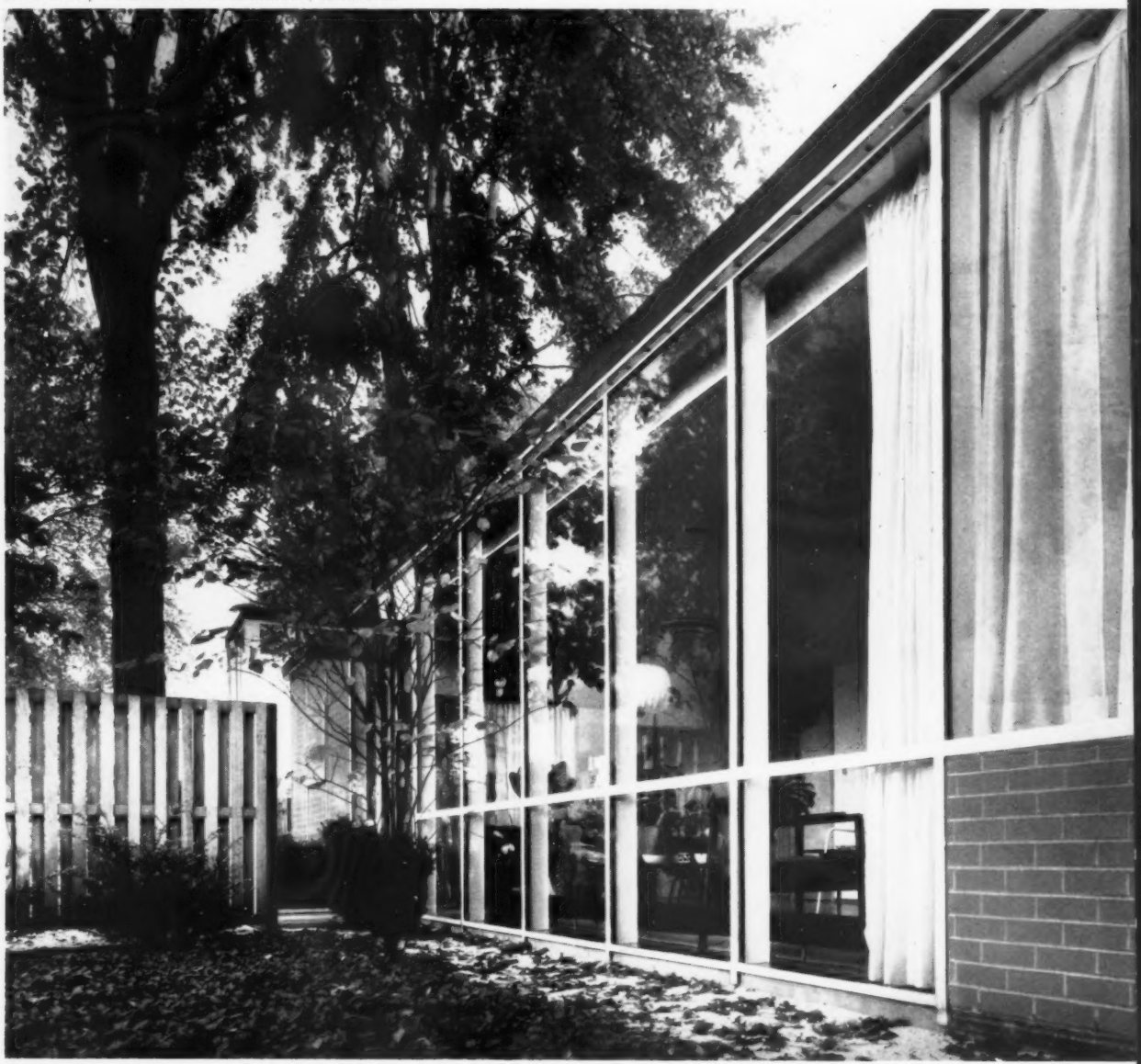
CONTRACTORS

General Contractors: W. J. Marston & Son Ltd. *Sub-contractors: Steel frame:* Redpath Brown & Co. Ltd. *Aluminium windows and transomes:* Quicktho (1928) Ltd. *Glass (Muroglass & Prismatic):* Pilkington Bros. Ltd. *Glaziers:* Faulkner-Greene & Co. Ltd. *Roofing:* Wm. Briggs & Sons Ltd. *Paint, exterior and interior:* W. & J. Leigh, Ltd. *Flooring (Resinoid and Crestaline):* Haskel Robertson & Co. Ltd. *Tilers (Blue quarries and white glazed wall tiles):* Wiggins-Sankey Ltd. *Ceiling (Pinoleum):* Tidmarsh & Sons. *Kitchen Lift:* George Johnson Ltd *Slate cills:* Bow Slate & Enamel Co. Ltd. *Ironmongery:* Alfred G. Roberts Ltd. *Glazed partition bricks:* Leeds Fireclay Company *Electrical contractors:* John Hearson & Co. Ltd. *Electric light fittings: Suspended fittings in main halls:* Frederick Thomas & Co. *General lighting in classrooms:* Thorn Electric Industries Ltd. *Wall brackets in classrooms:* George Forrest & Son Ltd. *Spun aluminium recessed fittings in circulation areas, dining rooms and staff roofs:* Hume Atkins & Co. Ltd. *Bricks (suppliers):* R. Passmore & Co. Ltd. *Adamsez sanitary ware:* Stitsons Sanitary Fittings Ltd. *Sliding door and gear:* P. C. Henderson Ltd. *Heating sub-contractors:* Norris Warming Co. Ltd. *Heaters:* C. A. Dunham & Co. Ltd. *Hardwood floor:* Vigers Brothers Ltd. *Wallpaper:* Cole & Sons (Wallpapers) Ltd. *Turfing:* James Monk. *First floor partitions:* British Plasterboard Co. Ltd. *Gates, railings and balustrading:* St. Peter's Metal Works. *Tarmacadam paving:* The Wainwright Paving & Contracting Co. Ltd. *Trees:* Hillier & Sons. *Acoustic tiles: (Mintex):* Merchant Trading Co. Ltd. *Sperical concrete water tank:* Cement Gun Co. (Gunite). *External finish on tank:* Gunac Co.

working detail

GLAZED WALL: SURGERY, DOCTOR'S HOUSE AT DETROIT, MICHIGAN

Leinweber, Yamasaki and Hellmuth, architects

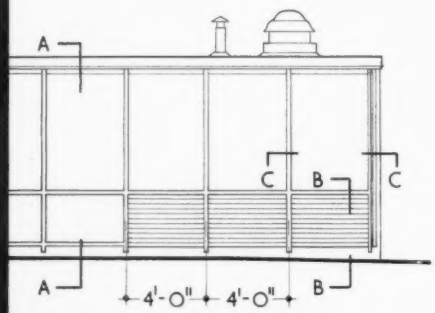


The welded steel frame, which includes an 8 in. × 4 in. angle to serve as eaves beam and fascia, is bolted to the concrete foundation. The line of holes under the eaves beam gives ventilation to the roof and is covered by screen rings to prevent the entry of insects.

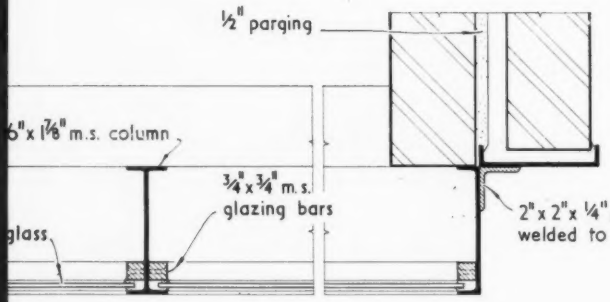
working detail

LAZED WALL: SURGERY, DOCTOR'S HOUSE AT DETROIT, MICHIGAN

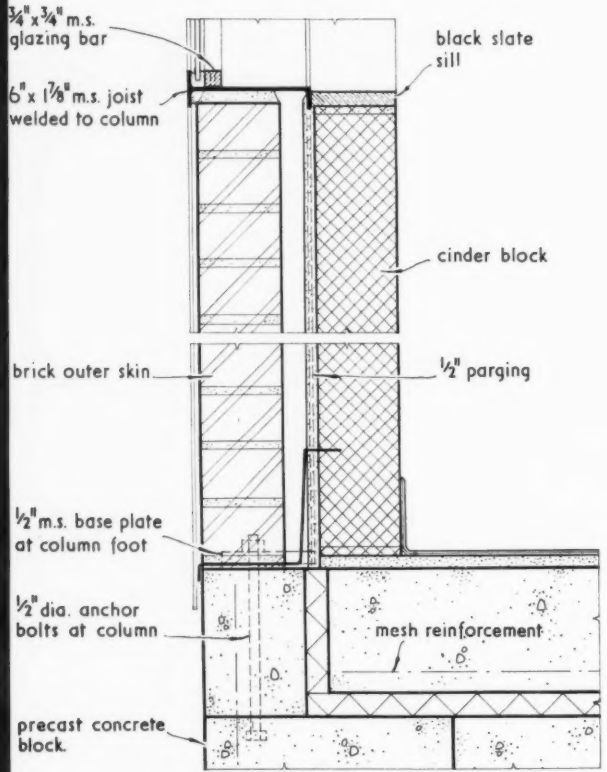
einweber, Yamasaki and Hellmuth, architects



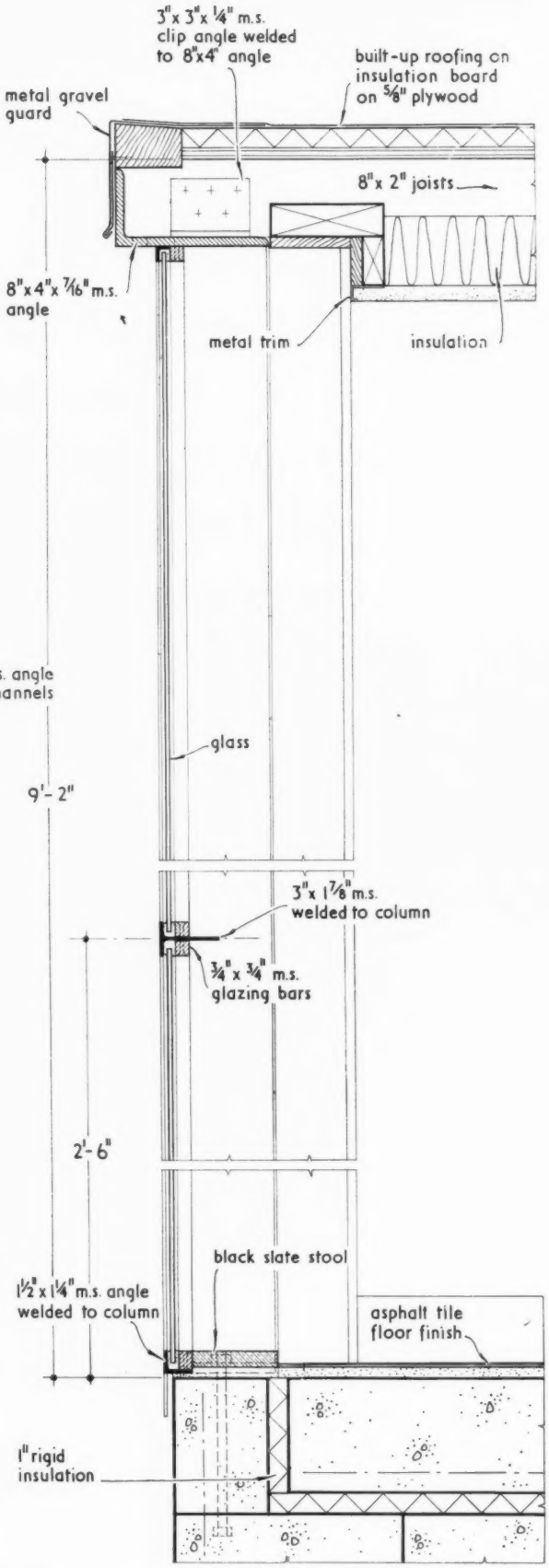
KEY ELEVATION OF WINDOW WALL.
scale 1/8" = 1'-0"



PLAN AT C-C. scale 1½" = 1'-0"



SECTION B-B. scale 1½" = 1'-0"



SECTION A-A. scale 1½" = 1'-0"

working detail

BALCONIES: FLATS IN LONDON, S.W.1

Powell and Moya, architects

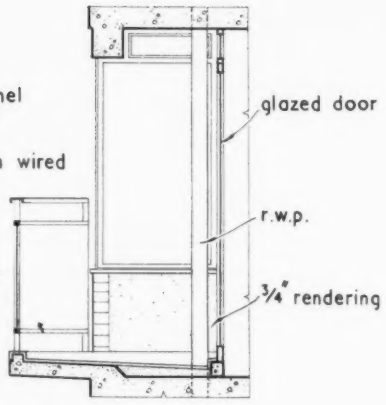
This balcony is a further development of the example (taken from an earlier block in the same scheme) illustrated as a Working Detail on August 26, 1954: for instance, the profile and materials of the balustrade are the same, but greater use is made of shop welding, and the exposed edges of the Georgian wired glass are covered with aluminium trim.

working detail

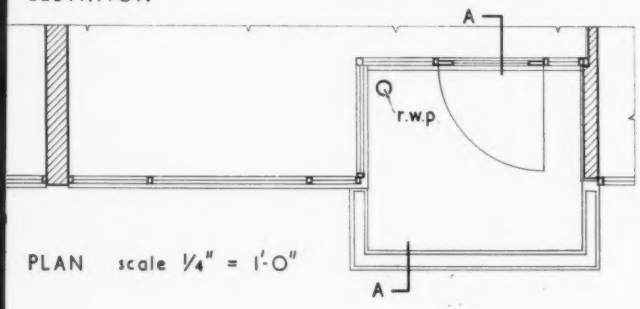
BALCONIES: FLATS IN LONDON, S.W.1

Powell and Moya, architects

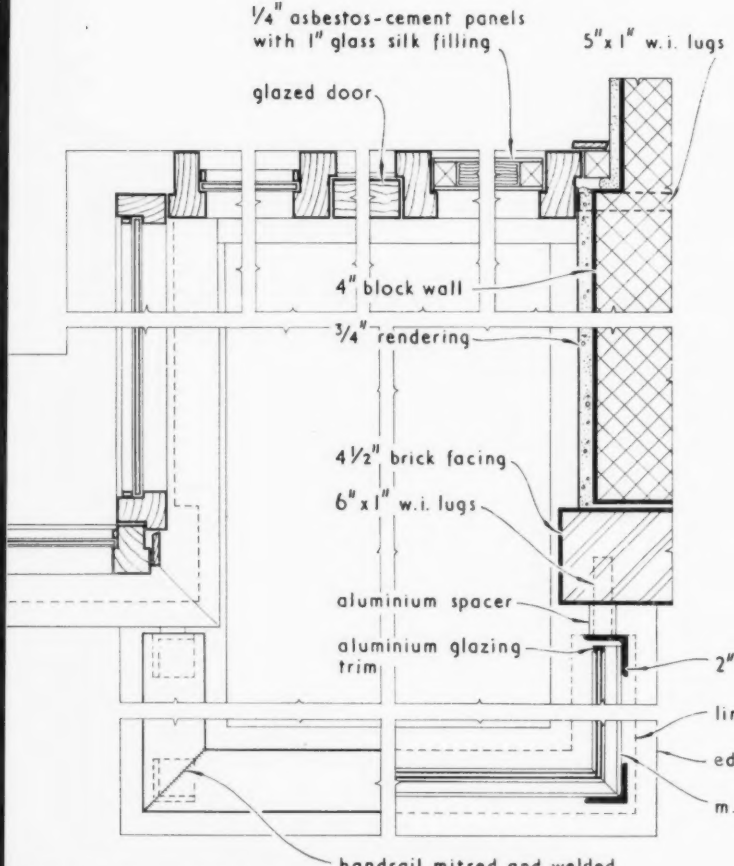
ELEVATION



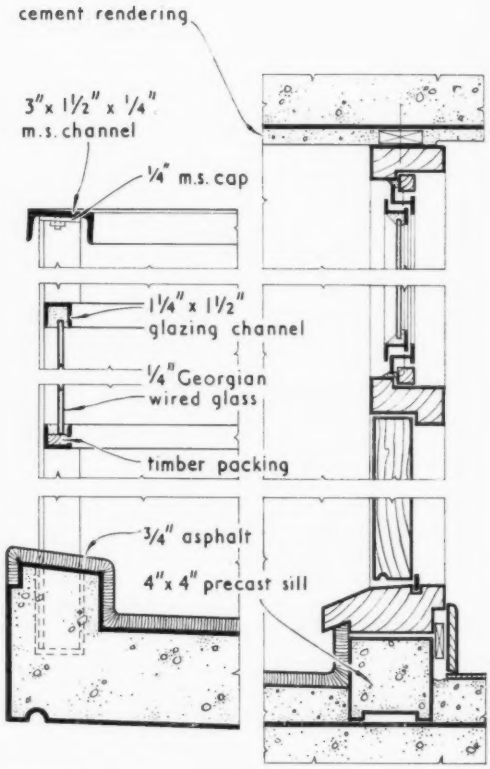
SECTION A-A



PLAN scale ¼" = 1'-0"



PLAN OF BALCONY.
scale 1½" = 1'-0"



SECTION A-A. scale 1½" = 1'-0"

THE LIBRARY OF INFORMATION SHEETS COMPLETE TO JUNE, 1956

REPRINTS

All Information Sheets published since the new series was started in October, 1947, have been reprinted. Specially-designed binding cases to hold approximately 100 Sheets may be obtained at the price of 6s. 0d. each. (Postage 6d.)

Individual Sheets may be ordered (3d. each). Readers requiring sets or individual Sheets should fill in the form below. Sets in classified order (without binders) are available as follows, and the publishers will quote for sets not detailed below.

Oct., 1947-June, 1956 ... ... £4 17s. 6d.
(Postage 2s. 6d.)

ORDER FORM

Please send me .....

Name .....
(Block letters)

Address .....

.....

Buildings Illustrated

Department Store, Arundel Street, Portsmouth, Hampshire. (Pages 372-373.) Architects, T. P. Bennett & Son F./A.R.I.B.A. Quantity Surveyors, Harris & Porter. General Contractors, Trollope & Colls Ltd. Sub-contractors: heating and ventilation, Rosser & Russell Ltd.; electrical installation, Troughton & Young Ltd.; shopfronts and shopfittings, Courtney Pope Ltd.; suspended ceilings, Steel Bracketing & Lathing Ltd.; asphalt roofing, Highways Construction Ltd.; part of sliding glass doors (mechanical and structural parts), Knight Construction Ltd.; terrazzo paving, Art Pavements & Decorations Ltd.; escalator, refrigerating equipment, J. & E. Hall Ltd.; partitioning ("Bellrock"), Orlit Ltd.; flagstaff, Camper & Nicholson Ltd.; plastering, J. H. Jenner Ltd.; Portland stone facing, Wandsworth Stonemasonry; artificial stone, Blockcrete Ltd.; metal windows and lantern lights, Crittall Manufacturing Co. Ltd.; goods lift, Waygood-Otis Ltd.; steelwork (loading bay), Aston Construction Ltd.; facing bricks (suppliers), Henry J. Greenham (1929) Ltd.; ironmongery, Yannedis & Co. Ltd.; strong-room door, Chubb & Sons Ltd.; external neon signs, Harris, The Sign King; balustrading and handrails, William Pickford Ltd.; cement glaze wall finish, Robb's Cement Enamel Finishes Ltd.; roller shutters, Shutter Contractors Ltd.; ash hoist, Vaughan Lift Engineering Ltd.; sanitary fittings, John Bolding & Sons Ltd.; kitchen equipment, Gardiner & Gulland Ltd.; treatment to canopy soffit, STIC. B. Paint Sales Ltd.; emulsion paint for walls and ceilings, Joseph Freeman & Sons & Co. Ltd.

Announcements

PROFESSIONAL

The Council of Industrial Design, Scottish Committee, have changed their address to 46, West George Street, Glasgow, C.2. Tel.: Douglas 3914.

Field, Pethybridge & Partners, architects, have moved their office to 4, Yeoman's Row, S.W.3 (Tel.: KNIghtsbridge 4791), where they will be pleased to receive trade catalogues, etc.

Brandt & Odell, consulting engineers, have moved to 12, Queen Anne Street, W.1. Tel.: LANgham 4501.

C. S. Allott & Son, consulting engineers and architects, 1, North Parade, Manchester, 3, and Croxley House, 14, Lloyd Street, Manchester, 2, have opened a London Office at 20/22, Bedford Row, W.C.1 (Tel.: HOLborn 1691/2.) L. B. Ollier, B.SC.(TECH)., M.I.C.E., is resident partner-in-charge, with H. S. Mayo, B.SC., A.M.I.C.E., as chief assistant. At present the London Office is chiefly concerned with civil engineering works for the Bradwell and Berkeley Nuclear Power Stations in conjunction with the English Electric Co. Ltd., Babcock & Wilcox Ltd., and Taylor Woodrow Construction Ltd. group.

Brunton, Baden Hellard & Partners, of 96, Eltham Road, Lee, S.E.12, announce that Raymond J. Playle, A.R.I.C.S., A.I.ARB., has now joined the "Polycon Group" of Consultants, and will henceforth play an essential part in all the activities of the Group.

TRADE

Donald McIntyre, F.R.I.B.A., of Durham, President of the Northern Architectural Association, is to open a three-day exhibition of the products of the Expanded Metal Co. Ltd. at Newcastle, on September 11.

Josiah Parkes & Sons Ltd. have completed arrangements for acquisition of the whole of the issued capital of Edwin Showell & Sons Ltd., of Shirchley, Birmingham, an old-established business manufacturing Builders' Brassfoundry, Door Springs and Architectural Brassfoundry.

The Cementation Co. Ltd. have moved their London office to:—P.O. Box 151, 20, Albert Embankment, S.E.11. Tel.: REL. 7654.

Frank Rabone has been appointed by the Turriff Construction Corporation Ltd. as Group Development Executive to assist in developing the activities of the Corporation and its Subsidiary Companies. Mr. Rabone will be based in Birmingham and is operating from the Corporation's offices at 112, Colmore Road, Birmingham, 3.

Clarke Ellard Engineering Co. Ltd., who have for ten years manufactured Sliding Door Gear and Mechanical Handling Equipment under that name, have now changed their name to Ellard Sliding Door Gears Ltd. This change is due to the resignation of A. H. Clarke, and the fact that the company has decided to discontinue the manufacture of Mechanical Handling Equipment and concentrate entirely on Ellard Sliding Door Gears. Their range of door gear remains unchanged.

M. Sumray, managing director of Baxter's Leather Co. Ltd., which was recently acquired by Rubber Improvement Ltd., was appointed to the Board of Rubber Improvement Ltd., at a Board Meeting held on August 23.

The Brightside Heating & Engineering Co. Ltd. have moved their Glasgow branch to the following address: 6, Lynedoch Crescent, Charing Cross, Glasgow, C.3. Telephone: Douglas 3971.

P. L. Critchell, Technical Advisory Officer, of Expandite Ltd., Chase Road, London, N.W.10, who specialise in the manufacture of jointing materials and sealing compounds, will be leaving this country on August 21 for an extensive tour of Spain. During his visit he will inspect airfields and hydraulic structures where the Company's materials have been used extensively.

Pilkington Brothers Ltd. announce that T. A. Markus, A.R.I.B.A., has joined their New Products Application Department where a start is being made on cladding and curtain wall problems.

Corrections

In the JOURNAL of August 23, the design of Dublin airport was attributed to Michael Scott. The architect was, of course, Professor Desmond FitzGerald. In the same caption Dublin was inadvertently described as part of Great Britain. We apologize for these errors. Post-war extensions to Dublin airport were carried out by Richard H. Davies in association with Hugh D. Roberts. These extensions were illustrated in the JOURNAL of June 7, 1951.

R. J. Lansdown tells us that owing to some confusion at the Eisteddfod Office, the name of his collaborator in the preparation of a winning design for the redevelopment of central Aberdare (AJ: August 30) was not given to us. The design was prepared jointly by S. H. Eagleson and R. John Lansdown.

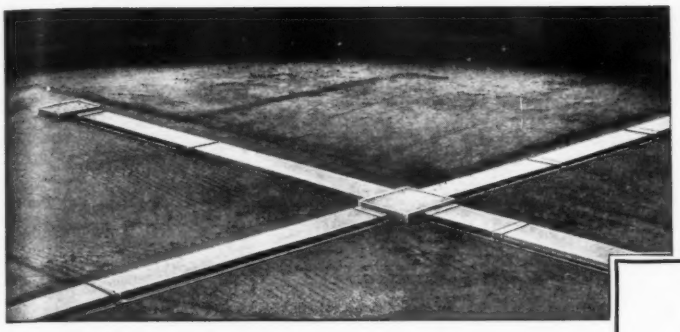
Architects: John King & White

On giving the 'go-ahead' to Catesbys

When we first saw this room where Simon-Carves Ltd. now hold their London board meetings it was four bare walls and a forlorn floor. With the architect's designs in our hands and inspiration in our heads, we . . . . well, we'd rather the photograph said that for us so that we can carry on making oases out of deserts for architects with the maximum co-operation and the minimum of supervision.

Catesbys contracts
AND EXPORT LIMITED

TOTTENHAM COURT ROAD · LONDON W1 · MUSEUM 7777



PURPOSE-MADE for every job

GREENWOOD-AIRVAC

UNDERFLOOR CONDUIT SYSTEM

For depths of screed 1½" and over
Rustproofed all-metal construction
Sizes from 4" x 1" to 12" x 1½"
Single or multiple divisions
One-way or multi-way junction boxes
Flyover separators if required
Floor outlets for future connections

Every contract for the Greenwood-Airvac patent Conduit System is purpose made in that the duct size, junction box design and other accessories are made to suit the individual application although based on a standard pattern throughout. This elasticity of design enables this versatile system to meet all the requirements of architects and contractors to the mutual benefit of all concerned.
Full details are given in the publication 'Greenwood-Airvac Conduit Systems' now available on request.

GREENWOOD'S AND AIRVAC VENTILATING COMPANY LIMITED · BEACON HOUSE · KINGSWAY · LONDON · W.C.2
Telephone · CHAncery 8135 (4 lines) *Telegrams: "Airvac," London*
Patentees, Designers and Manufacturers of Ventilating Equipment and Electrical Conduit Systems.

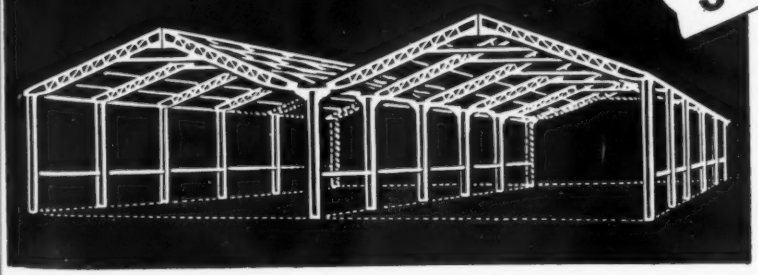
6 POINT PLAN TO SAVE ON BUILDING COSTS

WITH

TUBULAR FRAMED BUILDINGS AND ROOF STRUCTURES

SALOPIAN
REGD. TRADE MARK.

1 ECONOMICAL in material, time and labour
2 STRONGER than other steel sections of equal weight
3 EASILY ERECTED AND ASSEMBLED on account of light weight and special Salopian design
4 INCREASED HEADROOM AND GREATER STORAGE CAPACITY ensured by high level tie beam
5 LOWER MAINTENANCE COST in paint and labour due to reduced suriace area
6 STANDARD SPANS of 18ft., 27ft. 6ins., 34ft., 40 ft., 50 ft., and 60 ft. readily available



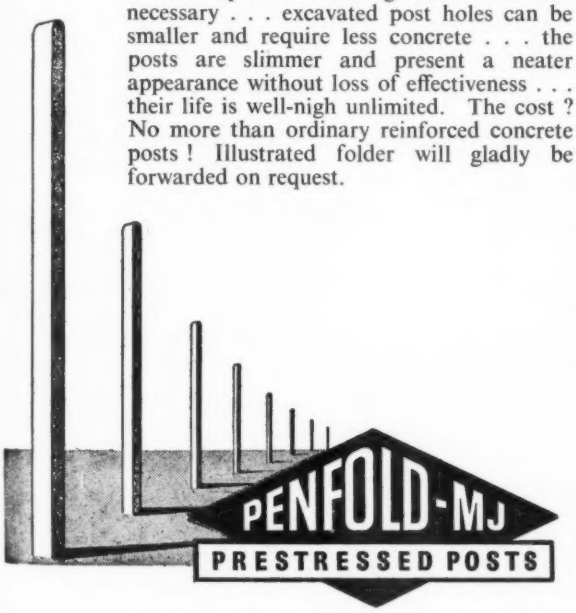
Where additional accommodation is required quickly for offices, factories, canteens, schools, pavilions, etc. — Salopian Tubular Framed Buildings and Roof Structures can meet any specific requirement. Illustrated literature describing the wide adaptability of this medium is available on request — may we send you a copy?

SALOPIAN ENGINEERS LIMITED (Constructional Engineering Division), PREES, WHITCHURCH, SHROPSHIRE. Telephone: PREES 331-4

Proof of the Puddling . . .

. . . was in the wonderful change it wrought in pig-iron. This process, devised by Henry Cort, converted this iron into a malleable metal and this entirely revolutionised the iron industry.

Penfold are pioneers, too. Their recent introduction of Stainless Steel Chain Link Fencing is proving a boon for those with the problems of "difficult" areas to protect and now they introduce—PRE-STRESSED CONCRETE POSTS. Manufactured by an exclusive Scandinavian method of proved design they possess a strength several times that of the ordinary reinforced concrete post. In consequence straining struts are unnecessary . . . excavated post holes can be smaller and require less concrete . . . the posts are slimmer and present a neater appearance without loss of effectiveness . . . their life is well-nigh unlimited. The cost ? No more than ordinary reinforced concrete posts ! Illustrated folder will gladly be forwarded on request.



PENFOLD FENCING & ENGINEERING LTD.

Imperial Works - Balmoral Road - Watford - Herts.

Telephone : Watford 2241 - *Telegrams :* "Penfold, Watford".

what's METALLIC?

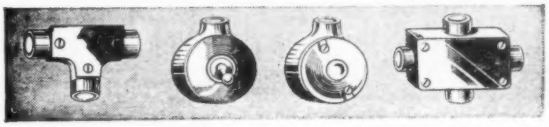
You'll seldom see it, but in many a school or factory, hospital or housing estate, METALLIC conduit and fittings plays a prominent, if undercover, part in the electrical installation. And why is METALLIC so often specified? Because architects and contractors alike know that METALLIC is reliable, really long-lasting. Strongly made from good materials, it's specially treated to resist moisture, chemicals, etc., while consistent accuracy cuts installation time to a minimum and avoids wastage.

Wherever you go you'll find conduit and fittings by

A TI COMPANY **METALLIC**

THE METALLIC SEAMLESS TUBE CO. LTD., LUDGATE HILL, BIRMINGHAM, 3

and at London, Newcastle-on-Tyne, Leeds, Swansea & Glasgow



A man amongst EMULSIONS

" If a job's worth doing, it's worth doing well. That's why I specify good-quality emulsion paint. As far as my clients are concerned it must look attractive and wear well; and to save time on the job, it must be easy to apply and quick-drying. But which among this mass of paints will be the best? "

Architects all over the country have found the answer to this question in POWERKOTE emulsion paint. POWERKOTE can be used without a special thinner and applied direct to all surfaces —new cement, plaster, asbestos, hardboard. One coat is usually sufficient for complete obliteration, but if necessary, this quick-drying paint can be re-coated within three to four hours. It's odourless, non-toxic and practically non-inflammable. POWERKOTE gives a smooth, washable, mark-free finish that wears exceptionally well. Its high quality and durability have already been proved by its successful use on the Limerick Regional Hospital, St. John's Lighthouse and many other large buildings. So for the emulsion paint that's got everything, pick—

POWERKOTE EMULSION PAINT

Manufactured by:

DONALD MACPHERSON & CO. LTD.

Albion Street, Manchester 1, and Mitcham London

ROYAL

Doulton

THE LEADING NAME IN *Sanitary Ware*

An outstanding syphonic suite having maximum efficiency with the quietest flushing operation. It is the most suitable suite for hotel use or executive suites in offices, while for the home, its higher cost is well worth while for its reliability and silence. Modern and simple in design it is very easy to keep clean. It is available in both earthenware and vitreous china.

DOULTON SANITARY POTTERIES LIMITED
Royal Doulton Potteries,
Doulton House, Albert Embankment, London, S.E.1

Royal **DOULTON**
SANITARY WARE

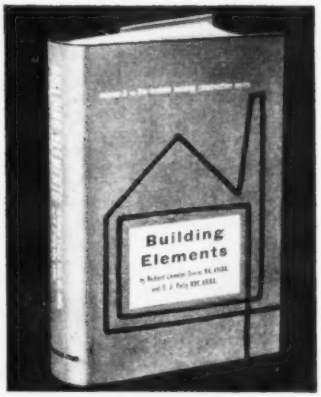
© A5091

now ready the third and final volume in the new series on modern building construction

These three volumes—of which details are given below—combine to provide a definitive work on modern building construction which has been written and published at the recommendation of the Text and Reference Books Committee of the Royal Institute of British Architects. The main object of the Series, written in a manner directly related to design, is to provide information in a suitable form for architectural students. It will, however, also be found useful by practising architects, students of building, and building technicians.

building elements

by R. LLEWELYN DAVIES, M.A., A.R.I.B.A. and D. J. PETTY, M.B.E., M.A., A.R.I.B.A. Foreword by W. A. ALLEN, B.ARCH., A.R.I.B.A.



This Book deals with the structural elements of which a building consists, its walls, roofs, floors, windows, etc., and explains the functional requirements a building has to meet. It then describes how these requirements are met in the actual design of the various structural elements.

The book is divided into two parts, the first of which contains chapters on the requirements of building elements under the headings of Design and Expression; Weather Exclusion; Thermal Insulation; Sound Insulation; Fire Protection. In Part 2 chapters deal with the principal kinds of External Walls; Internal Walls; Roofs; Floors; Stairs; Flues and Fireplaces; Windows and Doors; which are in current use, and show how far and in what way, each of these elements fulfils the requirements described in Part 1.

Size: 8¾in. by 5⅝in., containing 384 pages including over 190 diagrams and halftone illustrations. 37s. 6d. net, postage 1s. 4d.

building materials

by CECIL C. HANDISYDE, A.R.I.B.A. Foreword by A. H. MOBERLY.

This book provides up-to-date information on building materials in a form most useful to architectural students and practising architects. In addition to traditional materials, Mr. Handisyde deals with the many new materials which have come into use during the last twenty-five years, and takes full account of the very considerable amount of recent scientific research which has been brought to bear on both old and new materials. He examines thoroughly those problems of increasing concern to architects today—to what extent will alternative materials provide comfortable buildings, buildings that are warm and quiet and reasonably secure against fire, as well as being weatherproof and strong enough for their purpose.

Size: 8¾ in. by 5⅝ in. Containing 336 pages including 58 diagrams and halftone illustrations. Second edition, 30s. net, postage 1s. 3d.

structure in building

by W. FISHER CASSIE, PH.D., M.S., F.R.S.E., M.I.C.E., M.I.STRUCT.E., and J. H. NAPPER, M.A., F.R.I.B.A., A.M.T.P.I. Foreword by W. A. ALLEN, B.ARCH., A.R.I.B.A.

Steel, concrete, aluminium alloys, etc., have revolutionised structural design, and although this field is largely an engineering one, today it is essential for the architect to understand something about it. No attempt is made in the book to give the formulae and methods of analysis and design used by the structural engineer; rather it provides the architect and student with mental pictures of how structures behave, for without the ability to 'feel' how forces act and react in the support of buildings, the architect cannot hope to put into practice the spatial conceptions of present-day architecture.

The book fills a gap in the literature on structural design and provides the architect with all the information he needs about systems of construction, their character, possibilities and limitations, to enable him to produce designs for new buildings with economy and imagination.

Size: 8¾ in. by 5⅝ in. Containing 268 pages including over 150 diagrams and halftone illustrations. Second impression, 30s. net, postage 1s. 2d.

The complete set of three volumes: price 97s. 6d. net. Postage 2s. 3d.

THE ARCHITECTURAL PRESS 9-13 QUEEN ANNE'S GATE WESTMINSTER S.W.1

CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

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

AIR MINISTRY Works Designs Branch requires in London and Provinces ARCHITECTURAL ASSISTANTS, experienced in planning/preparation of working drawings and details for permanent and semi-permanent buildings.

Salaries in London up to £925 p.a. (men) and £831 (women). Lower in Provinces. Starting pay depending on age, quals. and experience. Long-term possibilities, with promotion and pensionable prospects. 5-day week. 3 weeks, 3 days' leave a year. Liability for overseas service. Normally natural born British subjects. Write, stating age, quals., employment details., incl. type of work done, to any Employment Exchange, quoting Order No. Borough 1000. 3029

LANCASHIRE COUNTY COUNCIL

Applications are invited for the following permanent appointments :—

(*a*) STRUCTURAL ENGINEERS : (1) Within the salary scale £880—£1,080; (2) within the salary scale £795—£970.

(*b*) HEATING ENGINEERS : (1) Within the salary scale £880—£1,080; (2) within the salary scale £795—£970.

Applicants for :—

(*a*) should be corporate members of the Institution of Structural Engineers and have wide experience in the design of reinforced concrete framed structures; some knowledge of structural steel design would be an advantage;

(*b*) should be corporate members of the Institution of Heating and Ventilating Engineers and have had wide experience in the design of all types of heating and ventilating, cold water, and gas installations for all types of buildings. Applicants for the senior appointment should have held a responsible position, with an industrial background as an added qualification.

Previous applicants for the above appointments will be considered and therefore need not re-apply.

Application forms, from the County Architect, P.O. Box 26, County Hall, Preston, to be returned by Monday, 1st October, 1956, quoting position for which applying and Ref. A/AJ. 3078

GLOUCESTERSHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

DIVISIONAL ARCHITECT, Grade "A" (£1,210 × £55—£1,320). N.J.C. Service Conditions; Superannuation; Medical Examination. Applicants should be associate members of R.I.B.A. and have had wide experience in projects usually dealt with by a County Council, *i.e.*, Educational, Police, etc., and hold a motor car driving licence.

The successful candidate will be in charge of a Division of the County and will be responsible for all work carried out in that Division.

Apply, giving age, present position, salary and date of appointment, previous appointments, names and addresses two persons for references, County Architect, Shire Hall Gloucester, by 20th September, 1956.

GUY H. DAVIS,
Clerk of the County Council.
3075

CITY OF NOTTINGHAM
ASSISTANT QUANTITY SURVEYOR

Grade A.P.T. V (£795—£970 per annum)

Applications are invited for the above position in the City Engineer's Department.

Applicants should be Associates of the Royal Institution of Chartered Surveyors, or have extensive professional experience. The person appointed will be required to be responsible for all the Quantity Surveying work on individual major contracts. Commencing salary will be according to experience.

Housing accommodation is available.

Applications on forms to be obtained from R. M. Finch, O.B.E., M.I.C.E., City Engineer and Surveyor, Guildhall, are to be returned to him not later than 22nd September, 1956. 3085

COUNTY BOROUGH OF GREAT YARMOUTH
GENERAL ASSISTANT ARCHITECT

Applications are invited for the appointment of a GENERAL ASSISTANT ARCHITECT in the Borough Engineer's Department, at a salary in accordance with A.P.T. III (£640—£765) of the National Scale of Salaries. Housing accommodation will be offered by the Council if required.

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

Applicants should have passed the Intermediate Examination of the R.I.B.A.

Forms of application may be obtained from the Borough Engineer, Town Hall.

Applications, endorsed "General Assistant Architect," must reach me not later than Friday, 28th September, 1956.

FARRA CONWAY,
Town Clerk.

Town Hall, Great Yarmouth.
6th September, 1956. 3172

GOLD COAST HOUSING CORPORATION
Vacancies exist for
(*a*) QUANTITY SURVEYORS
(*b*) EXECUTIVE ENGINEERS (CIVIL)

QUANTITY SURVEYORS : Candidates must be under 45, be either Associates of the Royal Institute of Chartered Surveyors or Members of the Institution of Quantity Surveyors and have had practical experience, preferably in the tropics.

Duties : Preparation of Bills of Quantities, Schedules of Rates, etc., in connection with an extensive programme of work covering various types of houses and ancillary buildings together with roads, drainage and other site works throughout the Gold Coast, including responsibility for measurements for periodical certificate payments and final settlement of accounts for the above works and the briefing of and collation of reports from Inspectors of Works.

EXECUTIVE ENGINEERS (CIVIL) : Candidates must be over 28 years of age and possess a good Civil Engineering degree or have passed Section I and II of the Final Examination of the Institution of Civil Engineers or hold equivalent qualifications and must have had a minimum of two years' experience after qualification. Associates of the Royal Institute of British Architects and Building Surveyors with A.R.I.C.S (Building) qualification are eligible to apply. Experience on site development and building construction in the tropics and a knowledge of works costing would be an advantage.

Duties : Include co-operation in the planning and layout of housing estates, site development including supervision of provision of water and electric power supply, design and construction of houses.

Terms of Service : Appointments on contract/gratuity terms for two tours of 18-24 months each in the first instance in scale (consolidated) £1,030—£2,020 for Quantity Surveyors and £1,130—£2,020 for Executive Engineers. Point of entry according to qualifications and experience. Gratuity at rate of £37 10s. for every 3 months' completed service. Outfit allowance £30—£60 and furnished quarters at low rent according to salary. Leave at rate of 7 days for each month and free first-class passages for officer, wife and up to three children under the age of 13 years.

Apply to The Secretary for Recruitment, Gold Coast Office, 13, Belgrave Square, London, S.W.1. for further particulars and a form of application. 3072

CITY OF CARDIFF
APPOINTMENT OF CITY ARCHITECT

Applications are invited for the appointment of a City Architect who will be responsible for the organisation and administration of the Architectural and Quantity Surveying Sections in the City Surveyor's Department. The salary will be in accordance with Scale H of the Salary Scales for Chief Officers of Local Authorities (£1,955 × £55—£2,230 per annum).

Application forms and a list of Duties and Conditions of Appointment are obtainable from me and should be returned by the 29th September, 1956.

S. TAPPER-JONES,
Town Clerk.

City Hall,
Cardiff.
August. 1956. 3067

LANCASHIRE COUNTY COUNCIL

SENIOR ASSISTANT ARCHITECT, A.P.T. Grade VI (£880—£1,080). For architects who want a general experience on a variety of County buildings: to work in a group and have charge of projects. Experience of local government work not essential.

Application forms, from the County Architect, P.O. Box 26, County Hall, Preston, to be returned by Monday, 1st October, 1956, quoting Ref. A/AJ. 3079

BOROUGH OF BEXLEY
ASSISTANT ARCHITECT
AMENDED ADVERTISEMENT

Salary according to qualifications and experience —Special Grade (£690—£840 p.a.) or Grade A.P.T. IV (£710—£885 p.a.) plus London weighting.

Candidates should have passed the final examination of the R.I.B.A. and have had experience in housing, school and other building projects.

Forms of application with conditions of appointment obtainable from Borough Engineer, West Lodge, Broadway, Bexleyheath, to whom completed applications must be returned by Monday, 24th September, 1956.

Canvassing will disqualify.

ARTHUR GOLDFINCH,
Town Clerk.
3106

THE NORTH WESTERN ELECTRICITY BOARD
THIRD ASSISTANT ENGINEER (ARCHITECTURE AND BUILDING)
SUB-AREA ENGINEER'S DEPARTMENT, KENDAL

The successful candidate will be required to carry out building and civil engineering design work and produce sketch and working drawings. Ability to take off quantities will be an advantage. The duties may also include some site supervision of works let to outside Contractors.

Salary scale: £850 × £20—£910 p.a., Grade K.10, N.J.B. conditions.

Applications, naming three referees, to Sub-Area Manager, No. 6 Sub-Area, The North Western Electricity Board, Castle Green, Kendal, by 22nd September, 1956.

Note.—Applications received in response to the previous advertisement will be considered. 3177

COUNTY BOROUGH OF BURTON UPON TRENT
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the appointment of ASSISTANT ARCHITECT in Grade III/IV (£640—£885). Commencing salary in accordance with qualifications and experience.

The appointment will be subject to the provisions of the Local Government Superannuation Acts, 1937-1953, to the passing of a medical examination by the Medical Officer of Health, and to determination by one month's written notice on either side.

Housing accommodation, at a rent, will be provided for the successful candidate if required.

Applications, giving age, qualifications, full details of experience and names of two referees, should be submitted to the Borough Architect, Town Hall, Burton upon Trent, not later than 26th September, 1956.

H. BAILEY CHAPMAN,
Town Clerk.

Town Hall, Burton upon Trent.
6th September, 1956. 3183

UNIVERSITY COLLEGE OF NORTH STAFFORDSHIRE

Applications are invited for the post of ASSISTANT ARCHITECT on the staff of the Buildings Officer and Architect. Salary in the scale £790 × £30—£880 p.a. The post is superannuable. Duties may include work on buildings for teaching and research, students' hostels, staff residences, general purposes buildings and services. Applicants must be Registered Architects. Further particulars may be obtained from the Registrar, The College, Keele, Staffs., to whom three copies of application giving full details of age, qualifications, experience, etc., and names of three referees, should be sent within 10 days of publication of this advertisement. 3146

CITY OF LEICESTER
CITY ENGINEER'S AND SURVEYOR'S DEPARTMENT
MAINTENANCE SECTION

Applications are invited for the appointment of MAINTENANCE ASSISTANTS in the City Surveyor's Department in Grade A.P.T. V (£795—£970 per annum).

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

The appointment will be subject to the provisions of the Local Government Superannuation Acts, 1937 and 1953.

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

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

Applications, stating age, qualifications, training and experience, together with the names of not less than two persons to whom reference may be made, should reach the undersigned not later than Monday, 1st October, 1956.

The Council are unable to assist with housing accommodation.

JOHN L. BECKETT, M.Inst.C.E.,
City Surveyor.

Town Hall, Leicester. 3170

CAMBRIDGESHIRE COUNTY COUNCIL
COUNTY PLANNING DEPARTMENT

Applications are invited for the appointment of a PLANNING ASSISTANT, between A.P.T. Grades IV and V of the National Joint Council's scales (£710 to £970 p.a.), according to experience. Candidates should be Corporate Members of the Royal Institute of British Architects, and preferably of the Town Planning Institute, and be able to drive a car. The successful candidate will be engaged in varied work requiring ability in design, such as: central area redevelopment schemes, landscaping and tree planting schemes, housing and other layouts, advice on architectural matters, and the preparation of material for exhibitions and publications.

The appointment is subject to the provisions of the Local Government Superannuation Acts, the Council's conditions of service, and a satisfactory medical examination.

Applications, stating age, past and present appointments and dates, qualifications, experience and present salary, together with the names of two referees, should be received by the County Planning Officer, County Planning Department, Hobson Street, Cambridge, not later than Monday, 24th September, 1956.

CHARLES PHYTHIAN,
Clerk of the County Council.

Shire Hall, Castle Hill, Cambridge. 3169

SLOUGH CORPORATION
ARCHITECTURAL VACANCY

A vacancy occurs for an ASSISTANT ARCHITECT on the staff of the Borough Engineer.

Slough is a rapidly developing town, and the vacancy is an excellent opportunity for an experienced Assistant Architect to assume responsibility for individual design and to supervise contracts of varying sizes and types for housing and other work.

The salary will be Grade A.P.T. IV of the National Scales, which commences at £710 and progresses to £885 per annum.

Those interested are invited to write, giving brief details of qualifications and experience, to the Borough Engineer, Town Hall, Slough, Bucks., with a view to meeting him at an early date for a discussion on the work of the Department and the prospects offered by the vacancy. 3143

GOVERNMENT OF WESTERN NIGERIA
PRINCIPAL TOWN PLANNING OFFICER,
MINISTRY OF LANDS AND LABOUR

Direction of planning surveys, collection and analysis of essential data, preparation of draft outline plans and reports for the Regional capital (Ibadan) and the Ikeja area adjoining the Federal capital (Lagos), and also to institute a departmental training scheme.

Contract appointment. Salary £2,244 p.a. Gratuity of £37 10s. for each completed 3 months' service.

Free passages for officer, wife and up to three children aged under 13.

Quarters, if available, at rental of £150 p.a. Generous leave.

Candidates must be A.M.T.P.I., with 10 years' experience after qualification, and preferably 5 years' practical experience in architecture. Tropical planning experience an advantage.

Write Director of Recruitment, Colonial Office, London, S.W.1, giving age, qualifications and experience, quoting BCD 107/410/03. 3168

COUNTY BOROUGH OF WEST HARTLEPOOL
APPOINTMENT OF CHIEF QUANTITY SURVEYOR, GRADE A.P.T. V

Applications are invited for the appointment of Chief Quantity Surveyor in the Borough Architect's Department, at a salary in accordance with Grade A.P.T. V (£795—£970). The commencing salary will be fixed according to the qualifications and experience of the successful applicant.

Applications, stating age, training, qualifications and details of experience, together with not more than three copies of recent testimonials, should be submitted to the Borough Architect, Municipal Buildings, West Hartlepool, not later than noon of Friday, the 28th September, 1956.

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

ERIC J. WAGGOTT,
Town Clerk.

Municipal Buildings, West Hartlepool.
6th September, 1956. 3167

SURREY COUNTY COUNCIL
EDUCATION DEPARTMENT
KINGSTON SCHOOL OF ART

Applications are invited for the following appointments in the Department of Architecture to commence with the new session 1956:

1. PART-TIME STUDIO INSTRUCTOR to instruct in the basic principles of general design, and also to assist with the supervision of the general architectural studies of the First Year students
2. PART-TIME INSTRUCTOR IN STRUCTURAL MECHANICS (Intermediate Stage) for one seven-hour day weekly.
3. PART-TIME INSTRUCTOR IN ACOUSTIC DESIGN AND SOUND CONTROL for one seven-hour day weekly.

Applicants should be well qualified professionally, have had varied practical experience and be actively engaged in their profession. Previous teaching experience will be an additional qualification.

Salary for these appointments will be in accordance with the rates approved by the Education Committee. The appointment of the Studio Instructor will be up to a maximum of three seven-hour days weekly.

Application form and further particulars including details of part-time rates of salary may be obtained upon receipt of a stamped addressed envelope, from the Registrar, Kingston School of Art, Knight's Park, Kingston-on-Thames, Surrey. 3098

THE CORPORATION OF GLASGOW
ARCHITECTURAL AND PLANNING DEPARTMENT
ASSISTANT ARCHITECTS
PLANNING ASSISTANTS
CIVIL ENGINEERS
QUANTITY SURVEYORS

Vacancies exist for a number of assistants. Minimum qualification, Intermediate Examination of the appropriate professional body. Salary scale £580—£1,100 per annum, with placing according to age, experience and qualifications.

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

A. G. JURY,
City Architect and Planning Officer.
3088

COUNTY BOROUGH OF BOLTON
CHIEF ASSISTANT ARCHITECT

Applications are invited from Members of the R.I.B.A. for the post of a CHIEF ASSISTANT ARCHITECT in the Department of the Borough Architect (Mr. K. Martin Baxter), at a salary within Grade A.P.T. VI (£880×£40—£1,080). Commencing salary according to experience and qualifications. The present establishment includes two Chief Assistants, but does not include a Deputy Borough Architect, and the post will carry a measure of responsibility in the absence of the Borough Architect.

The appointment is superannuable and is subject to the passing of a medical examination. Further details are obtainable from my office, together with Forms of Application, which should be returned to me not later than 1st October, 1956.

PHILIP S. RENNISON,
Town Clerk.

Town Hall, Bolton. 3133

LANCASHIRE COUNTY COUNCIL—
PLANNING DEPARTMENT
PLANNING ASSISTANTS required at Accrington, Liverpool and Manchester, £690—£885.

Applicants should possess a recognised qualification in Architecture, Surveying, Engineering and/or Town Planning. The commencing salary for successful candidates will be according to qualifications and experience.

Applications, stating appointment applied for, giving age, qualifications, present appointment, experience, etc., and two referees, to the County Planning Officer, East Cliff County Offices, Preston, by 19th September, 1956. 3144

BOROUGH OF SWINDON
ASSISTANT ARCHITECT, A.P.T. IV
(£710—£885)

Applications are invited for an appointment of ASSISTANT ARCHITECT, required for a large and varied development programme, including housing schemes and industrial buildings, in connection with the expansion of the town. Applicants must have passed the Final R.I.B.A. Examination.

Housing accommodation is available.

Applications on forms obtainable from the Town Clerk, Civic Offices, Swindon, must be returned by 26th September, 1956. 3174

CAMBRIDGESHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:—

(*a*) ONE ARCHITECTURAL ASSISTANT, Grade A.P.T. III (£640×£25—£765).
(*b*) TWO QUANTITY SURVEYORS, Grade A.P.T. IV (£710×£35—£885).
(*c*) ONE ASSISTANT QUANTITY SURVEYOR, Grade A.P.T. II (£595×£20—£675).

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

(*b*) Applicants should have had considerable experience in all duties of quantity surveying, including site measurement and final accounts.

(*c*) Applicants should have had experience in abstracting, billing, and site measurement. Preference will be given to applicants who have passed the Intermediate stage of the R.I.C.S.

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

Applications, stating age, present salary, present and previous appointments, details of training and experience, together with one recent testimonial and the names and addresses of two referees, should be submitted to the undersigned, not later than 27th September, 1956.

CHARLES PHYTHIAN,
Clerk of the County Council.

Shire Hall, Cambridge.
5th September, 1956. 3158

FURTHER ADVERTISEMENT.

METROPOLITAN BOROUGH OF PADDINGTON
APPOINTMENT OF DIRECTOR OF HOUSING AND BOROUGH ARCHITECT

Applications are invited for this appointment on the salary scale £2,125 per annum, rising by annual increments of £55 and one of £50 to £2,395 per annum. Commencing salary according to ability and experience.

Candidates must be Associates or Fellows of The Royal Institute of British Architects, and possess considerable experience and organising ability.

The person appointed will be responsible to the Council for the work of the Housing Department (including the Management section) and for advising on all architectural and planning matters.

The conditions of service will be in accordance with the recommendations of the Joint Negotiating Committee for Chief Officers of Local Authorities; medical examination; superannuation, and terminable by three months' notice on either side.

Applications with full information, including age, qualifications, experience, particulars of present and past appointments and salaries, and the names of three referees, are to be received by me by 13th October, 1956.

Canvassing will be a disqualification.

W. H. BENTLEY,
Town Clerk.

Town Hall, Paddington, W.2.
5th September, 1956. 3165

CITY OF BATH
CITY PLANNING AND ARCHITECTURAL DEPARTMENT

Applications are invited for the appointment of a PLANNING ASSISTANT, at a salary in accordance with Grades A.P.T. III (£530—£675) per annum, according to qualifications and experience. The post is pensionable and subject to the N.J.C. conditions.

Applications, stating age, qualifications and experience, and giving names of two referees, should be sent to the City Planning Officer and Architect, 7, North Parade Buildings, Bath, by the 29th September, 1956.

JARED E. DIXON,
Town Clerk.

Guildhall, Bath.
2nd August, 1956. 3184

METROPOLITAN BOROUGH OF PADDINGTON
QUANTITY SURVEYOR (A.P.T. VI—£910 to £1,110 p.a.).

Applications are invited for the above-mentioned appointment in connection with housing and other civic building schemes from candidates with experience of all branches of building work, and who are familiar with a quantity surveyor's duties, including preparing bills of quantities for building works, site measurements, settling final accounts, and preparing estimates of cost. Associate Membership of R.I.C.S. preferable.

Applications in writing to the undersigned by 26th September, 1956 (quoting A.306), must state age, qualifications, present and past appointments with dates and salaries, experience, and names and addresses of three referees.

W. H. BENTLEY,
Town Clerk.

Town Hall, Paddington Green, W.2. 3164

BERKS COUNTY COUNCIL—PLANNING DEPARTMENT

Applications are invited for the post of SENIOR ASSISTANT PLANNING OFFICER on A.P.T. Grade VI (£880—£1,080 p.a.). Duties of post are concerned initially with preparation and review of County Development Plan. Applicants should be experienced in development plan and development control work, and must be A.M.T.P.I.; an additional qualification such as a degree in an allied subject would be an advantage.

Form of application from County Planning Officer, 7, Abbot's Walk, Reading, to whom completed applications must be returned not later than 14 days from the date of this advertisement. 3147

COUNTY BOROUGH OF WALLASEY
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited by 19th September, 1956, for the following posts in the above Department:—

(*a*) ARCHITECTURAL ASSISTANTS, Grades A.P.T. IV (£710 to £885), Special Grade (£690 to £840), A.P.T. II (£595 to £675), and A.P.T. I (£530 to £610).
(*b*) TEMPORARY ARCHITECTURAL ASSISTANTS, to be paid in accordance with their qualifications and experience.

Forms of application obtainable from Borough Architect, Town Hall, Wallasey, to whom they should be returned. The Council will favourably consider the provision of housing accommodation in connection with these appointments, in approved cases.

A. G. HARRISON,
Town Clerk.
3138

CITY OF BIRMINGHAM EDUCATION COMMITTEE
COLLEGE OF ART AND CRAFTS
Principal: MEREDITH W. HAWES, A.R.C.A., A.R.W.S., N.R.D.
SCHOOL OF INDUSTRIAL DESIGN

Applications are invited for the post of HEAD OF THE SCHOOL OF INDUSTRIAL DESIGN. The post is an important one in the College, and candidates, who should be practising designers, are expected to hold high professional qualifications in industrial design or architecture. Teaching experience is also desirable. Salary in accordance with Burnham (Further Education) Scale for Heads of Departments, Grade II: Men, £1,400×£50 to £1,600. Forms of application and further particulars may be obtained from the Principal, College of Art and Crafts, Margaret Street, Birmingham, 3 (s.a.e.). Closing date: 6th October, 1956.

The successful candidate will be required to take up duty on the 1st January, 1957, or as soon as possible thereafter.

E. L. RUSSELL,
Chief Education Officer.

August, 1956. 3134

URBAN DISTRICT COUNCIL OF BASILDON
ARCHITECTURAL ASSISTANT, GRADE A.P.T. III (£640 to £765 p.a.).

Applications are invited for the above established post in the Engineer and Surveyor's Department. Commencing salary according to experience and qualifications. Inter. R.I.B.A. or equivalent required. Housing considered.

The Urban District has a population of 59,000, covers 27,000 acres, and includes the New Town area and two townships designated as expanded towns. Rapid development will provide an increasing variety of interesting work.

Full particulars and application forms from and returnable to Mr. S. A. Wadsworth, A.M.I.C.E., A.M.I.Mun.E., Council Offices, High Street, Billericay, Essex. Closing date: 22nd September, 1956. 3142

BOROUGH OF WEMBLEY
TOWN PLANNING ASSISTANT

Applications are invited for the above appointment from persons who have passed a Professional Examination for Corporate Membership of one of the Institutions appropriate to practising Town Planners, and who have had practical experience in town planning administration. Commencing salary according to experience, within £740—£915 p.a. inc. Applications, disclosing any relationship to a member or senior officer of the Council, giving the names and addresses of three referees and quoting Reference C, must reach the Borough Engineer and Surveyor, Town Hall, Wembley, by the 29th September, 1956. Canvassing disqualifies. Housing accommodation not provided. 3140

COUNTY BOROUGH OF BURY
AMENDED ADVERTISEMENT

Applications invited from suitably qualified persons for the following appointments in the Borough Engineer's Department:—

(1) SENIOR ARCHITECTURAL ASSISTANT, A.P.T. Grade V (£795—£970).
(2) ARCHITECTURAL ASSISTANTS (two vacancies), A.P.T. Grade IV (£710—£885).
(3) SENIOR ASSISTANT QUANTITY SURVEYOR, A.P.T. Grade IV (£710—£885).

Each appointment is superannuable.

If required, provision of housing accommodation will be considered.

Successful candidates will be engaged on the Council's educational building programme, and experience of new school design is desirable.

Applications, stating age, details of training, qualifications and experience (previous Local Government experience not essential), together with the names and addresses of two referees, must reach me not later than 24th September.

EDWARD S. SMITH,
Town Clerk.

Town Hall, Bury.
31st August, 1956. 3129

DURHAM COUNTY COUNCIL
PLANNING DEPARTMENT

AREA PLANNING OFFICER. Salary: £975—£1,200 (A.P.T. VII). Must be Member or Associate Member of the Town Planning Institute, and should have had wide experience in all aspects of planning work since qualifying, including control of staff. The post gives scope for initiative, and the successful applicant will be responsible for all development control and town map work in the East Durham area.

SENIOR PLANNING ASSISTANT. Salary: £795—£970 (A.P.T. IV). Applicants must be Associate members of the Town Planning Institute. Preference will be given to those holding an architectural qualification and having design ability and experience. The successful applicant will work as a member of a small team dealing with the preparation of housing and redevelopment layouts, central area layouts, village layouts, etc.

Further particulars, including forms of application, which are returnable by the 22nd September, 1956, obtainable from the County Planning Officer, 10, Church Street, Durham.

Canvassing members of the Council is prohibited.

J. K. HOPE,
Clerk of the County Council.
3159

WARWICKSHIRE COUNTY COUNCIL
COUNTY PLANNING DEPARTMENT

Applications are invited for the appointment of a PLANNING ASSISTANT, A.P.T. Grade III/IV (£640—£885 per annum). Commencing salary will be according to experience and qualifications.

Applicants should hold a technical qualification, preferably in planning, and the appointment is subject to the provisions of the Local Government Superannuation Act and to the National Scheme of Conditions of Service.

The successful applicant will be required to pass a medical examination and to provide and maintain a motor car. Travelling and subsistence allowance will be paid in accordance with the National Scale.

The appointment is in the Development Plan section and experience in Town Map work is essential.

Applications, together with the names and addresses of two referees, should be sent to J. J. Brooks, County Planning Officer, Northgate, Warwick, not later than Friday, 28th September, 1956.

Canvassing will be a disqualification.

L. EDGAR STEPHENS,
Clerk of the Council.
Shire Hall, Warwick. 3194

BOROUGH OF CHELTENHAM
APPOINTMENT OF TWO
ARCHITECTURAL ASSISTANTS

Applications are invited for the appointment of two Architectural Assistants on the Capital Works Establishment of the Borough Engineer's Department, at a salary within Grade A.P.T. IV (£710-£885).

Applicants must be Associate Members of the R.I.B.A., or equivalent, and experienced in the design of Public Buildings, Housing and Ancillary Buildings in connection with Estate Development.

The appointments are subject to the National Joint Council's Conditions of Service; to one month's notice in writing on either side; and to the successful applicants passing a medical examination and contributing to the Corporation's Superannuation Fund.

The Council will provide housing accommodation, if required, for the successful applicants.

Applications, endorsed "Architectural Assistant," stating age, training, qualifications and experience; present and previous appointments; and giving the names of two referees, are to reach Mr. G. Gould Marsland, M.B.E., B.Sc., M.Inst.C.E., Borough Engineer, P.O. Box No. 12, Municipal Offices, Cheltenham, not later than the 29th September. 3187

METROPOLITAN BOROUGH OF
WANDSWORTH
ARCHITECTURAL STAFF

Applications invited for posts of:—

(*a*) SENIOR ASSISTANT ARCHITECT (A.P.T. VII, £1,005—£1,230 p.a.).
(*b*) TWO SENIOR ASSISTANT ARCHITECTS (A.P.T. V, £825—£1,000 p.a.).
(*c*) TWO ARCHITECTURAL ASSISTANTS (Grade III(A), £720—£870 p.a.).

Applicants for (*a*) must be Assoc. of R.I.B.A. and have had experience in design and planning of multi-storey blocks of flats, and supervision of their erection.

Applicants for (*b*) must be Assoc. of R.I.B.A. and/or the R.I.C.S. (Building), with architectural experience. Practical knowledge required in preparation of working drawings and ½ in. details for multi-storey blocks of flats and/or other framed buildings, and supervision of their erection.

Applicants for (*c*) must have passed parts I and II of the R.I.B.A. Final or Special Final Examination or their equivalent at one of the recognised schools of architecture, and had at least 5 years' experience, including training.

Application forms from Borough Engineer, Surveyor and Architect, must reach me by 3rd October.

R. H. JERMAN,
Town Clerk.
Municipal Buildings, Wandsworth, S.W.18. 3191

COUNTY BOROUGH OF STOCKPORT

ASSISTANT ARCHITECTS required. Large building programme—interesting work. Salary A.P.T. IV (£710—£885), commencing according to qualifications and experience. Full particulars, age, experience, two referees, to Borough Architect, Town Hall, Stockport, by 22nd September, 1956, quoting Reference AA6. Post pensionable, subject to medical examination. Canvassing disqualifies. Applicants must disclose whether related to any member or senior officer of Council. 3128

LONDON COUNTY COUNCIL requires TWO ARCHITECTS, for work offering special opportunities for contemporary architectural design of park buildings. Salary range £987—£1,184 and £775—£987. Also ARCHITECTURAL ASSISTANTS and LANDSCAPE ASSISTANTS; salaries up to £817 a year, according to qualifications and experience.

Apply, giving brief particulars, to Chief Officer of the Parks Department, Old County Hall, Spring Gardens, S.W.1. (WHItehall 3121, ext. 319). (1708) 3136

METROPOLITAN BOROUGH OF FULHAM
BOROUGH ARCHITECT'S AND HOUSING DEPARTMENT

(*a*) TWO ASSISTANT ARCHITECTS, A.P.T. III or IV (£670—£795 or £740—£915 p.a., including £30 p.a. London weighting), according to qualifications and experience.
(*b*) ARCHITECTURAL ASSISTANT, A.P.T. I or II (£530—£610 or £595—£675 p.a., plus London weighting of £20 or £30 p.a., according to age).

Qualifications required: Posts (*a*) preference will be given to A.R.I.B.A., or equivalent and with experience in the design and construction of multi-storey dwellings; (*b*) R.I.B.A. Intermediate standard and at least 2 years' drawing office experience. Application forms from Town Clerk, Town Hall, S.W.6. Closing date: 29th September. 3188

BOROUGH OF PRESTWICH
APPOINTMENT OF
ARCHITECTURAL ASSISTANT

Applications are invited from suitably qualified persons for the appointment of Architectural Assistant in the Department of the Borough Engineer.

Salary A.P.T. IV (£710 per annum, annual increments of £35 to a maximum of £885 per annum). The appointment is permanent and superannuable.

Further details and application forms to be obtained from the undersigned. Forms to be returned not later than 6th October, 1956.

C. A. CROSS,
Town Clerk.

Town Hall,
Prestwich,
Lancs. 3193

Official Announcement

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

ADVERTISEMENT FOR CREDITORS: Re LLOYD FOSTER WARD, deceased, late of 340, Flaxley Road, Yardley, Birmingham, and 35, Ludgate Hill, Birmingham, 3, Architect and Surveyor, who died on the 30th March, 1956. NOTICE IS HEREBY GIVEN that Creditors and other persons intending claims against the Estate of the above Deceased in respect of his above practice should give notice thereof in writing to Sydney Mitchell, Chattock & Hatton, 1484, Coventry Road, Yardley, Birmingham, 25, before the expiration of two Calendar months from the date of this insertion, after which time the Executors intend to deal with the Assets of the said Deceased having regard only to the Claims of which Notice has then been received.

(Sgd.) SYDNEY MITCHELL, CHATTOCK & HATTON.
1484, Coventry Road, Yardley,
Birmingham, 25. 3195

Architectural Appointments Vacant

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

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

APPLICATIONS are invited for the following appointments:—

(*a*) SENIOR ASSISTANT ARCHITECTS, with experience of work on commercial and industrial projects.
(Salary range £820 to £975 per annum.)
(*b*) ASSISTANT ARCHITECTS, capable of preparing working drawings from preliminary details.
(Salary range £550 to £820 per annum.)
There is a five-day week in operation, and both appointments offer prospects of upgrading.
Applications, stating age, experience, qualifications and salary required, to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4. 3871

CROYDON.—ARCHITECTURAL ASSISTANT required immediately for interesting and varied work. Inter./Final standard; capable of running small contracts.—Write age, experience, and salary required, to George Lowe & Partner, 4, High Street, Croydon, Surrey. 1951

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

APPLICATIONS are invited for the following appointments in a newly formed Branch Office. Interesting and varied commercial and industrial projects.
(*a*) SENIOR ASSISTANT ARCHITECT, with experience in Store and Shop Design.
(Salary range £820 to £975 per annum.)
(*b*) ASSISTANT ARCHITECTS, capable of preparing working drawings and details from preliminary sketches.
(Salary range £550 to £820 per annum.)
Both appointments offer prospects of upgrading. Applications, stating age, experience, qualifications, and salary required, to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4. 3872

ASSISTANT ARCHITECT required by West End firm for important airport, industrial and office schemes. Salary according to experience. Box 1891.

ARCHITECTURAL ASSISTANT required, Intermediate standard, for St. Albans office. Capable of carrying out design and working drawings in varied practice under supervision. Salary according to experience.—Apply in writing, giving details of qualifications and experience, to F. J. Taylor, Son & Bracken, 20, London Road, St. Albans. 3087

ARCHITECTURAL ASSISTANT required in busy London office with varied practice. Good salary and prospects for suitable applicant. 5-day week. Write, giving particulars of age, qualifications, experience, etc., to Box 775, c/o 7, Coptic Street, W.C.1. 9313

LONDON Consultants require immediately ASSISTANTS of Intermediate and R.I.B.A. standard for varied and interesting contemporary industrial projects. Responsibility given to applicants with good design sense and constructional ability. Apply, giving full particulars and salary required, to Box No. 401, Glovers Advertising Ltd., 351, Oxford Street, London, W.1. 9341

ARCHITECT'S ASSISTANT. Inter. Standard. Charles E. Ware & Son, 20, Richmond Road, Exeter, Devon. 3039

ARCHITECTS' ASSISTANTS, with experience and ability, required immediately in our Leamington and Birmingham offices. Apply, giving particulars and preference, to: Quick & Lee, Chartered Architects, 11, Waterloo Place, Leamington Spa. 3045

W. J. SIMMS Sons & Cooke Ltd., Manufacturers of Factory-made Timber Buildings, have vacancies in their Architectural Department for an experienced SENIOR ASSISTANT and also a JUNIOR ASSISTANT. The work is interesting and varied in connection with manufacture for both the home and export market. Salaries will be commensurate with experience and ability. Accommodation is available for the Senior Assistant. Apply to the Staff Architect, W. J. Simms Sons & Cooke Ltd., Haydn Road, Sherwood, Nottingham. 3016

ARCHITECT, R.I.B.A., Inter Standard, with Shop Fitting experience, required by well-known London Multiple Firm. Permanent position, Pension Fund. Apply stating previous experience and salary required to Box 3059.

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

SHOPFITTING DRAUGHTSMAN required, experienced in shop equipment and modernisation of interiors.
The position calls for the preparation of layouts and perspectives with a modern approach to store fitting problems.
The post is pensionable, subject to medical examination and there is a five-day week in operation.
Applications giving age, details of previous experience and salary required to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester 4. 3056

SENIOR AND JUNIOR ASSISTANTS required for large schemes of contemporary nature. Excellent opportunities offered to suitable applicants. Five-day week. Please write giving full particulars of experience and salary required to Johns, Slater & Haward, F/A.R.I.B.A., 32, Foundation Street, Ipswich. 3060

ARCHITECT'S ASSISTANTS required, Intermediate standard, for Schools, Churches, Housing, etc.—Apply, giving details of experience and salary required, to J. C. Prestwich & Sons, M.A., F./A.R.I.B.A., Bradshawgate Chambers, Leigh, Lancs. 3123

DESIGNING experience in the working out of projects for large buildings is offered to a young qualified ASSISTANT with real ability. London office.—Apply, stating qualifications and salary required, to Box 3080.

ARCHITECTURAL ASSISTANT, Inter. standard, required by Birmingham firm. 5-day week; concessions for study.—Box 3121.

ARCHITECTS (London, F.R.I.B.A.) have vacancy for PUPIL with G.C.E. No premium; small salary. Service deferment probably arranged. Tel.: CHA. 7611, or write Box 3109.

SMALL West London office, with varied practice, urgently requires ASSISTANT of 2 years' minimum office experience.—Details and salary required to Pollen & Jebb, 8, Pembroke Square, W.8. Tel. No.: WES. 4974. 3096

ARCHITECTS (SENIOR or ASSISTANT), qualified or to the standard of the R.I.B.A. Final examinations. Two positions vacant in the office of a firm of Architects in Melbourne, Australia. Salaries (sterling p.a.): Senior £1,500 upwards, Assistant £1,200-£1,500. Good conditions; 5-day week. Responsible work, with encouragement to advance.—Reply to Box 3097. Selected applicants will be interviewed in London on the 4th October.

WEST END Architects require ASSISTANT for preparation of working drawings. Some office experience essential, together with a sound knowledge of building construction.—Box 3091.

SMALL West End office, undertaking a wide range of work, urgently requires ASSISTANT. Must have at least 2 years' office experience.—Reply with details of experience and salary required, Box 3090.

J. DOUGLASS MATHEWS & PARTNERS, Chartered Architects, 3, Ebury Street, London, S.W.1, require Five Medium Grade ASSISTANTS, and Two JUNIOR ASSISTANTS. Salaries in accordance with experience. 3104

ARCHITECTURAL ASSISTANT, Inter. to Final standard, required in small contemporary office.—A. F. Bennett, 35, Queens Gate Mews, S.W.7. KNI. 6937. 3102

SHOPFITTING DRAUGHTSMAN. Selfridges Limited have a vacancy for a shopfitting draughtsman in their architect's office. The work is varied and interesting. Permanent, pensionable position for man under forty-five years of age. Staff restaurant. Five-day week. Apply in the first instance in writing stating age, experience and salary required to Staff Manager, 400, Oxford Street, London, W.1. 3141

ASSISTANT ARCHITECT required in the Regional Architect's Office, London Midland Region, British Railways, Euston Grove, London, N.W.1. Must be Associate of the R.I.B.A. or have Intermediate and several years' office experience. Progressive outlook and sound knowledge of modern structural technique essential. Commencing salary £770 per annum. Five-day week. Residential and other travelling facilities available. Superannuation scheme. Applications should be made to Chief Civil Engineer (Ref. 35), London Midland Region, 3a, Euston Grove, London, N.W.1. 3139

VACANCIES occur for two ARCHITECTURAL ASSISTANTS (Intermediate R.I.B.A. standard) in Architect's Department of multiple shop Company, with offices in West London. 5-day week, staff dining room and pension scheme. Applicants should state salary required, experience and age. Box 3137.

LESLIE GOODAY, A.R.I.B.A., M.S.I.A., requires ASSISTANT, Inter-Finals standard. 17, Sloane Street, S.W.1. Phone BEL 5221/2. 3132

FIRM of Chartered Architects and Chartered Civil Engineers in Midlands require QUALIFIED ASSISTANT QUANTITY SURVEYOR to work under Chartered Quantity Surveyor.
Applicants should have a minimum of 6 years' experience and initiative to carry through work from preliminary estimates to final account in close co-operation with Architects.
Assistance given with housing if desired. Salary commensurate with ability. Box 3131.

ARCHITECTURAL ASSISTANT required by Braddock & Martin-Smith, A./F.R.I.B.A. Type of work in progress: schools, offices, flats, churches. Type of office: small and busy. Opportunity to control jobs. 5-day week. Environment unusually pleasant. Write to the above firm at The East Gallery, St. John's Church, St. John's Wood, N.W.8, giving age, experience and salary required. 3130

ASSISTANT required in small but busy Architect's Office on South Coast. 5-day week. Write, age, experience and salary, etc., to Egerton W. Owen, Chartered Architect, 33, Beach Road, Littlehampton, Sussex. 3127

CONSTRUCTION DEPARTMENT of a large multiple retail concern with offices in London require:—
JUNIOR ESTIMATOR. There is a Pension Scheme and a five-day week in operation. Applicants should write giving full particulars of age, experience and salary required. Box 3135.

ARCHITECTS in Northern Cathedral City have a vacancy for a qualified ASSISTANT with a view to partnership. Answers treated in confidence. Box 3151.

ARCHITECTS and ARCHITECTURAL ASSISTANTS are offered interesting and remunerative work on large industrial multi-storey and housing contracts with long established Company of contractors in the Manchester area. The positions offered are of a permanent nature, with good working conditions. A contributory pension scheme is in operation. Only Intermediate standard or recently completed Finals applicants considered. Salary £700/£750 with advancement according to proven ability. Apply Box 3149.

ARCHITECTURAL ASSISTANT required, Final Standard, for variety of work in connection with exhibition and ancillary buildings. Good salary and working conditions. Write, in first instance, giving details of age, training and experience, if any, to Staff Architect, Olympia Limited, Kensington, W.14. 3150

POST-INTERMEDIATE ASSISTANT required, in large London Office with widely varied practice. Lewis Solomon, Son & Joseph, 21, Bloomsbury Way, London, W.C.1. Telephone HOL 7082. 3152

ARCHITECT, qualified, required by Scottish Special Housing Association Limited. Salary scale £650—£980 with placing for age on entry up to £850 at age 31. The post is superannuable under the Local Government Superannuation Acts. A house may be available if required. Application forms with full particulars can be obtained from the Secretary, 15-21, Palmerston Place, Edinburgh, 12. 3163

DRAUGHTSMEN (Architectural) required in the Architects' Department of a large North Lincolnshire Steelworks for work on expansion and development projects, embracing a wide variety of office, laboratory and industrial buildings.
Applicants should be competent draughtsmen with a sound knowledge of modern building techniques.
The positions are permanent for suitable applicants and amenities offered include pension scheme, facilities for sports and numerous social activities, etc.
Applications, giving age, experience and salary required, should be made in writing to: Employment Officer, Appleby-Frodingham Steel Co., Scunthorpe, Lincs. 3160

SMALL London Practice, W.C.1, requires Intermediate ARCHITECTURAL ASSISTANT with initiative. Box 3157.

BRITISH INSULATED CALLENDER'S CABLES LTD. have the following vacancies in the Building Department at Prescot :—

(*a*) ARCHITECTURAL ASSISTANT with experience up to Intermediate standard in the preparation of working drawings and details for factory-type single- and multi-storey buildings, offices and laboratories from architects' sketches.

(*b*) QUANTITY SURVEYOR experienced in preparation of Bills of Quantities, site measurements and settlement of Contractors' accounts.

Applications in writing, quoting ref. : P/51/56, should be addressed to the Staff Officer, B.I.C.C. Ltd., Prescot, Lancs. 3153

PRIVATE practice office has vacancy for ASSISTANT willing to take control of jobs. Work includes domestic, ecclesiastical, commercial and industrial, modern and traditional. Urgent. Send details age, experience and salary suggested to: Forsyth Lawson, Cunningham & Partners, 30, Horse Fair, Banbury, Oxon. 3180

FRY, DREW, DRAKE & LASDUN have vacancies for experienced, qualified ASSISTANTS in their London office. Write with details of training, qualifications, experience, etc., to Secretary, 63, Gloucester Place, W.1. 3173

ARCHITECT AND SURVEYOR required for good class traditional estate development work, including preparation of drawings and negotiation with Local Authorities. This is a new appointment offering excellent scope in an expanding organisation. Send full particulars of age, experience and salary required to Prowting Estates Ltd., 127, High Street, Ruislip, Middx. 3171

Architectural Appointments Wanted

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

A POSITION is sought in London office by ARCHITECTURAL ASSISTANT experienced over a number of years. Box 3166.

Other Appointments Vacant

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

RUBBER FLOORING SALESMAN required by well-known manufacturers with established flooring service and contract department to cover London and Southern Counties. Must have good knowledge of rubber flooring and linoleum trade, with live connection amongst architects, builders and other classes of buyers. Redfern's Rubber Works Ltd., 7/8 Chandos Street, Cavendish Square, W.1. 3154

CHIEF OF DRAWING OFFICE.—Division of East Midlands manufacturing concern, prefabricating timber structures, invites immediate applications for this important and responsible position. The successful applicant must have good structural background, preferably including prefabrication and/or timber-engineering experience, and must be able to organise and control drawing office producing a large volume of schemes designs and working drawings. A most attractive salary is offered, with pension scheme and congenial working conditions. There are exceptional prospects for rapid advancement.—Please write fully to Box 3070.

SECRETARY required by Architect in Belfast. Must be able to control one or two Secretarial Assistants. An efficient and experienced organiser with University degree and reasonable shorthand and typing ability can expect a starting salary of about £500 per annum. Required to begin duties January or February, 1957. Details of education and experience, with dates, to Box 3162.

Competition

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

CITY OF CARLISLE
A TWO STAGE COMPETITION

The Corporation of the City and County Borough of Carlisle invite architects registered under the Architects (Registration) Acts and resident in Great Britain, Northern Ireland or the Republic of Ireland to submit in competition designs for a new Assembly Hall and Municipal Offices to be erected in Carlisle. Assessor: Professor W. B. Edwards, M.A., B.ARCH., M.T.P.I. (F).

PREMIUMS :—

(*a*) Preliminary Stage. Six competitors will be selected to proceed to Final Stage. Each will receive the sum of £300. Last day for submitting designs, Friday, 31st January, 1957.

(*b*) Final Stage. The author of the design placed first will receive £1,000. Last day for submitting designs, 1st July, 1957.

Last day for questions, 27th October, 1956.

Conditions may be obtained from the Town Clerk, 15, Fisher Street, Carlisle, on or after 17th September, 1956. Deposit £2 2s. 0d.

Applicants for the conditions must state their registration number or the number of the receipt issued to him by the Architects Registration Council in respect of the admission fee.

H. D. A. ROBERTSON.
Town Clerk.
3112

Services Offered

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

IS IT ACCURATE? The Site Survey Company, Blackheath, S.E.3. Telephone: LEE Green 7444-5. 1890

GOOD LETTERING is essential for Commemorative Wall Tablets, Foundation Stones, etc. Designs prepared and estimates given for the finished work in any suitable material. Renowned as a Centre for Lettering since 1934. Sculptured Memorials, 67, Ebury Street, S.W.1. 9170

SURVEYS OF BUILDINGS, detailed drawings prepared, also land surveys by chain or theodolite, levelling, etc. LIV. 1839. 1739

ARCHITECTURAL PHOTOGRAPHY to Monochrome, Natural Colour and 3D. Quotations with pleasure.—Geoffrey Hammonds (Associate of the Institute of British Photographers in Commercial Photography). 3094

ARCHITECTURAL, Reinforced Concrete and Steel Design and Detailing required—only buildings over £10,000. Large staff available. MUSeum 8753.

Site Surveys and Surveys of Buildings prepared at short notice anyhere in Britain. MUSeum 8753. 3103

"DON" ARCHITECTURAL MODEL MAKERS. We offer the highest grade work with speed and reliability. Please 'phone Brith 3843 or Hastings 3985. 1673

A.R.I.B.A., A.A. Dip., is able to give part-time assistance or carry out work in own office. Apply Box 3148.

LEAVE ACCOMMODATION required by Architect (and wife), resident abroad, in attractive locality, in return for services in handling of practice, while owner is on holiday, during July and August, 1957. Box 3161.

ARCHITECTURAL ASSISTANT (27), West-End professional office, desires part-time work, evenings and week-ends up to 30 hours weekly. Experienced in surveying and levelling. Box 3178.

REINFORCED CONCRETE ENGINEER, experienced, offers freelance service to the profession in the Midlands Area. Accurate and economical design, details, and schedules. Box 3176.

HEATING AND VENTILATING.—M.I.H.V.E. advises on tenders or prepares schemes. Box 3179.

ARCHITECTURAL ASSISTANT, five years' office practice, offers part-time service to Architects and Engineers; able to design and detail reinforced concrete. Box 3182.

For Sale and Wanted

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

EXCEPTIONAL offer 3rd floor at 94, New Bond St., W.1. 1,300 sq. ft. £950 p.a. Long lease available, perfect natural lighting suitable for drawing office. Tel. GRO. 6601. 8231

RECONDITIONED Ex-Army Huts and Manufactured Buildings, Timber, Asbestos, Nissen Type, Hall Type, etc. All sizes and prices. Write, call or telephone: Universal Supplies (Belvedere) Ltd., Crabtree Manorway, Belvedere, Kent. Tel.: Erith 2948. 1474

WANTED. — Adjustable set-square, imp. drawing-board and T-square, set of instruments, etc., for 1st year student. Box 3192.

Miscellaneous

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

A. J. BINNS, LTD., Specialists in the supply and fixing of all types of Fencing, Gates and Cloakroom Equipment. Harvest Works 96/107, St Paul's Road, N.1. Canonbury 2061

OFFICE accommodation available, Charing Cross district, 10s. sq. ft. exclusive (approx. 2,400 sq. ft.), suitable for Architects, Quantity Surveyors, etc. Please write Box 3145.

KNIGHTSBRIDGE Studio. Freestanding tiny cottage, 2 rooms, Kitchenette and w.c., set in private courtyard, the right address, your clients will call it charming! Private parking, good light, room for 3 draughtsmen and sec. 15 years' lease at £163 p.a. inc. Busn. or Resd. (1 room previously let for £3 p.w.) all for £900 o.n.o. Belgravia 3876. 3185

MAP STORAGE. The Sensible Map Storage Cabinet is ideal for the compact, readily accessible filing of large or small quantities of O.S. Sheets. Model P.5 for up to 1,000 Nat. Grid 25" or 50" £20-1-5; Model O.25 for 1,000/2,000, All Sizes approx. £50. Write for details—J. H. Clarke & Co. Ltd., 77-78, High Street, Chelmsford. 3181

Educational Announcements

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

R.I.B.A. Inter. and Final EXAMS. TUITION BY POST.—C. W. BOX, F.R.I.B.A., 115, Gower Street, W.C.1. Tel.: EUS. 3906. 1942

R.I.B.A. and T.P.I. EXAMS.—Stuart Stanley (Ex. Tutor Sch. of Arch., Lon. Univ.), and G. A. Crockett, M.A./B.A., F./F.R.I.B.A., M./A.M.T.P.I. (Prof. Sir Patrick Abercrombie in assn.), prepare Students by correspondence, 10, Adelaide Street, Strand, W.C.2. TEM 1603/4.

COURSES for all R.I.B.A. EXAMS.
Postal tuition in History, Testimonies, Design, Calculations, Materials, Construction, Structures, Hygiene, Specifications, Professional Practice, etc. Also in general educational subjects.
ELLIS SCHOOL OF ARCHITECTURE
Principal: A. B. Waters, M.B.E., G.M., F.R.I.B.A.
103B OLD BROMPTON RD., LONDON, S.W.7
Phone: KEN 4477 and at Worcester

NORTHERN POLYTECHNIC
HOLLOWAY, LONDON, N.7

Principal: A. S. M. Symons, PH.D., B.SC., A.R.C.S., D.I.C., F.INST.P.
Head of Department of Architecture: T. E. Scott, C.B.E., F.R.I.B.A.

DAY SCHOOL OF ARCHITECTURE

The Northern Polytechnic Diploma in Architecture which is awarded on the successful completion of the five years' full-time course and subsequent passing of the examination in Professional Practice, qualifies students for exemption from the Final Examination for Associateship of the Royal Institute of British Architects. The Diploma is also accepted by the Architects' Registration Council of the United Kingdom as a qualification for registration under the Architects (Registration) Acts, 1931-1938.

School year begins 24th September, 1956.
Fees—£30 per annum.
Students under the age of 18 may be admitted free.

EVENING SCHOOL OF ARCHITECTURE

Five years' Course recognised by the R.I.B.A. for exemption from the Intermediate Examination.
New Session begins 24th September, 1956.
Fees from 30s. to 70s. per course.
Special Design classes, and lectures on the Theory of Structures, Hygiene, Materials, Specifications, and Professional Practice in preparation for the Final Examination of the R.I.B.A.

PART-TIME DAY CLASSES.

A leaflet describing part-time day courses will be sent on application.

ENTRY TO THE SCHOOLS. Intending day students are interviewed by appointment. Intending evening students will be interviewed from 5.30-7.30 p.m. on 17th and 18th September, 1956, or on any subsequent Monday evening at 6.30 p.m.

Prospectus post free on application.
Telephone: NORth 1686.

CANTEEN SERVERIES
QUICKLY MADE TO YOUR SPECIAL DESIGNS
By
J. TAYLOR (Syston) Ltd.
Janus Works, Albert Street, Syston, Leics.
Details on request. Phone: Syston 86133

ROYAL BOARD
The Outstanding All Wood Fibre Hardboard
Made in Sweden

GIMSON LIFTS

Service is available throughout the country. Technical literature will be sent on request.

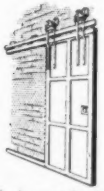
GIMSON & CO. (LEICESTER) LTD.
VULCAN ROAD, LEICESTER
Phone: Leicester 27272 Grams: Gimson Leicester

PERMANITE
ROOFING
FLOORING & TANKING

You can depend on
Cementone
Manufactured only by
JOSEPH FREEMAN SONS & CO. LTD.

don't just say mastic
specify **SECOMASTIC**
Secomastic Ltd. Bracknell, Berks. Tel: Bracknell 910

THE WORLD'S GREATEST BOOKSHOP
FOYLES
* FOR BOOKS *
FAMED CENTRE FOR
Books on Art & Architecture
Depts. for Gramophone Records, Music, Magazine Subscriptions, Foreign Stamps
119-125 CHARING CROSS ROAD WC2
Gerrard 5660 (20 lines) ★ *Open 9-6 (incl. Sats.)*
Two minutes from Tottenham Court Rd. Stn.



PATENT COMPOSITE STEEL-&-ASBESTOS
FIRE RESISTING DOORS
TO F.O.C. SPECIFICATIONS
"FIREMAN" regd.
"DURACHECK" regd.
★ *send for data to manufacturers:*
DURASTEEL LTD.
Oldfield Lane, Greenford, Middlesex.
Telephone: Waxlow 1051
Suppliers to: BRITISH ELECTRICITY AUTHORITY, ADMIRALTY, MINISTRY of SUPPLY MINISTRY of CIVIL AVIATION ETC. ETC.

ARCHITECTURAL
— ***contemporary***
SIGN LETTERS
IN A VARIETY OF METALS & FINISHES
WARD AND COMPANY
128 CHELTENHAM ROAD, BRISTOL 6
TELEPHONE 21536

ARCHITECTURAL
FOR MODELS
Completed Schemes, Planning Stage Models, Structural Design, Display Designers Mockups, etc.
CONSULT
LYNCH & BAKER LTD.
DISPLAY & MODELMAKING SERVICES
23 Oakleigh Court, Burnt Oak, Edgware, Middlesex. Colindale 1339

FIRST FOLD HERE

AJ enquiry service

If you require catalogues and further information on building products and services referred to in the advertisements appearing in this issue of the Architects' Journal please mark with a tick the relevant names given in the index to advertisers overleaf. Then detach this page, write in block letters, or type, your name, profession or trade and address in the space overleaf, fold the page so that the post-paid address is on the outside and despatch. We will ensure that your request reaches the advertisers concerned.

FOLD HERE

Postage will be paid by Licensee

No Postage Stamp necessary if posted in Great Britain or Northern Ireland

BUSINESS REPLY FOLDER
Licence No. S.W. 1761

THE ARCHITECTS' JOURNAL

9-13 Queen Anne's Gate

London, S.W.1.

FOLD HERE

TUCK IN THIS END

Alphabetical index to advertisers

	PAGE
Adams, Robert (Victor), Ltd.	119
Adshead, Ratcliffe & Co., Ltd.	70
Aero Research, Ltd.	55
Airscrew Co. & Jicwood, Ltd.	34
Anderson, D., & Sons, Ltd.	46
Architectural Press, Ltd., The	110, 113
Armstrong Cork Co., Ltd.	77
Associated Metal Works (Glasgow), Ltd.	115
Bambergers, Ltd.	102
B.B. Chemical Co., Ltd.	3
Bell & Webster, Ltd.	116
Bellrock Gypsum Industries, Ltd.	21
Benjamin Electric Ltd., The	59
Biddle, F. H., Ltd.	20
Birmid Industries, Ltd.	61
Blundell, Spence & Co., Ltd.	30
Bolivar Stamping Co., Ltd.	106
Bolton Gate Co., Ltd.	105
Boulton & Paul, Ltd.	63
Bowaters Sales Co., Ltd.	82
Bow Slate & Enamel Co., Ltd.	42
Braby, Fredk., & Co., Ltd.	65
Briggs, Wm. & Sons, Ltd.	62
Brightside Heating & Engineering Co., Ltd.	25
British Insulated Callender's Cables, Ltd.	19
British National Electrics, Ltd.	45
British Plaster Board (Manufacturing), Ltd.	49
British Titan Products Co., Ltd.	84
Broads Manufacturing Co., Ltd.	104
Brown, Donald (Brownall), Ltd.	108
Burgess Products Co., Ltd.	4
Canadian Government	32
Catesbys Contracts & Export, Ltd.	90
Causeway Reinforcement, Ltd.	108
Celotex, Ltd.	10
Cement Marketing Co., Ltd.	47
Chubb & Son's Lock & Safe Co., Ltd.	38
Church & Co. (Fittings), Ltd.	107
Claygate Fireplaces, Ltd.	93
Combined Optical Industries, Ltd.	96
Common Entrance Home Tutor	108
Concrete Development Co., Ltd.	60
Concrete, Ltd.	80
Crane, Ltd.	14
C.T.C. Heat, Ltd.	106
Cygnet Joinery, Ltd.	98
De la Rue, Thos. & Co., Ltd.	89
Denny, Mott & Dickson, Ltd.	31
Dexion, Ltd.	18
Docker Bros.	51
Doulton Sanitary Potteries, Ltd.	101
Dreadnought Fireproof Doors (1930), Ltd.	109
Durasteel, Ltd.	116
Econa Modern Products, Ltd.	113
Ellard Sliding Door Gears, Ltd.	37
Ellis School of Architecture	116
Evode, Ltd.	100
Fibreglass, Ltd.	86
Finlock Gutters, Ltd.	58
Floor Treatments, Ltd.	115
Foyle, W. & G., Ltd.	116
Franki Compressed Pile Co., Ltd.	9
Freeman, Joseph, Sons & Co., Ltd.	99, 116
Freer, William, Ltd.	108
Fuel Efficiency Exhibition	94
Gardiner, Sons & Co., Ltd.	7
Gay, R. & Co.	36
General Electric Co., Ltd.	54
Gimson & Co. (Leicester), Ltd.	116
Greenwood & Hughes, Ltd.	98
Greenwood's & Airvac Ventilating Co., Ltd.	91
Gyproc Products, Ltd.	74
Hailwood & Ackroyd, Ltd.	102
Hall, John & Sons (Bristol & London), Ltd.	2
Harvey, G. A. & Co. (London), Ltd.	95
Haskel Robertson, Ltd.	94
Henderson, P. C., Ltd.	78
Hilger & Watts, Ltd.	92
Hill, Richard, Ltd.	12
Hills (West Bromwich), Ltd.	53
Hollis Bros., Ltd.	68
Holoplast, Ltd.	76
Hope, Henry & Sons, Ltd.	81
Ibstock Brick & Tile Co., Ltd.	119
Imperial Smelting Corpn. (Sales), Ltd.	83
Jones & Broadbent, Ltd.	93
Jones, T. C. & Co., Ltd.	40, 41
Kingfisher, Ltd.	69
Lacrinoid Products, Ltd.	100
Lead Sheet & Pipe Council	26
Leeds Fireclay Co., Ltd.	33
Leigh, W. & J., Ltd.	43
Lever, Jas. & Sons	107
London Brick Co., Ltd.	48
Lynch & Baker, Ltd.	116
Macandrews & Forbes, Ltd.	119
Magnet Joinery, Ltd.	52
Marston, W. J., Ltd.	23
Maycrete, Ltd.	106
McPherson, Donald & Son, Ltd.	101
Metallic Seamless Tube Co., Ltd.	97
Metropolitan-Vickers Electrical Co., Ltd.	92
Mills Scaffold Co., Ltd.	120
Mitchell, Russell & Co., Ltd.	103
Moler Products, Ltd.	103
Morris, M. A., Ltd.	37
Morse, A. T., Sons & Co., Ltd.	107
National Federation of Clay Industries	28
Nife Batteries	11
Northern Aluminium Co., Ltd.	15
Northern Polytechnic	116
North British Chemical Co., Ltd.	95
Penfold Fencing & Engineering, Ltd.	97
Permanite, Ltd.	116
Pilkington Bros., Ltd.	24
Plywood Manufacturer's Association of British Columbia	88
Radiation Group Sales, Ltd.	35, 85
Rawlings Brothers, Ltd.	20
Redland Tiles, Ltd.	56
Rhodes Chains, Ltd.	108
Rippers, Ltd.	67
Rowe Bros. & Co., Ltd.	72
Sadd, John & Sons, Ltd.	13
Salopian Engineers, Ltd.	91
Scotney, Tom. M., Ltd.	71
Scottish Aluminium Ware, Ltd.	79
Secomastic, Ltd.	116
Shell Chemical Co., Ltd.	66
Smith's Clocks & Watches, Ltd.	87
Smith, Samuel & Sons, Ltd.	106
Spencer, Lock & Co., Ltd. (Royal Board)	116
Steel Radiators, Ltd.	109
Stramit Boards, Ltd.	64
Sugg, William & Co., Ltd.	27
Tarmac, Ltd.	104
Taylor, J. (Syston), Ltd.	116
Taylor, Robert & Co. (Ironfounders), Ltd.	8
Teleflex Products, Ltd.	22
Tentest Fibre Board Co., Ltd.	57
Terradura Flooring Co., Ltd.	2
Thermo-Plastics, Ltd.	16
Thorn, J., & Sons, Ltd.	96
Timber Development Association, Ltd., The	39
Timber Fireproofing Co., Ltd.	22
Trianco, Ltd.	105
Trollope & Colls	73
Tucker, G., & Son, Ltd.	44
Twisteel Design Service	29
Turners Asbestos Cement Co., Ltd.	75
United Steel Co. Ltd.	5
Versatile Fittings (W.H.S.), Ltd.	17
Vigers Bros., Ltd.	50
Ward & Co.	116
Ward, Thos. W., Ltd.	6
Wardle Engineering Co., Ltd.	60
Washington Engineering, Ltd.	99

For Appointments (Wanted or Vacant), Competitions Open, Drawings, Tracings, etc., Education, Legal Notices, Miscellaneous, Property and Land Sales, see 111, 112, 113, 114, 115, 116

Write in block letters, or type, your name, profession and address below, and fold so that the post-paid address is on the outside.

NAME_____

PROFESSION_____

ADDRESS_____

PAGE
..... 15
..... 116
..... 95
..... 97
..... 116
..... 24
n of
..... 88
... 35, 85
..... 20
..... 56
..... 108
..... 67
..... 72
..... 13
..... 91
..... 71
..... 79
..... 116
..... 66
..... 87
..... 106
d)... 116
..... 109
..... 64
..... 27
..... 104
..... 116
Ltd. 8
..... 22
..... 57
..... 2
..... 16
..... 96
td.,
..... 39
..... 22
..... 105
..... 73
..... 44
..... 29
..... 75
..... 5
..... 17
..... 50
..... 116
..... 6
..... 60
..... 99

Printed in Great Britain for the Proprietors of "THE ARCHITECTS' JOURNAL" (The Architectural Press Ltd.), 9, 11 and 13, Queen Anne's Gate, Westminster, S.W.1, by HARRISON & SONS LTD., by Appointment to Her Majesty The Queen, Printers, London, Hayes (Middx.), and High Wycombe.
Editorial illustrations engraved by THE ENGRAVERS' GUILD LTD., Windsor House, 23/26, Cursitor Street, London, E.C.4.