The Architects' Journal
October 11 1961 Vol 134 No 15 Price 1s

SfB (13)

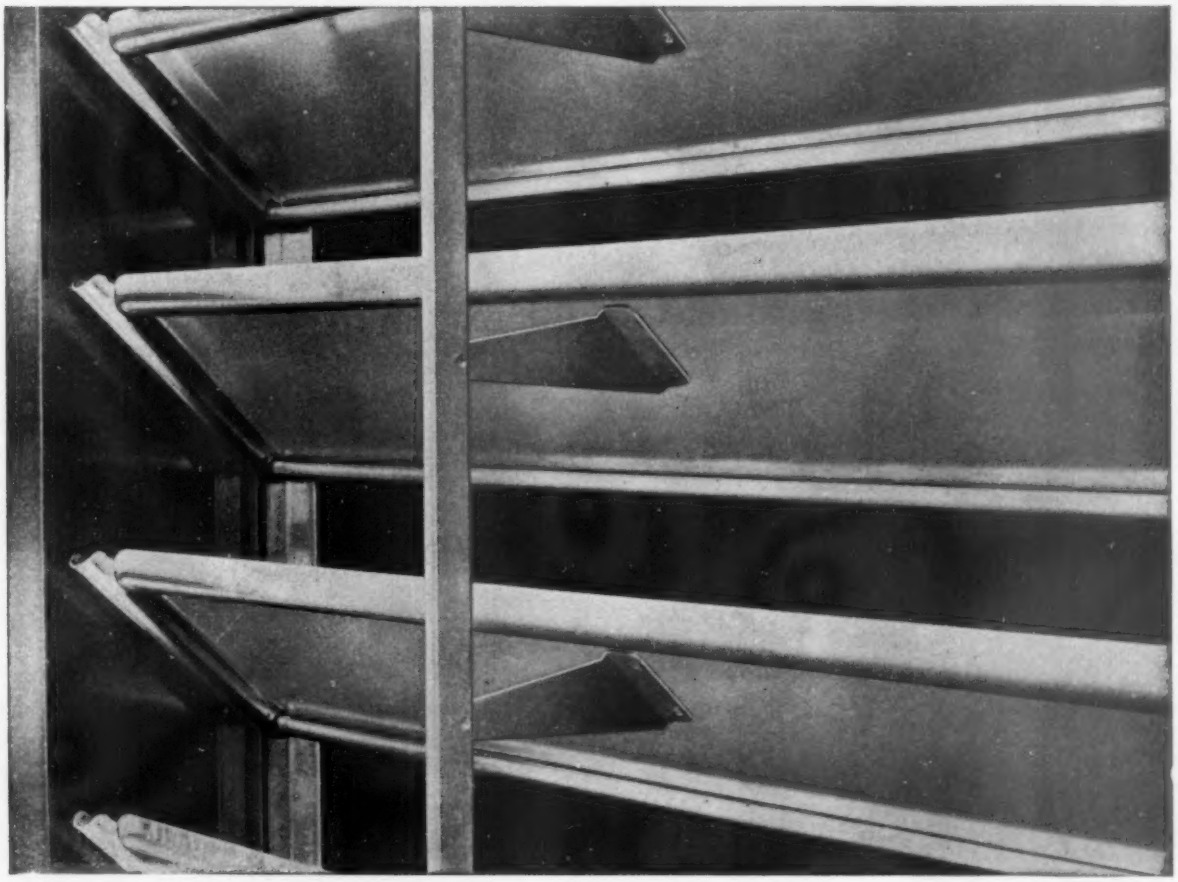
This issue of the AJ should be filed as it contains two parts of a 50-part technical information library which the AJ is founding. For the normal AJ cover we have substituted the most important elements from Table 1 of the SfB classification. These are the key to our library production programme, and each week we shall publish, with the normal AJ, a supplement dealing with one of these elements. Headings in bold type are those dealt with in AJ 4.10.61. This week's supplement covers SfB (13). The remainder will be published in subsequent issues. This is a token preclassified file cover for the Element File technical studies, Element Design Guide and Information Sheets within and for all subsequent articles and digests on these subjects which an architect needs to keep. At the end of a year readers will have a design manual covering all the functional elements listed below. This will form the nucleus of a technical library.

(11) Ground : General
(12) Drainage : General

(13)
Retaining structures: General

(14) Roads and pavings: General
(15) Garden: General
(15) Garden: Fences, gates, walls
(16) Foundations: General
(2) Structures: General
(2) Structures: Concrete: General
(2) Structures: Sections, metal
(2) Structures: Sections, wood
(21) Walls: External load-bearing: General
(21) Walls: External non-loadbearing: General
(22) Partitions: General
(23) Floors, ground: General
(23) Floors, structural: General
(24) Stairs and ramps: General
(25) Ceilings, suspended: General
(26) Roofs, structural, flat: General
(27) Roofs, structural, pitched: General
(30) Accessories, ironmongery: General
(31) Windows: General
(31) Windows: Sections, metal
(31) Windows: Sections, wood
(32) Doors: General
(34) Handrails and balustrades: General
(37) Roof-lights and traps, etc.: General
(38) Roof eaves, verges, gutters, rails: General
(41) Finishes, external: General
(42) Finishes, internal: General
(43) Finishes, floor: General
(46) Finishes, flat roofs
(47) Finishes, pitched roofs: General
(51) Installations, refuse disposal: General
(52) Installations, drainage and sanitation: General
(53) Installations, water, hot and cold: General
(54) Installations, gas, compressed air, steam, refrigeration: General
(56) Installations, heating: General
(56) Installations, heating: Equipment and fuel
(57) Installations, ventilation, air conditioning: General
(63) Installations, electrical: Lighting and power: General
(63) Installations, electrical: Lighting equipment
(64) Installations, communications: General
(66) Installations, mechanical: General
(68) Installations, special: General
(72) Rooms, fixtures and equipment: General (fixed furniture)
(72) Rooms, fixtures and equipment: General (loose furniture)
(73) Kitchens, fixtures and equipment: General
(74) Cloakrooms, bathrooms and lavatories, fixtures and equipment: General
(75) Laundries, fixtures and equipment: General

There it is—in every COLT ventilator



Look carefully at the rain channels on a Colt Ventilator, at the nylon bearings, at the flanges. And you'll see it —Colt experience, that attention to detail which is vital in a ventilator and a ventilation system. Colt pay attention to detail. They have to, because they tackle ventilation on a very broad front.

At Shell Laboratories, Egham, for example a system of Colt CO Ventilators, mounted in the glazing, provides general ventilation combined with automatic fire ventilation.

In every branch of British industry there are Colt-designed ventilation systems, based on the knowledge gained from thousands of site surveys and installations. Many of the systems, complete with controls, were not only designed by Colt, using equipment of Colt manufacture, but were installed by them, too. This is what Colt mean by a complete ventilation service.

Ask your Secretary to write to the Information Officer for the free Colt Manual of Service and Equipment.

ARCHITECTS
Messrs. Walker, Harwood and Cranswick.

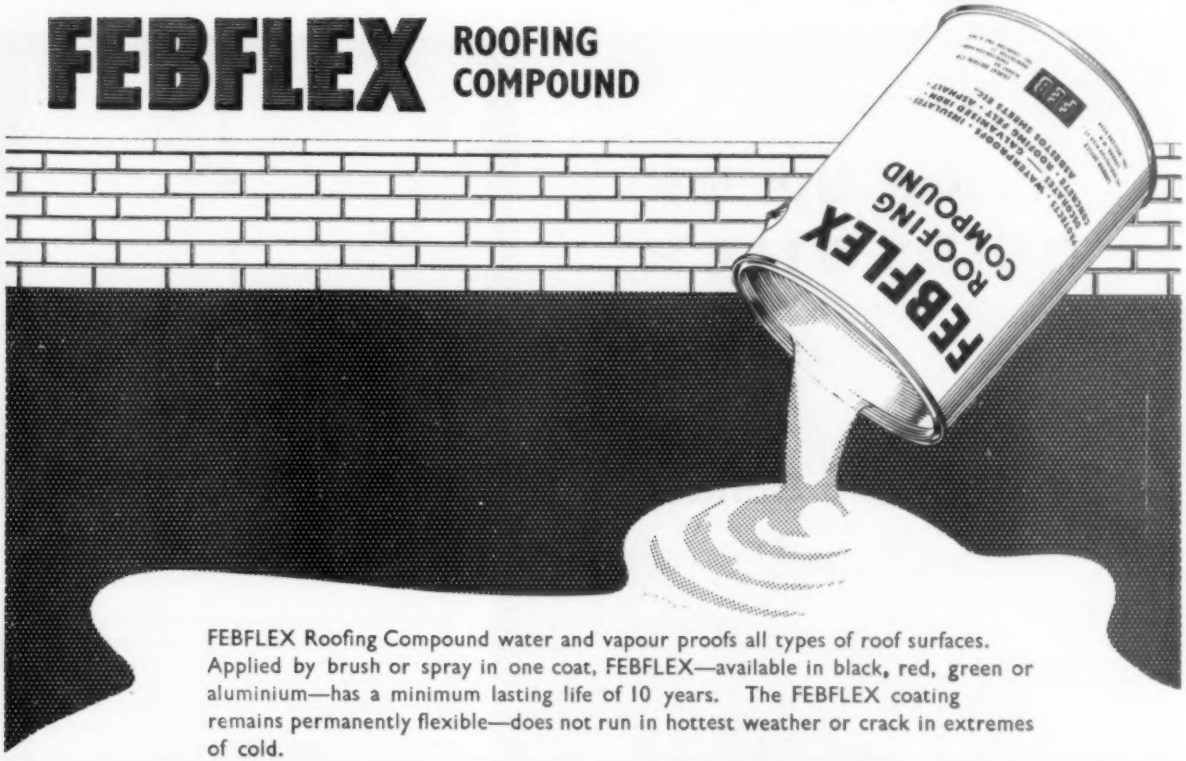
CLIENT
Shell Petroleum Limited. Continuous Combustion Laboratories Egham, Surrey.

CONTRACTOR
Trollope and Colls Limited.

VENTILATION
An installation of 51 cable operated, Dual Purpose Ventilators.
Colt Ventilation Ltd Surbiton Surrey.
Telephone: ELMbridge 0161

COLT

FEBFLEX ROOFING COMPOUND



FEBFLEX Roofing Compound water and vapour proofs all types of roof surfaces. Applied by brush or spray in one coat, FEBFLEX—available in black, red, green or aluminium—has a minimum lasting life of 10 years. The FEBFLEX coating remains permanently flexible—does not run in hottest weather or crack in extremes of cold.

A PINT OF THE BEST

When you wish to waterproof concrete and cement work, make sure that the waterproofing compound you use is the best available. There is a simple method of checking the efficiency of cement waterproofing compounds and we would suggest that you obtain from us a free sample of our Febproof Integral Liquid Waterproofer which will be supplied with a description of a method of testing its waterproofing efficiency in comparison with that of other products. You will find that Febproof in addition to its 100% waterproofing action also greatly increases plasticity and workability and increases compressive strength to a marked degree. If you also check the using cost, you will find that at the recommended rate of 1 pint of Febproof to each cwt. of cement, it is the cheapest cement waterproofer on the market.

FEBPROOF

INTEGRAL LIQUID WATERPROOFER for CEMENT AND CONCRETE WORK

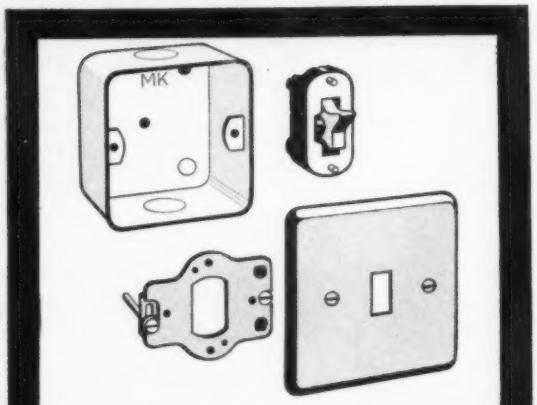
FEB (GT. BRITAIN) LTD.

102 Kensington High Street, London, W.8. 'Phone: WES. 0444

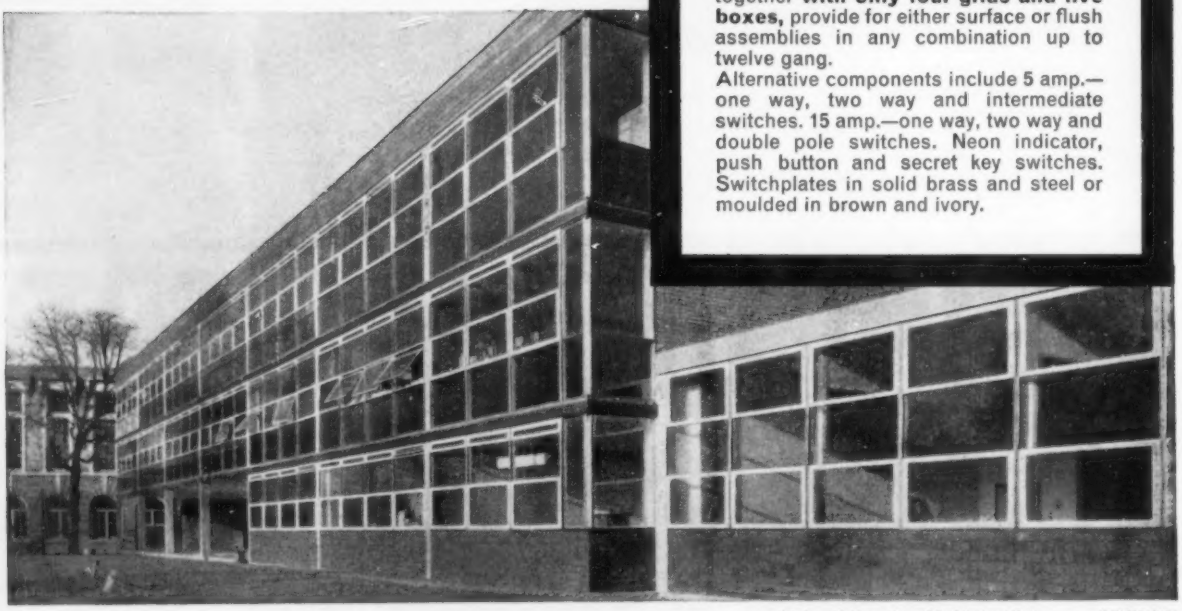
Albany Road, Chorlton-Cum-Hardy, Manchester 21. 'Phone: CHO 1063

. . . use the MK GRIDSWITCH

for the next School

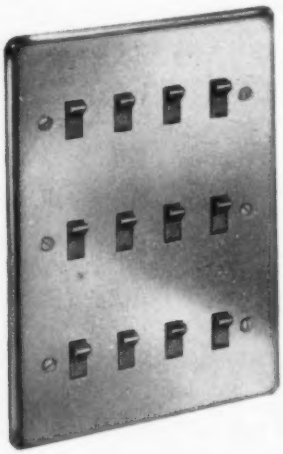


The M.K. Gridswitch gives maximum versatility with a minimum of components. Component switches etc. having standardised dimensions and fixing centres, together **with only four grids and five boxes,** provide for either surface or flush assemblies in any combination up to twelve gang.
Alternative components include 5 amp.—one way, two way and intermediate switches. 15 amp.—one way, two way and double pole switches. Neon indicator, push button and secret key switches. Switchplates in solid brass and steel or moulded in brown and ivory.



Photograph by courtesy of Architectural Review MK 210 DHB

Just a few of the infinite variety of MK Gridswitch Assemblies



GRIDSWITCH

M. K. ELECTRIC LIMITED, EDMONTON, LONDON N.9. TELEPHONE: EDMONTON 5151

THE OLD AND THE NEW

Shieldfield Redevelopment 486 Multi Storey Flats | *Architect: G. Kenyon, Esq., Dip.Arch., A.R.I.B.A., Dip.T.P., A.M.T.P.I., City Architect, Newcastle Corporation.* | *Contractor: Leslie & Co., Ltd., 80 Woodlands Road, Darlington, Co. Durham.*

IN CONTRAST with the old fashioned and dingy buildings of yester-year we illustrate here the modern way of living that comes from modern design and constructional methods.

A design for good living necessitates the use of good materials in erection and on this contract the Architect ensured that the brickwork had maximum durability by allowing the use of Febmix DeHydrated Mortar Plasticiser in the bricklaying mortar.

The Contractors also benefitted because the improved plasticity and workability of the mortar speeded erection and the elimination of lime reduced material cost.

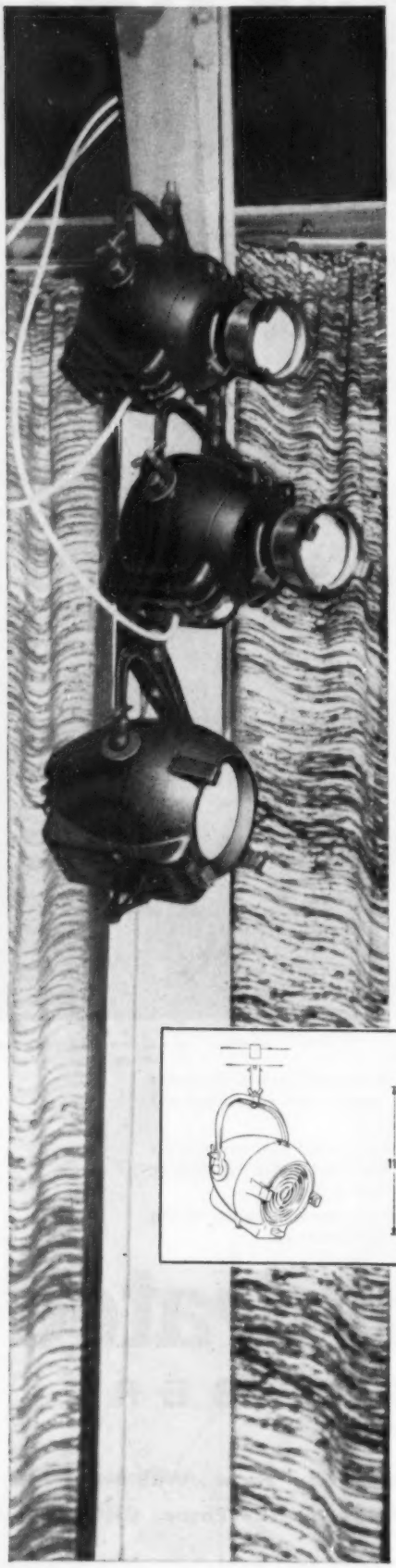
FEBMIX De Hydrated

MORTAR PLASTICISER

FEB
(GT. BRITAIN) LTD

102 Kensington High Street, London, W.8. 'Phone: WES 0444
Albany Road, Chorlton-cum-Hardy, Manchester 21. 'Phone: CHO 1063

DHB9473



LIGHTING FOR ENTERTAINMENT

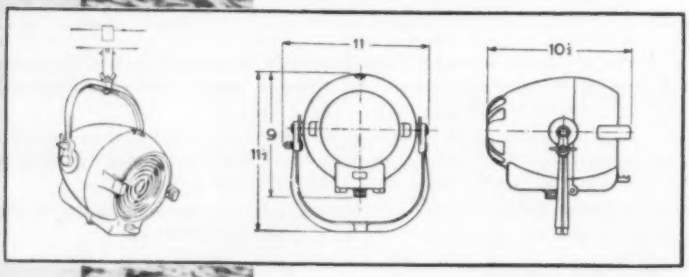
Ideally this type of lighting should be built in. Often this is not practicable. For example, rostrums in town halls or temporary stages in public assembly halls can often be effectively lit only from lanterns in full view of the audience.

In such cases the Strand Baby Spot, illustrated here, provides the only really satisfactory answer. It is a neatly styled, compact lantern quite unobtrusive and capable of a higher light output than many much bulkier lanterns.

Strand engineers offer free advice on planning all such specialised lighting and a fully equipped contracts and wiring department to carry out the installation. You will almost certainly find it useful to have our new catalogue of lighting control equipment and lanterns by you. It includes all optical and mechanical data and prices from which specifications and estimates can be prepared. May we send you a copy ? and if you have not already received one, copies of 'Stage Planning 1961' are also available.

Strand Patt. 123 and 23 Baby Spots are neatly styled and of small dimensions so that concealment is often unnecessary.

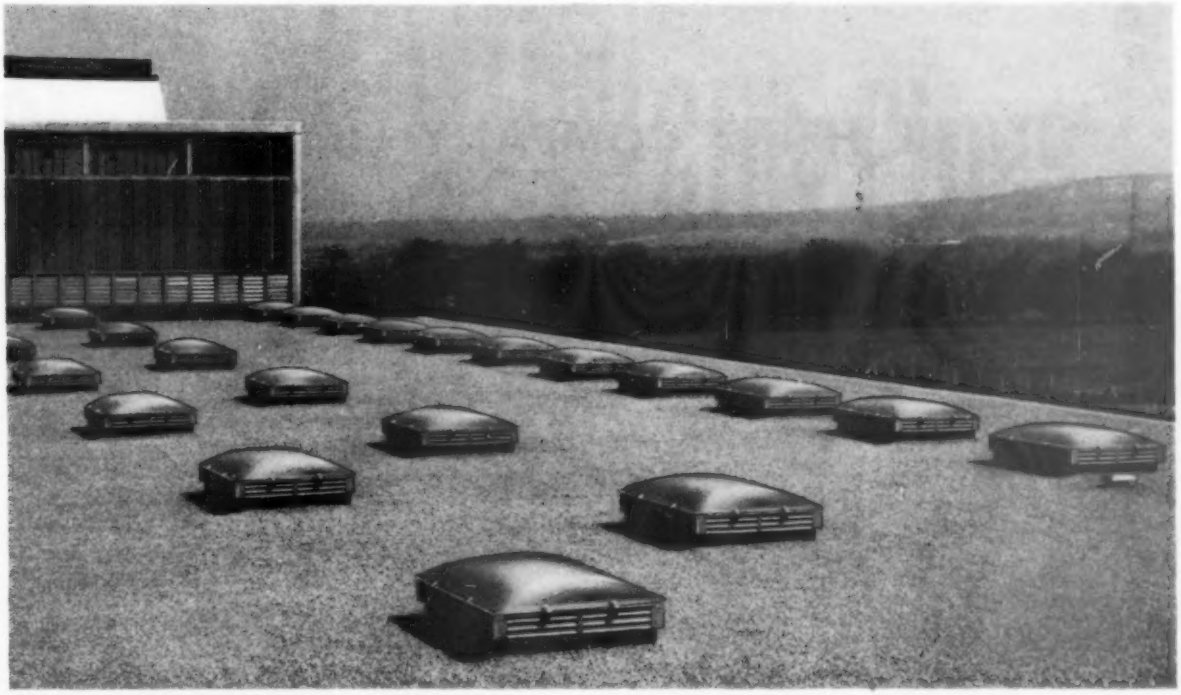
The above illustration shows a Strand all-electric Saturable Reactor Remote Dimmer Control in use at Adelaide University. This control requires little maintenance and being extremely compact is ideal for small lighting installations up to 54 ways. This type of dimmer accounts for 5,000 of the 16,000 remote controlled Strand dimmers in use.



STRAND ELECTRIC

THE STRAND ELECTRIC & ENGINEERING CO. LTD.

29 KING STREET, COVENT GARDEN, W.C.2. TEMPLE BAR 4444



Pilkington Bros. New Research Laboratory, Lathom, Lancs.
Architects: Courtaulds Technical Services Ltd, Coventry. *Contractors:* Holland & Hannen and Cubitts (North West) Ltd, Bromborough, Ches.

Greenwood Airvac Daylight Ventilators

DOME ROOFLIGHTS WITH COMBINED CURBS & LINERS

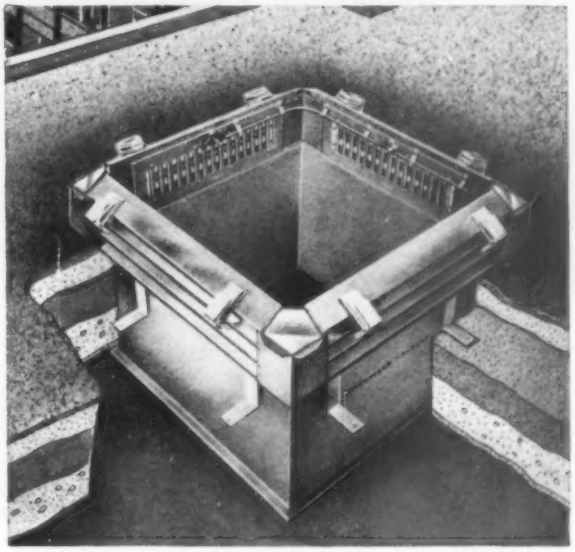
(Ventilated or unventilated)

Designed for building into roof structures in place of builders' curbs, Greenwood Airvac Curbs and Liners for Dome Rooflights give improved light value and obviate the need for special shuttering and rendering of roof openings.

Ventilated models provide controllable or permanent ventilation through weatherproof external louvres with maximum rooflighting. Internal hit and miss shutters supplied if required.

Both ventilated and unventilated units are fitted with internal Security Fixings and supplied in an extended range of circular and rectangular sizes to suit standard size glass, "Perspex" or fibreglass Domes. Circular Domes from 18″ to 72″ diameter and Rectangular from 24″ x 24″ to 72″ x 72″. Manufactured in aluminium.

For further details, please write for Technical Leaflet RL1/1



Cut-away view of curb and liner.

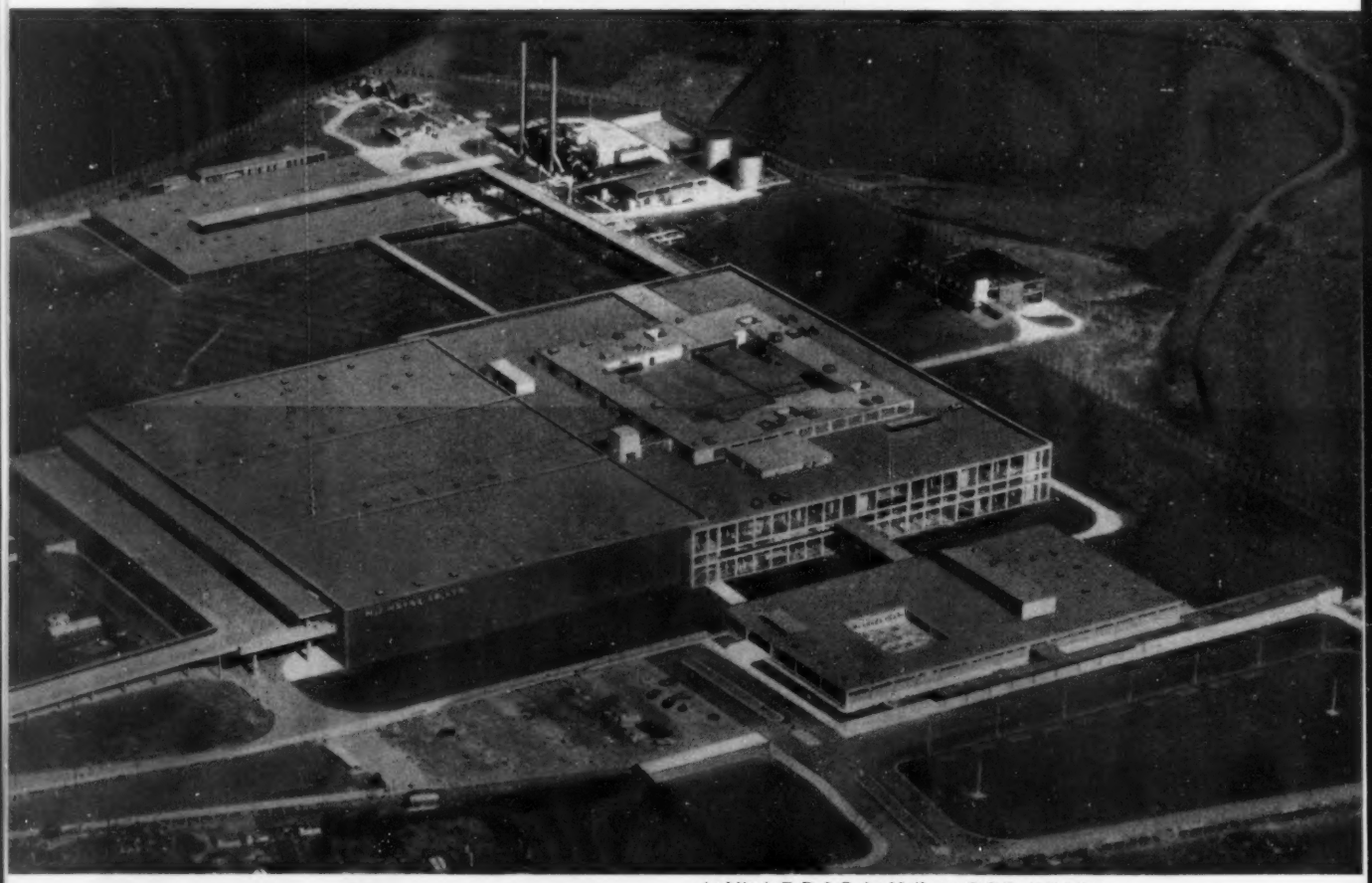
Greenwood Airvac *ventilation*

GREENWOOD'S AND AIRVAC VENTILATING COMPANY LTD
ESTABLISHED 1879
PATENTEES, DESIGNERS AND MANUFACTURERS OF NATURAL AND MECHANICAL VENTILATING EQUIPMENT.

BEACON HOUSE, KINGSWAY, LONDON, W.C.2.
CHANCERY 8135 (4 lines). 'Grams: 'AIRVAC', LONDON

G.U.20

*H. J. HEINZ COMPANY LIMITED chose...



Architect: E. D. Jefferiss Mathews, O.B.E., F.R.I.B.A., of J. Douglass Mathews & Partners.
Main Contractor: A. Monk & Company Limited, Warrington and London.

for their vast, new Food Plant . . . the biggest in Europe and the British Commonwealth

Excellence and dependability are qualities synonymous with the name of Heinz. These qualities also obtain in the design, structural techniques and materials involved in the construction of this fine new plant. **Glazed vitrified clay pipes** form the huge drainage system necessary to hygienic perfection, for they afford the greatest protection against interior and exterior attack and are the most permanent of all drainage materials.

* *H. J. Heinz Company Limited, Food Plant, Kitt Green, Wigan.*

Glazed Vitrified Clay Pipes

The unrivalled long life of **glazed vitrified clay pipes** is one of the main reasons for their wide specification and use to-day. Those responsible for our future drainage schemes cannot afford to take risks. They know there is no adequate substitute for **glazed vitrified clay pipes.**

For information write to the Engineer

NATIONAL SALT GLAZED PIPE MANUFACTURERS' ASSOCIATION

Hanover Court, Hanover Square, LONDON, W.1.
Telephone: MAYfair 0364

GLAZED VITRIFIED CLAY PIPES

VICKERS - *built . . . to last*

First in quality, first in design, first in style—that's V-A 60: first too in the features offered in this range of matching office furniture. V-A 60 is backed by Vickers engineering—good furniture built for years of good use. Write now for colour brochure.

V-A SIXTY
STEEL OFFICE FURNITURE

Desks · Tables · Chairs · Bookcases · Wardrobes · Filing Cabinets · Matching Accessories

VICKERS-ARMSTRONGS (ENGINEERS) LIMITED STEEL EQUIPMENT DIVISION
DARTFORD KENT DARTFORD 25141/3
SALES OFFICE AND SHOWROOM: 13 CITY ROAD LONDON EC1 MET 8877/9

TGA 5F89

Photo by courtesy of Holland & Hannen and Cubitts (G.B.) Ltd.

TEAK

TEAK tectona grandis, lord of Asian forests. Difficulties involved in reaching and shipping this most beautiful hardwood are felt by Morris to be well worthwhile.

Large stocks are held, from the smallest short scantling to the 25ft. flitch. Thus selection to customers' orders is less wasteful and more economic. And bulk shipment or one piece, the service is the same. See Morris for TEAK.

M·A·MORRIS·LTD

IROKO, MAHOGANY AND OTHER HARDWOODS

Ravensdale Wharf, Stamford Hill, London, N.16. Tel: STAMFORD HILL 6611

GLOW-WORM Sunrod

Although identical in appearance the Sunrod 'V' range comprises these models :

V15 *(15,000 B.Th.U's)* **£65** retail
V30 *(30,000 B.Th.U's)* **£80** ,,
V43 *(43,000 B.Th.U's)* **£92.10.0** ,,

also complete range of pressure jet and gas boilers from **£67.**

The 'V' series of oil-fired boilers

- **V** UNIQUE HEAT EXCHANGER
- **V** FOR LASHINGS OF HOT WATER
- **V** EASY TO KEEP CLEAN
- **V** FREE FROM SMELL
- **V** NO MOVING PARTS
- **V** LOW OPERATING COSTS
- **V** HIGH EFFICIENCY
- **V** DESIGNED TO ENHANCE THE KITCHEN
- **V** CHOICE OF ATTRACTIVE COLOURS
- **V** EASILY INSTALLED

THE HEAT EXCHANGER
Hundreds of copper rods trap all the heat from the fuel, enable it to work harder heating water.

GLOW-WORM/SUNROD, 47 HATTON GARDEN, LONDON E.C.1.

Corrugated 'Perspex' rooflights in a new warehouse at the Key Glassworks Ltd., Edinburgh Way, Harlow, Essex. Architects & Surveyors: Messrs. Brown & Brown, London, N.1. Main Contractors: Messrs. W. & C. French Ltd. Structural Engineers: Messrs. Matthew T. Shaw & Co. Ltd.

These rooflights have I.C.I. behind them and a long life ahead— they are made from Corrugated 'Perspex'

In this warehouse, recently built for the Key Glassworks Ltd. in Harlow, there are no dark corners. Corrugated 'Perspex' rooflights, though comparatively small and widely spaced, ensure plenty of daylight over the whole working area.

Corrugated 'Perspex' was chosen because it is the most efficient rooflight, in that it transmits more light and because it keeps up this efficiency. It retains its smooth, easily cleaned surface indefinitely, even in corrosive atmospheres, and in most cases, will last as long as the roof itself. Corrugated 'Perspex' is unique among rooflights in being made by I.C.I.

In fitting Corrugated 'Perspex' rooflights, Key Glassworks were not only fitting *the best*, they were buying it from a manufacturer on whom they could rely.

Insist on—

CORRUGATED 'PERSPEX'

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

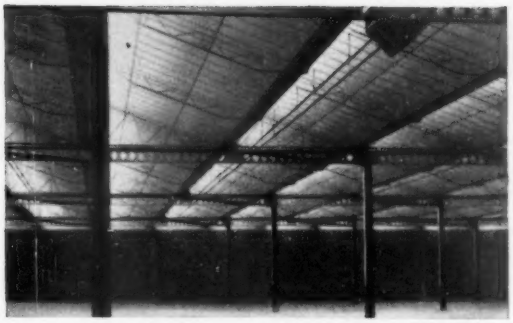
The prices of corrogated 'Perspex' have been reduced, as from September 1. For details consult your stockists.

See the I.C.I Plastics in Building Exhibition at
The Manchester Building Centre Ltd., 115 Portland St., Manchester, 1, 8th—17th Nov.

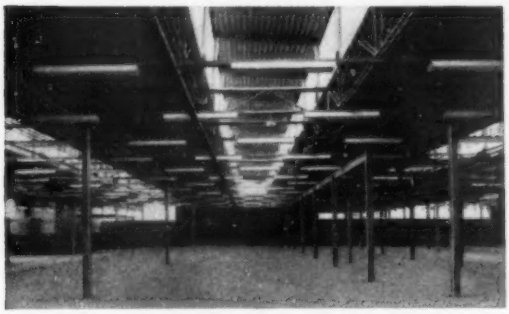
ICI

IMPERIAL CHEMICAL INDUSTRIES LIMITED · LONDON · S.W.1

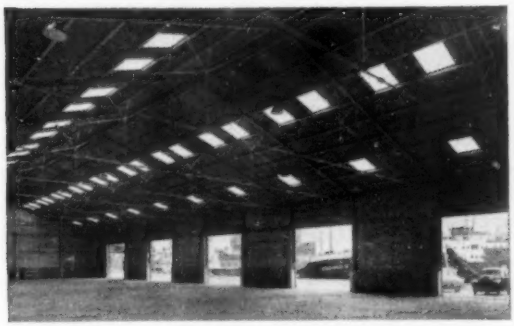
CP 174A



The ARCON SAWTOOTH ROOF BUILDING — *large clear floor areas, indirect lighting and ample scope for individual architectural treatment.*



The ARCON MONITOR ROOF BUILDING — *brings all the advantages of factory-made manufacture to flat-roofed building construction.*



The ARCON INDUSTRIAL BUILDING — *general purpose, for all light industrial needs — factories, stores, garages, workshops, etc.*

ARCON for earlier occupation

Arcon steel structures cut much of the time lag in building programmes. Known dimensions speed planning and preparation of drawings; standardised components and speedy, trouble-free erection methods ensure occupation with the minimum of delay.

Arcon structures are available in a very wide range of types and spans and walling systems. Write now for full specification brochure.

THE OWNER
THE ARCHITECT
THE BUILDER

ALL AGREE...

Arcon

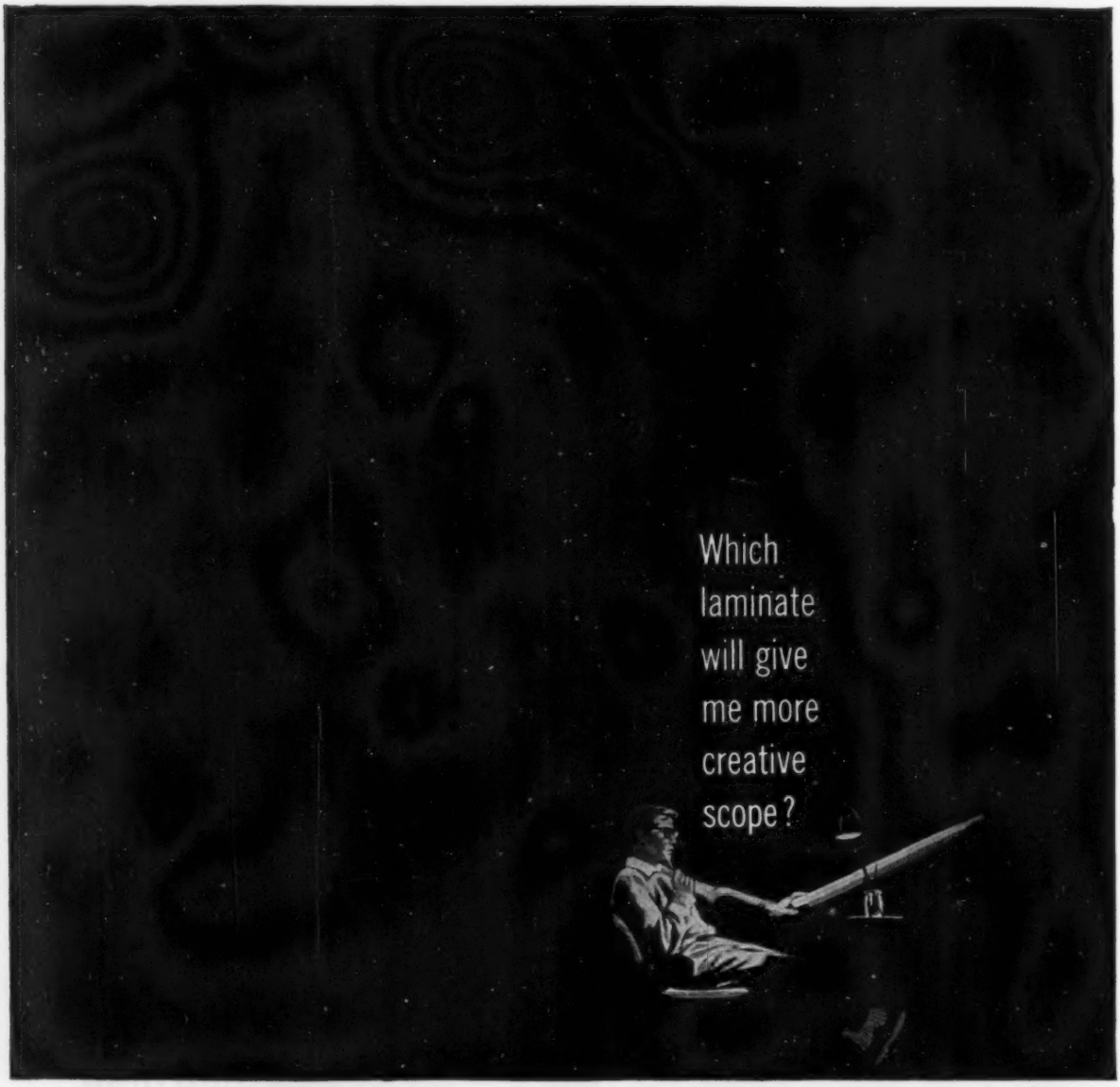
SIMPLIFIES BUILDING

TAYLOR WOODROW (ARCON) LTD · 41 WELBECK ST. W.1 · Tel: HUN 6666

The Sponsor companies forming the Arcon Group are: IMPERIAL CHEMICAL INDUSTRIES LTD · STEWARTS AND LLOYDS LTD · THE UNITED STEEL COMPANIES LTD · THE CRITTALL MANUFACTURING CO. LTD · TAYLOR WOODROW (ARCON) LTD

THE FOLLOWING ARE AGENTS FOR ARCON STRUCTURES IN ENGLAND AND WALES:

F. J. Reeves & Fox, Eliott Ltd.	Devon and Cornwall	Ellis & Everard Ltd.	Northampton, Leicester, Rutland, Hunts
Kennedy's (Builders' Merchants) Ltd.	Dorset	Jewson & Sons Ltd.	Cambridgeshire, Suffolk, Norfolk
Haine & Corry Ltd.	Somerset, Wiltshire, Herefordshire	J. H. Bean & Co., Ltd.	Lincolnshire, West Riding
South Wales Builders' Supply Co., Ltd.	Radnor, Cardigan, Pembroke, Carmarthen, Brecknock, Glam, Monmouth	Jordans (Derby) Ltd.	Nottinghamshire, Derbyshire
Sharpe & Fisher Ltd.	Gloucestershire	A. D. Foulkes Ltd.	Staffs, Warwick, Worcester, Shropshire, Montgomery, Merioneth
Broad & Co., Ltd.	Berkshire	Manchester Slate Co., Ltd.	Anglesey, Caernarvon, Denbigh, Flint, Cheshire, Lancashire
Hall & Co., Ltd.	Hampshire, Sussex, Surrey	Henry Williamson & Co., Ltd.	East Riding
Alfred Olby Ltd.	Kent	Crossley & Sons Ltd.	North Riding, Durham
J. H. Sankey & Son Ltd.	Essex	J. T. Dove Ltd.	Durham, Westmorland, Cumberland, Northumberland
Standard Range & Foundry Ltd.	Middlesex, Hertfordshire, Beds, Bucks		
Midland Builders' Supplies (Oxford) Ltd.	Oxfordshire		



FABLONITE

THE LIFETIME LAMINATE

FABLONITE is the new *top-quality* laminate that introduces over 70 new and exclusive stylings. There are 13 exceptionally realistic wood grains (their unique long 'repeats' defy detection!) . . . 18 pure plain colours . . . hosts of colourful patterns. The glorious 'Harmony' stylings (combining two or more effects in one distinctive panel) give individuality to built-ins and make interesting focal points. FABLONITE *costs less to use*—list price is only 3/9 per square foot in the standard range (including wood grains). *Planned nationwide distribution* ensures that you get the FABLONITE you want, *where and when you want it*. No costly hold-ups . . . no last-minute changes of plan!

The Fablon Building Division is ready to assist you with technical information. For details of prices, stylings and specifications post the coupon today, to: Fablon Ltd., Berkeley Square House, Berkeley Square, London, W.1.

Fabulous New Fablonite

To: FABLON LIMITED. Berkeley Square House, Berkeley Square, London, W.1.

Please supply details of FABLONITE prices, stylings and specifications. ☐

Please arrange for a FABLONITE consultant to call by appointment. ☐
(TICK WHERE APPLICABLE)

NAME .....

ADDRESS .....

AJ. 19

Maximum protection for joists.

Firstly we chemically pretreat our joists, then dip them in a specially formulated paint and bake them at high temperature. From then on they will withstand corrosion and defy the elements generally for years to come. This new process guarantees the architect the best possible building products at the price.

Small wonder architects everywhere are specifying Metsec.

METAL SECTIONS LTD

A TI COMPANY

OLDBURY · BIRMINGHAM Tel: BROadwell 1541

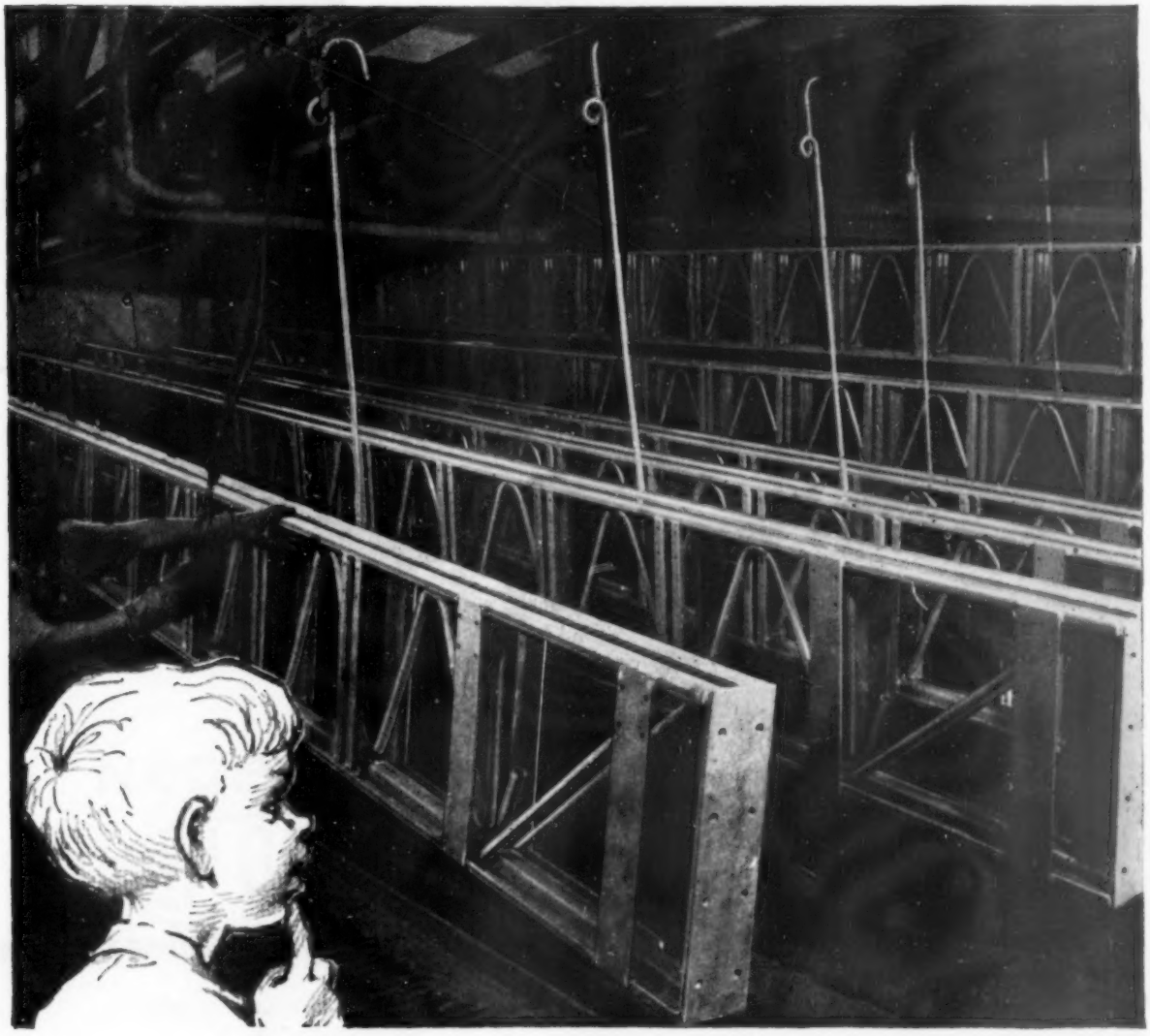
☐ *Please send me Joists Catalogue.*

☐ *I am also interested in your publication on DIFULITE Cellular Sub-Ceilings.* A.J.

Name _____

Position _____

Company Address _____



SM/MS 5454

CURTAIN WALLING PROBLEMS SOLVED WITH DU PONT NEOPRENE

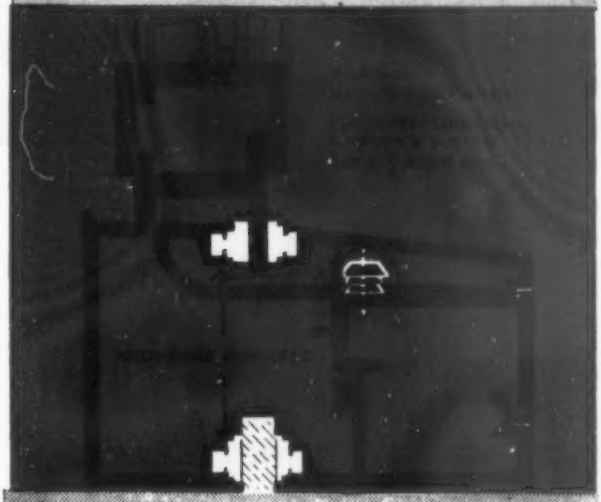
The architects chose glazing seals made from Du Pont neoprene for this new building at Oxford, which will house the University Engineering Department, because of the solutions offered to three major problems:

THE PROBLEM OF TIME – Pre-formed seals or gaskets made from Du Pont neoprene are quick and simple to install. They enable glass or panels to be sealed into frames by unskilled labour, with the minimum risk of a faulty seal. Diagram shows the method of sealing.

THE PROBLEM OF COST – Gaskets of Du Pont neoprene offer far greater long-term economy than conventional glazing compounds. They ensure a weatherproof seal that won't crack, dry out, harden, soften, or "set" and lose sealing pressure.

THE PROBLEM OF QUALITY – These gaskets of Du Pont neoprene exhibit the same high resistance to sunlight, oxygen, ozone and weathering that characterises this elastomer in all of its many applications.

Send for booklet—'Neoprene gaskets for curtain walls'—by posting coupon below to Du Pont Company (United Kingdom) Ltd., 76 Jermyn Street, London, S.W.1.



NEOPRENE

DU PONT

REG. U. S. PAT. OFF.

Established 1802

BETTER THINGS FOR BETTER LIVING

THROUGH CHEMISTRY

Du Pont Company (United Kingdom) Ltd., 76 Jermyn Street, London, S.W.1, England.

Please send me 'Neoprene gaskets for curtain walls'.

NAME .....

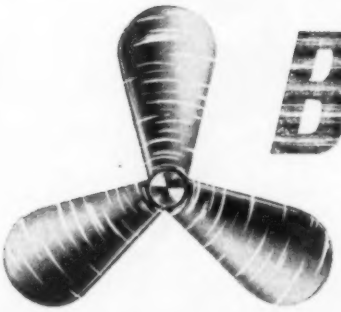
POSITION .....

COMPANY .....

ADDRESS .....

ARCHITECTS' JNL 11/61

ONLY Wandsworth Incinerators have the



BUILT-IN FAN

THE BUNNIE INCINERATOR

- **Automatic operation**
- **Big capacity—100-150 staff**
- **Surface or flush wall mounting (Pedestal model also available—details on request)**
- **Residual ash deposited in ash drawer for later disposal**
- **Outer case always remains cool**
- **Consumption 800 watts**
- **Available for A.C. or D.C.**
- **12 months' guarantee.**

Standard Surface-mounted ***BUNNIE***

The built-in extractor fan is an exclusive feature of the 'Bunnie' incinerator: it *completely* eliminates unpleasant odours, because smoke and fumes *cannot* "feed back" . . . even if several machines use a common flue, when a simple relay system gives *extra* protection.

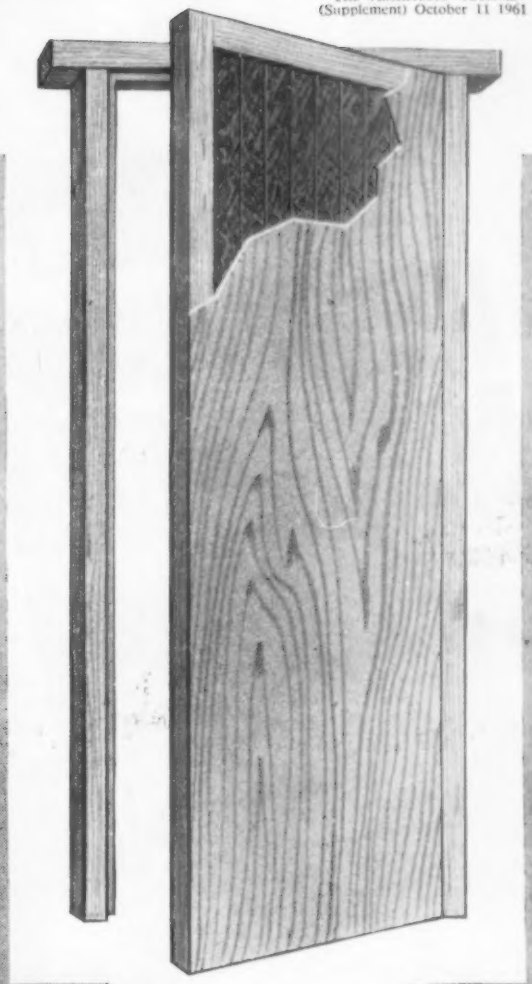
Technical advisory service available—write or 'phone for new Incinerator Booklet.

Flush-mounted ***BUNNIE***

Wandsworth

THE WANDSWORTH ELECTRICAL MANUFACTURING CO. LTD. (DEPT. A.J. 39), ALBERT DRIVE, SHEERWATER, WOKING, SURREY. Telephone: Woking 3506.

Fire precautions begin with Lindoco FIRE-CHECK DOORS



It is agreed everywhere that tomorrow's buildings must be protected against fire. How best to achieve this? The use of factory-hung Lindoco Fire-Check doorways is an obvious starting point. These craftsmen-built doors have a core of solid Stramit which defies fire vigorously. They are available, complete with frames, in two types, Half-Hour and One-Hour. Please write to us for further details.

OFFICIAL!

Lindoco patent factory-hung doorways are highly-efficient fire-barriers which fulfil all Fire-Check requirements as laid down by B.S. 476—1932 and BSS.459, Part III, 1946. Tests by the Department of Scientific and Industrial Research and Fire Offices Committee Joint Research Organisation indicate that the "half-hour type" door also passed for the GRADE "E" fire-resistance.

National Physical Laboratory tests show that the Lindoco Fire-Check door, with its core of solid Stramit, provides better insulation against airborne sound than a solid timber door. Official test report forwarded on request.

There's an open-and-shut case for

Lindoco FIRE-CHECK DOORS

ALSO AVAILABLE HIGH QUALITY FLUSH DOORS, PANELLED DOORS GLAZED DOORS, GARAGE DOORS, ETC.

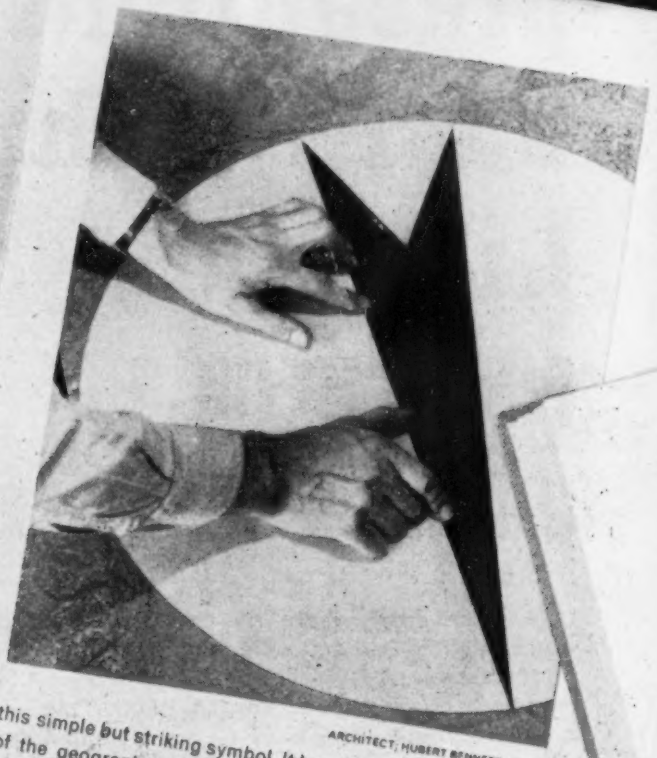
LINDEN DOORS LTD · COWLEY PEACHEY UXBRIDGE MIDDLESEX · TELEPHONE WEST DRAYTON 3751

THE ARCHITECTS' JOURNAL
(Supplement) October 11 1961

M.N.

ARCHITECT: HUBERT BENNETT, FRIBA

would agree; whereas it is the *design* of the floor which clearly dominates this 'general purpose' room in the Central Wandsworth Evening Institute, London. The black marble and grey marble Topline tiles—the LCC has used them in many of its schools—are by Michael Nairn of Kirkcaldy, whose sheet linoleum, in white and deep pink, features in



ARCHITECT: HUBERT BENNETT, FRIBA

this simple but striking symbol. It has been set into the floor of the geography room at Garratt Green, where it points north: a permanent and precise reminder of the basis of all geography, and at little cost, too. Nairn linoleum is well suited to this which seems to show that, when you haven't much money/choice/scope, a little imagination can do a lot

LOOK FIRST AT **NAIRN LINOLEUM** FOR SCHOOL FLOORING

Four pages from the long and happy life of Nairn linoleum. Children's feet test a flooring more thoroughly than perhaps any other kind of wear. The fact that so many architects specify Nairn linoleum for floors in schools, colleges and universities is a testimonial in itself. But it's not all a matter of finding an answer to stamping and scuffing. You get a lot for your money

THE ARCHITECTS' JOURNAL
(Supplement) October 11 1961

ARCHITECTS LEONARD MANASSEH & PARTNERS

of good. The floor is in Rutherford School, Marylebone, and the flooring is Nairn's Pebble Grey linoleum, chosen for its light-reflective qualities. Cut to a 3' 9" module (the rest of the roll was used as tiles elsewhere), it has strips of Blondwood lino in between, to line up with the structural mullions, thus lending a much-needed feeling of cohesion. The use

ARCHITECTS GOLLINS MELVIN WARD & PARTNERS

of modules, in fact, is a valuable technique; the floor of this library at Sheffield University was entirely designed for a module of 5' 1½". Michael Nairn made some 20,000 square yards of a special grey linoleum (this, of course, is one of the few floorcoverings wide enough for such a big module to cover this job, and the result is this highly successful

with Nairn linoleum. You get good looks with long life; you get economy with versatility; you get colour with strength. That's why it pays to look first at Nairn linoleum for school flooring . . . or, indeed, any other. You can quickly get skilled advice and information on any floorcovering—not only linoleum—from your nearest Nairn technical representative. Please phone, call or write. London, Birmingham, Manchester, Glasgow or Kirkcaldy.

NAIRN

From Commonwealth log to British-made door —in one factory!

Thamesply-Werno doors are the only British-made doors produced throughout in one factory. The highest standards imposed at all stages of manufacture, are reflected in the sustained high quality and durability and yet the price of the finished door is low.
Also, Thamesply-Werno doors have better soundproofing and thermal insulation properties, and a higher impact resistance.

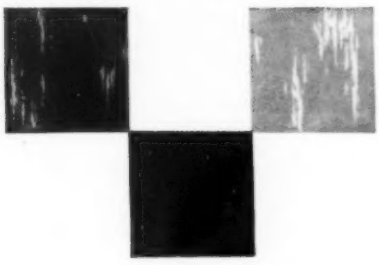
THAMESPLY WERNO

The Unique Tubular Core
Every square foot of a Thamesply-Werno door is packed with more than 10,000 equal-length tubes of straw. The patented production process ensures uniformity of thickness and density.

Every door guaranteed against defective workmanship and materials
Thamesply-Werno doors are manufactured for every finish and for every project

THAMES PLYWOOD MANUFACTURERS LTD • HARTS LANE BARKING ESSEX Tel. No: RIPpleway 5511
TA 6251

SEMFLEX TILES BECOME AN INTEGRAL PART OF COLOUR HARMONY IN ANY DESIGN



This is only one of the wide range of Semtex flooring materials, giving unlimited scope for any application.

- ✳ Excellent choice of decorative colours.
- ✳ Backed by the vast research facilities of the Semtex Organisation. Expert assistance on pre-treatment and other flooring problems.
- ✳ Skilled laying service through Semtex branches or approved contractors throughout the U.K.
- ✳ Contracting facilities also available throughout the world.
- ✳ Design consultancy service.

For further details please contact Semtex today.

IMAGINATIVE MODERN FLOORING

Semtex Ltd

1 SEMTEX HOUSE · 19/20 BERNERS STREET · LONDON W1 · Telephone—LANgham 0401

CIH/61/SE/C14

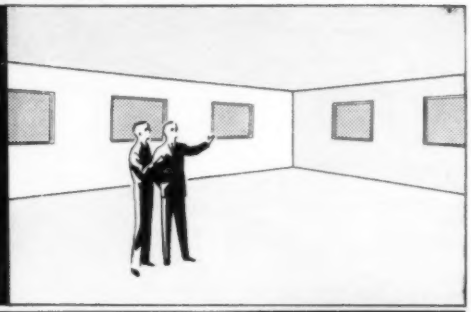
When it's a question? of partitioning—

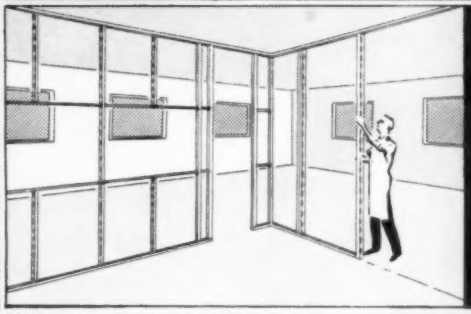
THE QUICK, EASY ECONOMICAL ANSWER IS THE NEW PERMALOCK SYSTEM

—it includes a complete service, too!

A simple plan can be made on site. No need for detailed drawings.

Factory produced Permalock components are assembled quickly.





Permalock Partitioning complete with doors, windows and decoration just as you want them.

Designed specifically to meet present day demands the Permalock system offers demountable partitions of excellent quality for new buildings and conversion work. Although low in price compared with other demountable systems Permalock maintains high standards of durability and finished appearance. Economical because the skilful original design of accurate mass produced components allows installation on site with speed and unequalled simplicity, Permalock partitions minimise transmission of noise. Any problems from enquiry to completion are resolved by the Permalock Service.

patents pending

permalock partitioning—durable, demountable

A PRODUCT OF THE EXPANDED METAL COMPANY LIMITED

'Phone Permalock centres at:

LONDON	ABBey 7766	EXETER	55466
ABERDEEN	51862	GLASGOW	Possil 8597
BELFAST	26471	LEEDS	25343
BIRMINGHAM	East 3791	MANCHESTER	Central 9855
BRISTOL	292451	NEWCASTLE	810308
CARDIFF	33757	NOTTINGHAM	42897

Write or 'phone to-day for fully illustrated colour brochure

NAME .....

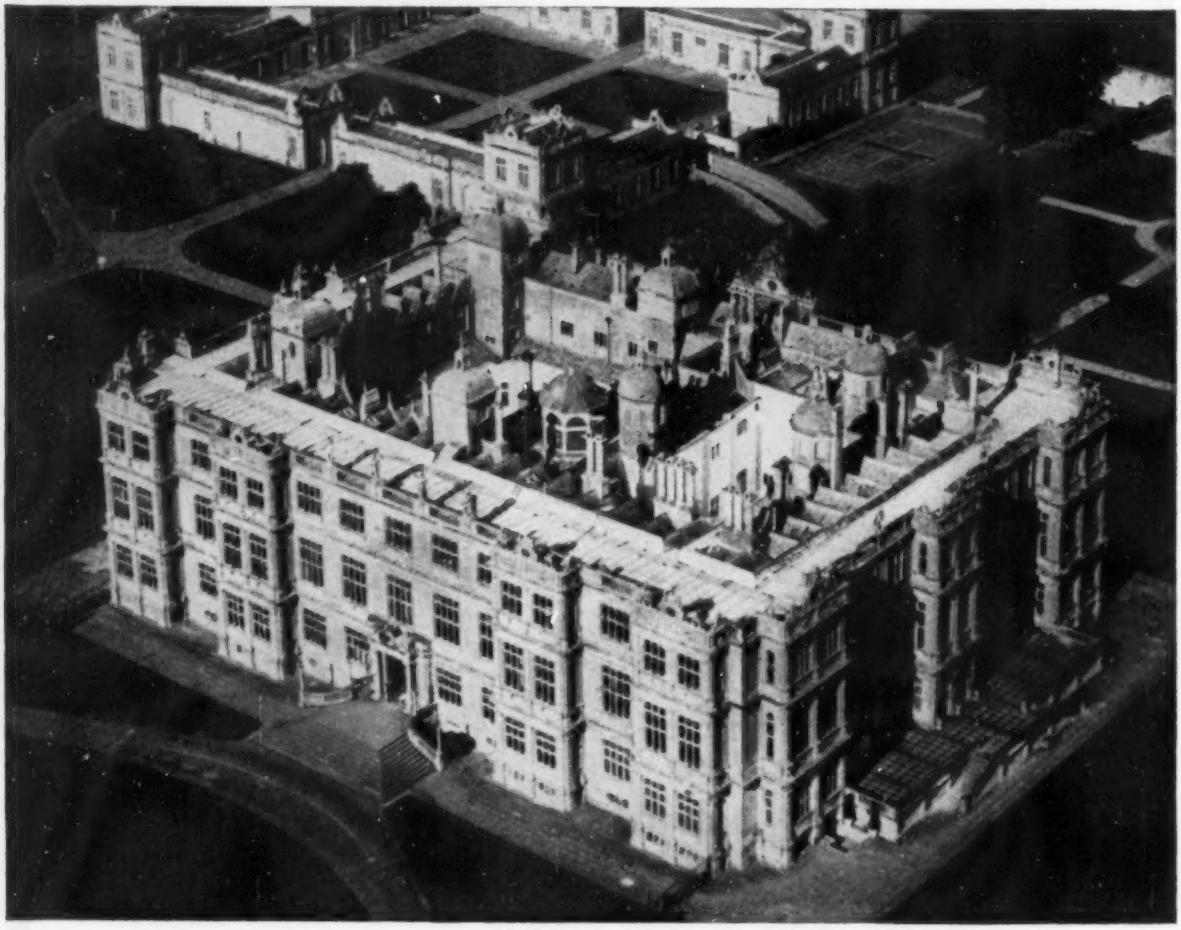
ADDRESS .....

.....

AJ

OR WRITE TO: THE EXPANDED METAL COMPANY LIMITED · 16 CAXTON STREET · LONDON SWI

Britain's Heritage in Timber



... Preserved by **Pestcure Plus**

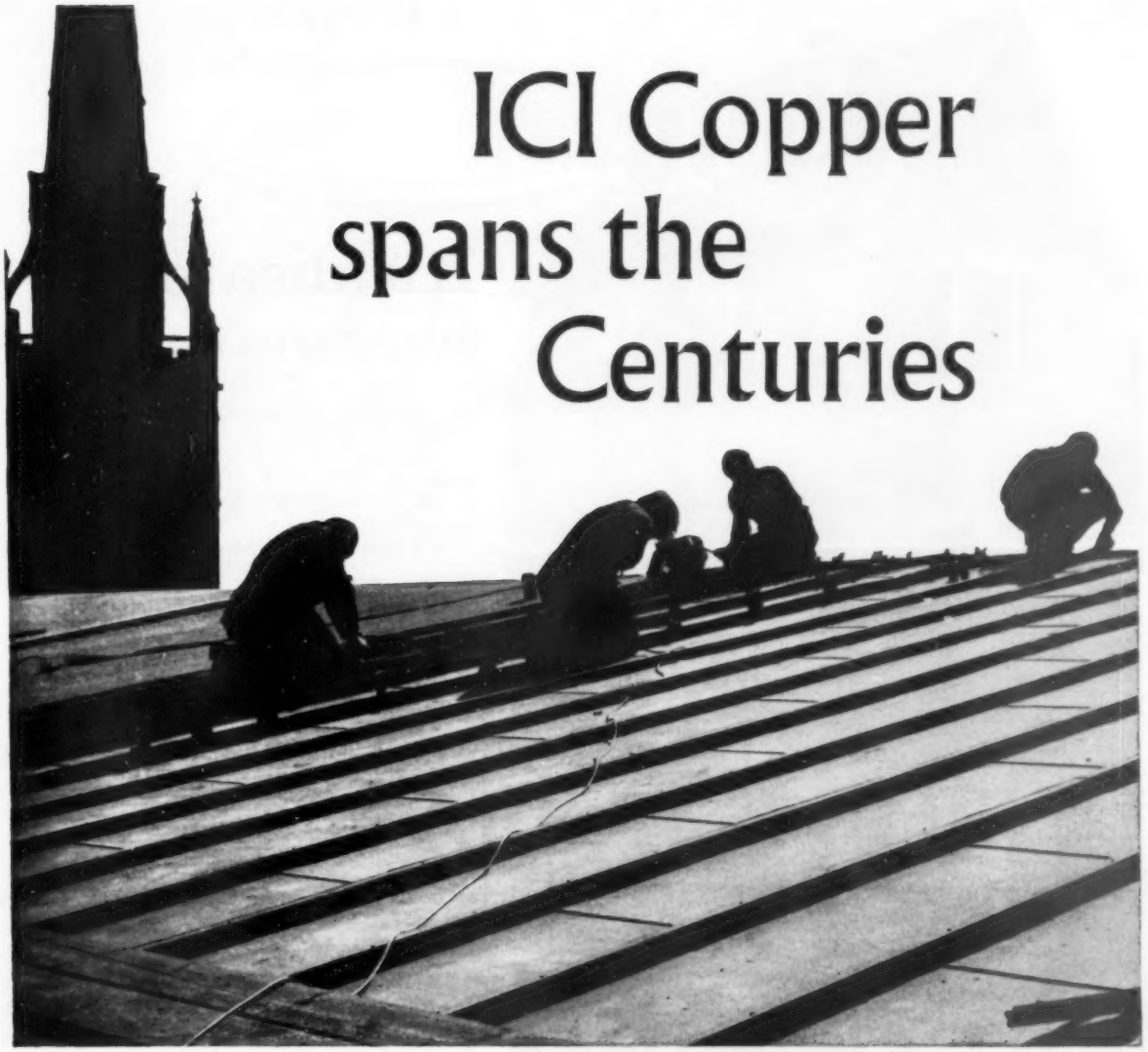
Longleat, the magnificent residence of the Marquis of Bath, is only one of the long list of stately homes and distinguished buildings which are benefitting from the protection which Pestcure Plus provides. This is because Pestcure Plus has become known as the surest, most effective method for the treatment and prevention of woodworm and dry-rot. Colourless, non-staining, economical and easy to apply, Pestcure Plus can provide the answer to your problems. *Free advice and surveys.*

Stand 1287-8 · Building Exhibition · Olympia · Nov 15-29

GEORGE E. GRAY (Distributors) **LTD**

JOINANT HOUSE • EASTERN AVENUE • ILFORD • ESSEX • *Telephone: VALentine 8844*
AND AT: **FLOWERS HILL • BRISLINGTON • BRISTOL 4** • *Telephone: Bristol 70205*

ICI Copper spans the Centuries



Seventy tons of ICI copper strip covers the roof of Coventry Cathedral

Architect: Sir Basil Spence, R.A. Main contractor: John Laing Construction Ltd. Roofing contractor: Fredk. Braby & Co. Ltd.

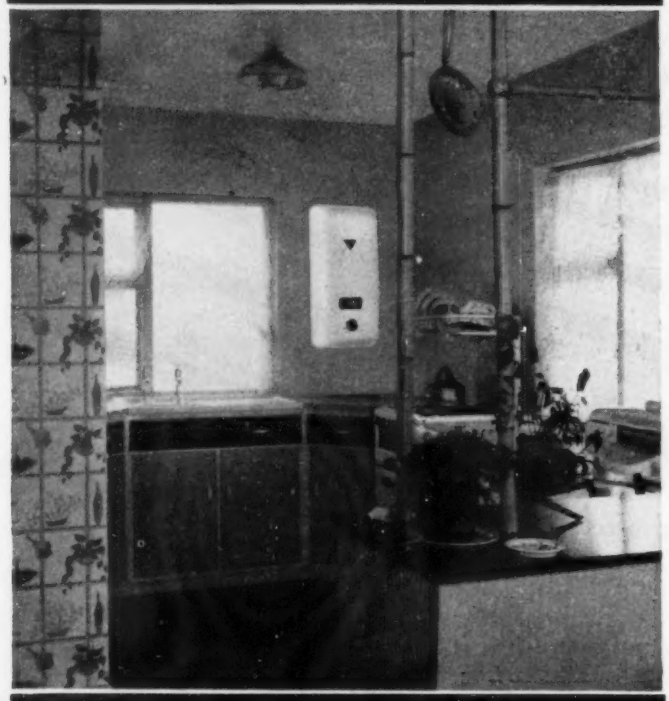
The "new" Coventry Cathedral is unique in many ways—not least in its serene blend of 14th and 20th Century architectural styles. Copper, ageless and beautiful, will protect the Cathedral as it does so many other important buildings the world over.

ICI METALS DIVISION

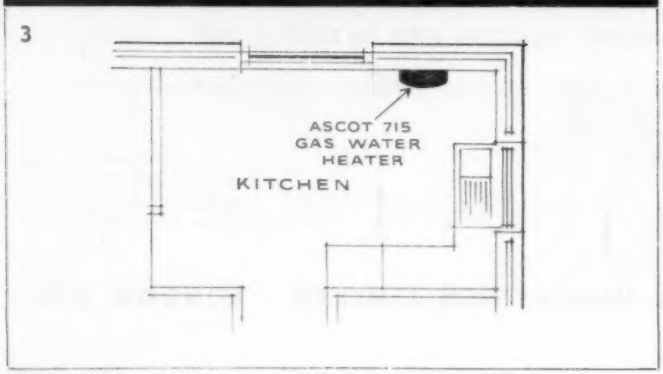
IMPERIAL CHEMICAL INDUSTRIES LIMITED · LONDON S.W.1

C.37

1



3



Barbour Index File No. 151

ASCOT AND THE PRIVATE BUILDER: **6**

Kirkheaton

HUDDERSFIELD

(Six detached two-bedroom houses)

Builder:
Jack Brook Esq., Netherton, Nr. Huddersfield

Architect:
G. G. Furness Esq., A.R.I.B.A., Huddersfield

Hot water:
Ascot 715 multipoint water heaters

This is the sixth of a new series of Ascot case-histories illustrating the installation of Ascot instantaneous gas water heaters in contemporary private housing schemes, and showing how by specifying Ascots for hot water systems, architects and builders of every type of modern dwelling are given flexibility of planning and ease of installation.

1. *Elevation view of one of the Kirkheaton houses*
2. *Through view of the kitchen from the dining room, showing the Ascot 715 installed over the draining-board.*
3. *Plan view of kitchen showing Ascot 715 in position.*

Ascot is ideal for your building scheme!

For full information write to
ASCOT GAS WATER HEATERS LTD
255 North Circular Rd, London N.W.10

REGD. TRADE MARK
ASCOT
A Radiation Company
WHC/A468

A HOTTENTOT WHO KNEW A LOT...
FITTED AN ARKAY DOME

But the Hottentot who did not, lived in a darkened home. For if it's a question of providing natural light from the roof of a building, Arkay Glass Domes provide the answer. Architects know that Arkay Glass Domes have been specifically designed for this purpose. Domes of up to 96″ diameter can be supplied and there is no risk of distortion or deterioration or of fire. They are easy to fit and keep clean, are not liable to discoloration and normal ventilation systems can be fitted. Circular Domes stocked in sizes up to 72″ diameter and Rectangular Domes up to 72″ × 48″ in $\frac{3}{8}$″ or $\frac{1}{2}$″ cast glass.

Circular Domes up to 48″ diameter and Rectangular Domes up to 72″ × 48″ manufactured in $\frac{1}{4}$″ wired cast glass.

For full details, or if advice on a particular problem is required, write to us.

ROBINSON KING & CO. ARKAY LONDON · E.15

. . . glass domes by

ROBINSON KING & CO.

GROVE GLASSWORKS, MARSHGATE LANE LONDON, E.15

Telephone: MARyland 4161

Typists at their desks, schoolchildren at theirs, air-travellers at airports, shoppers in shops . . . more and more people in more and more places are looking up at Burgess suspended ceilings, impressed by their smart modern appearance, grateful for the quietness they bring. Some things they *can't* see though. Concealed heating maybe . . . or ventilation . . . or lighting. Fire-resistance. A choice of 12 modules of tiles . . . plain or decorative, perforated or ribbed. There's much more to Burgess ceilings than we can possibly deal with here. Why not write and ask us for the full story on any particular aspect of ceilings that interests you ?

EVERYONE LOOKS UP TO

Burgess

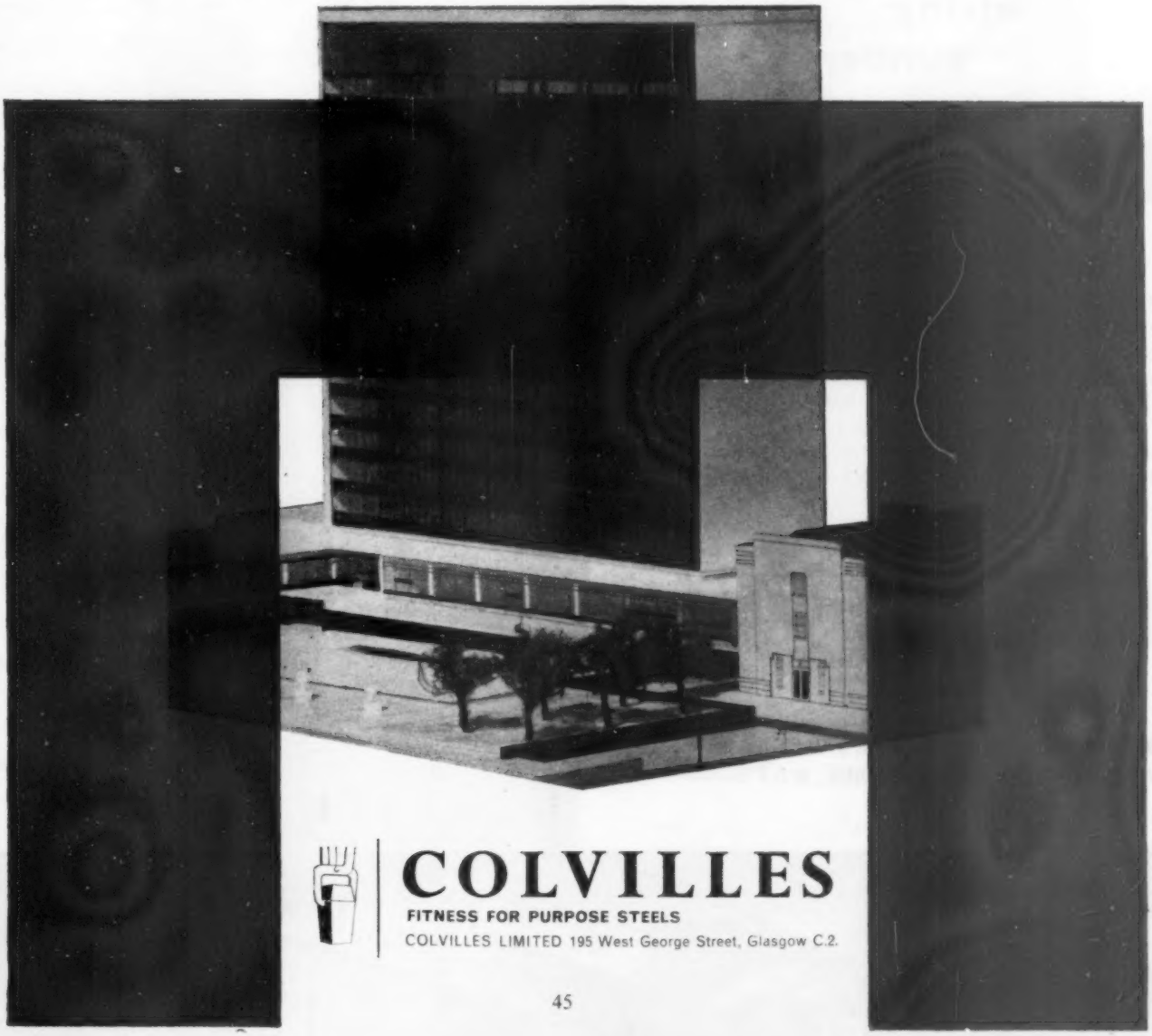
SUSPENDED CEILINGS

ACOUSTIC & THERMAL INSULATION · ½ HOUR FIRE-RESISTANCE · BUILT-IN HEATING
FITTED LIGHTING · DECOR PANELS · 4' x 2' TILE

BURGESS PRODUCTS COMPANY LIMITED, ACOUSTICAL DIVISION, HINCKLEY, LEICESTERSHIRE

STEEL AND THE ARCHITECT

COLBOND-60, Colvilles' most recent development in reinforcing bars, is being used extensively in the new County Buildings at Hamilton. This bar is rolled to A.S.T.M. 305 for indentations and has a guaranteed minimum yield of 60,000lbs. Size range $\frac{5}{16}$" to 1¼". Supplied in long random lengths or cut to length and bent to schedule if required.



COLVILLES

FITNESS FOR PURPOSE STEELS

COLVILLES LIMITED 195 West George Street, Glasgow C.2.

wiring timber buildings

BICC mineral insulated copper sheathed cable is ideal for the wiring of timber buildings — it is fireproof, waterproof, mechanically tough, non-ageing and easily installed.
Over 2,500 yards of BICC M.I. cable has been installed in the recently completed timber-built Wave Basin enclosure at the Hydraulics Research Station at Wallingford, Berkshire.

BICC M.I. CABLES

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

Architect:
Mr. O. P. Carver, A.R.I.B.A.,
Senior Architect
at the Ministry of Works.

Electrical Contractor:
R. McEwan & Co. (Woking) Ltd.,
Woking, Surrey.

Modelling a harbour installation at the Wave Basin to study the effects of simulated tidal conditions.

all eyes are on Ferodo non-slip stairtreads

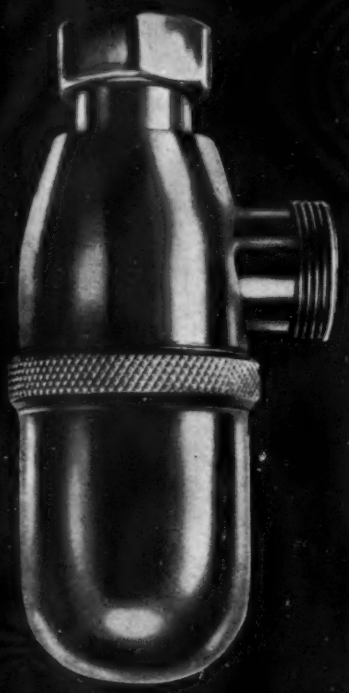
Here's the kind of shapely design that brings a gleam to the eyes of students of modern staircase architecture. Good-looking Ferodo non-slip Stairtreads set new standards of safety . . . protect stairs from wear . . . last for years without maintenance or renovation.

* 7 attractive colours.
* Comprehensive range—29 treads with nosings, 3 flat treads.
* Aluminium, silver bronze or manganese bronze channels.
* Special orders can be manufactured.

FERODO non-slip stairtreads

Write to our Stairtread Department for full illustrated literature for your file.
FERODO LIMITED CHAPEL-EN-LE-FRITH
A Member of the Turner & Newall Organisation

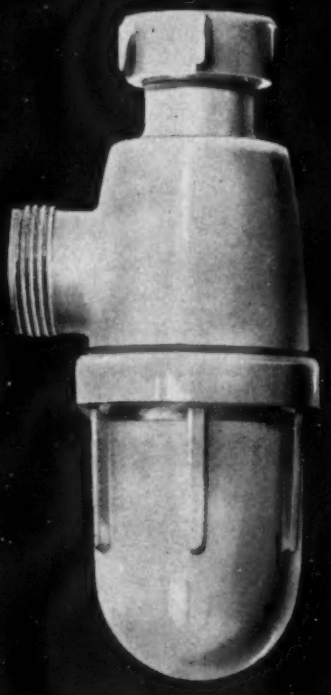
9/61



The GREVAK MONITOR in Cast Brass

- ★ Completely resistant to induced and self-siphonage.
- ★ No anti-siphon pipework required.
- ★ Maintains seal against flow of over 100 galls./min.
- ★ Removable base for easy cleaning.
- ★ Available in natural brass or chrome finish.
- ★ Size 1¼" B.S.P. with 'P' or 'S' outlet.

GREVAK anti-siphon traps



"GREVAK" ANTI-SIPHON TRAPS are fully patented.

The GREVAK MONITOR in Hostalen

- ★ Identical anti-siphon safeguard as Brass.
- ★ Hostalen is a high density polyethylene.
- ★ Resistant to acids and detergents.
- ★ Unaffected by boiling water.
- ★ Available in White and Off-White finish.
- ★ Size 1¼" B.S.P. with 'P' or 'S' outlet.

GREVAK SENIOR

Heavy duty pattern anti-siphon trap for commercial use with 'P' or 'S' outlet available in cast iron, brass and lead. Brass and Cast Iron are bitumen coated internally.

GREVAK JUNIOR

Light duty pattern anti-siphon trap with 'P' or 'S' outlet available in cast iron, brass, copper and lead. Brass and Cast Iron are bitumen coated internally.

GREVAK BATH

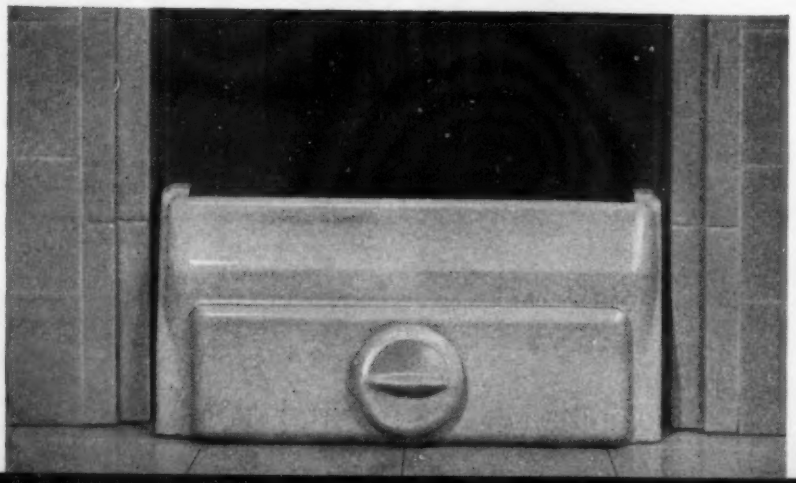
This anti-siphon Bath trap with 'P' or 'S' outlet has no equal. The 1¼" size being only 5¼" deep, fits above the floor line with bath feet giving 6½" clearance. Available in cast iron, brass, copper and lead with or without overflows.

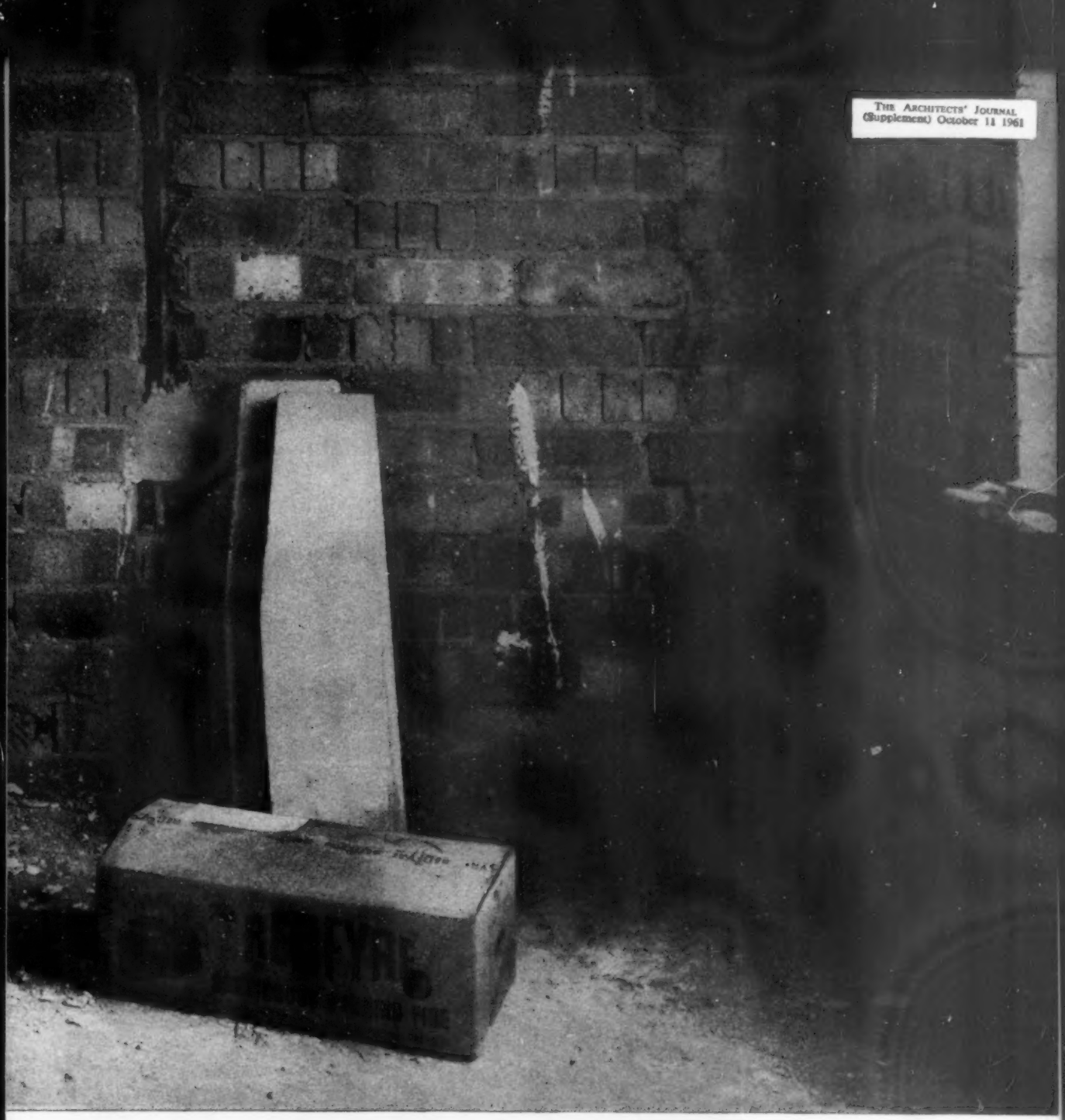
Fully descriptive literature obtainable from :—

GREENWOOD and HUGHES LIMITED · CARLISLE HOUSE, 8 SOUTHAMPTON ROW, LONDON, W.C.1. Telephone CHAncery 9377 (3 lines)
Telegrams : Antivacu, Westcent, London

THE ARCHITECTS' JOURNAL
(Supplement) October 11 1961

A Redfyre Bacboiler adds value to every house you build





Specify Redfyre, and you specify all the charm and comfort of a beautiful open fire . . . you specify the convenience of cheap hot water for kitchen and bathroom . . . and you specify the extra bonus of partial central heating. Yet for all this, Redfyre is inexpensive and easy to install; running costs are very very reasonable; and maintenance costs virtually non-existent.

There are now three Redfyres with Bacboilers for you to choose from—all well-known to the public. The Hearth Redfyre with underfloor airfeed and the famous low-cost Redfyres, the 55 and 60. All these models are controlled burning fires, are Ministry-approved and are suitable for use in smokeless zones.

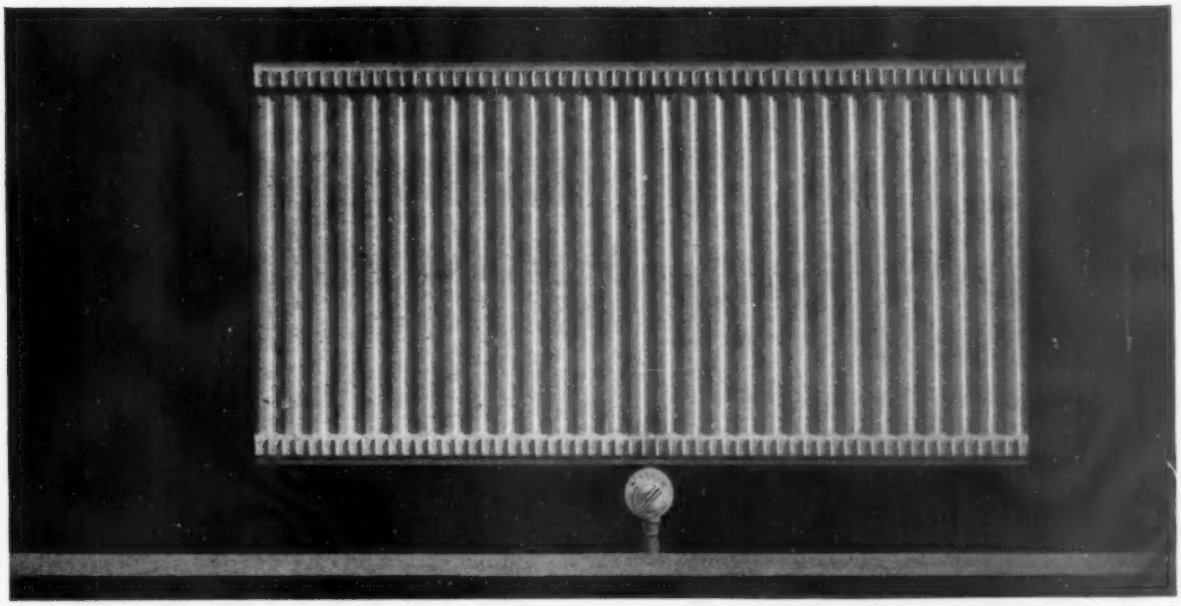
May we send you full details of these fires in our specially-bound Architect's Handbook?

NEWTON CHAMBERS & CO LTD, REDFYRE PRODUCTS, THORNCLIFFE, SHEFFIELD

SEE THE REDFYRE RANGE ON STAND 410 ROW H AT THE BUILDING EXHIBITION

REDFYRE

ONE PIPE RADIATORS



At last heating engineers can reap the benefits of simple, efficient one-pipe radiators.

The Bekon "One Pipe" system offers a simplicity and economy of installation, never known before, without losing any of the features essential to effective forced circulation.

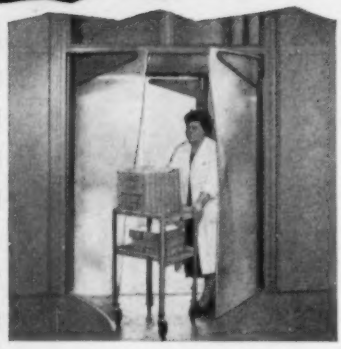
Special fittings enable it to be used equally efficiently for under-floor or surface runs. Installed on the one-pipe ring main principle, it employs a single patent valve connection to a specially designed Bekon pressed steel panel radiator which incorporates all the usual Bekon features. Sizing calculations are made in accordance with normal heat loss practice.

Send for leaflets and specifications.

Bekon RADIATORS

Bekon Supplies Limited., Beaconsfield, Buckinghamshire Tel: Beaconsfield 372

POSITIVE



PROOF

FROM ILFORD

Proof of the success of Neway Flexible Doors can be found at Ilford Limited, where the original installation proved so successful that they have installed no less than 65 pairs in their Basildon factory.

NEWAY

Flexible Doors

Available in various sizes Neway Doors ensure safety and speed of movement, eliminating Door Maintenance, Draughts and damage to trucks and goods.

DUNLOP *make the Rubber Panels*

NEWMANS

WILLIAM NEWMAN & SONS LIMITED
(Dept. AJ10)
HOSPITAL STREET, BIRMINGHAM 19

Revolutionary New

ENABLES FINISHED CONSTRUCTION AT 4,000 SQ. FT. OF FLOOR AREA PER DAY

95% FACTORY BUILT - Terrapin building units are constructed under closely controlled manufacturing conditions from high quality materials. Each Terrapin "Building Unit" (the basis of all Terrapin construction) is completely finished in the factory incorporating interior and exterior decoration, glazing, roof coverings, floor coverings, and electric lighting installation.

A BETTER BUILDING - FASTER - Transported to the building site in folded condition Terrapin "Pack Units" can be erected to form single or multi-span buildings of almost any shape or size faster than by any other known system of construction.

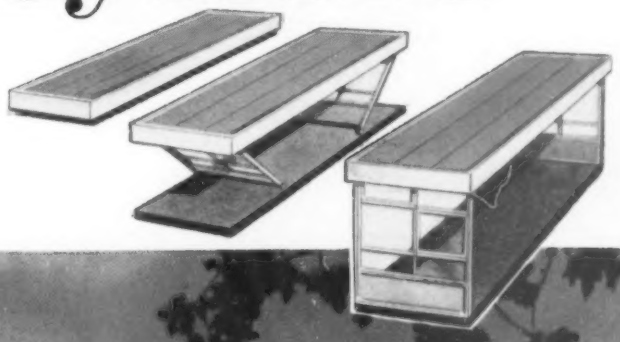
Left to right
OLIVE GREEN: B.S. No. 4-050
BALTIC BLUE: B.S. No. 0-011
PINE GREEN: B.S. No. 5-061
MUSTARD YELLOW: B.S. No. 4-056

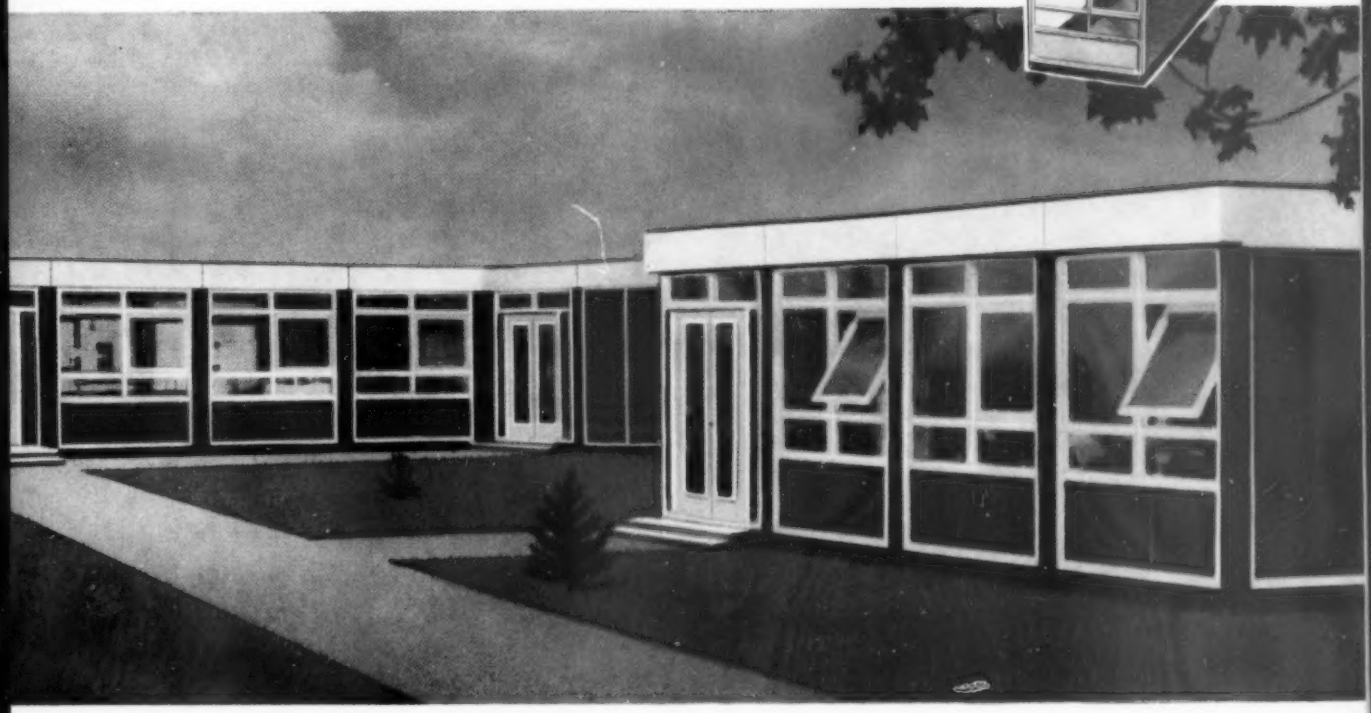
A QUALITY PRODUCT - High standards of workmanship and materials, backed by rigorous testing and inspection during manufacture, are the hallmark of Terrapin buildings. Proof of their quality and performance is substantiated by an ever increasing demand from all branches of Industry, Commerce and the Social Services.

MOBILITY - As quick and easy to dismantle as to erect, Terrapin "Pack Buildings" can be moved when you like - where you like - and as often as you like - speedily and at extremely low cost.

Building System

Terrapin pack building units can be used to create modern functional buildings of superb quality, to almost any size and any ground plan, faster than by any other known method.





Now 4 External Colour Schemes from which to choose.....

.... in addition to our standard external finish in varnished AFRICAN UTILE HARDWOOD. These new colour finishes are in highly durable, low maintenance textured paint.

A full colour brochure and a copy of the Terrapin price list, which enables you to make up your own preliminary estimate of cost, will be mailed to you by return post. Complete the coupon and post today.

TERRAPIN

"Bring you tomorrows buildings today"

TERRAPIN LIMITED
Haddon House, Fitzroy Street, London, W.1.
Telephone: Langham 0611. Private Branch Exchange.
Telegrams: Terrapin Wesdo London.

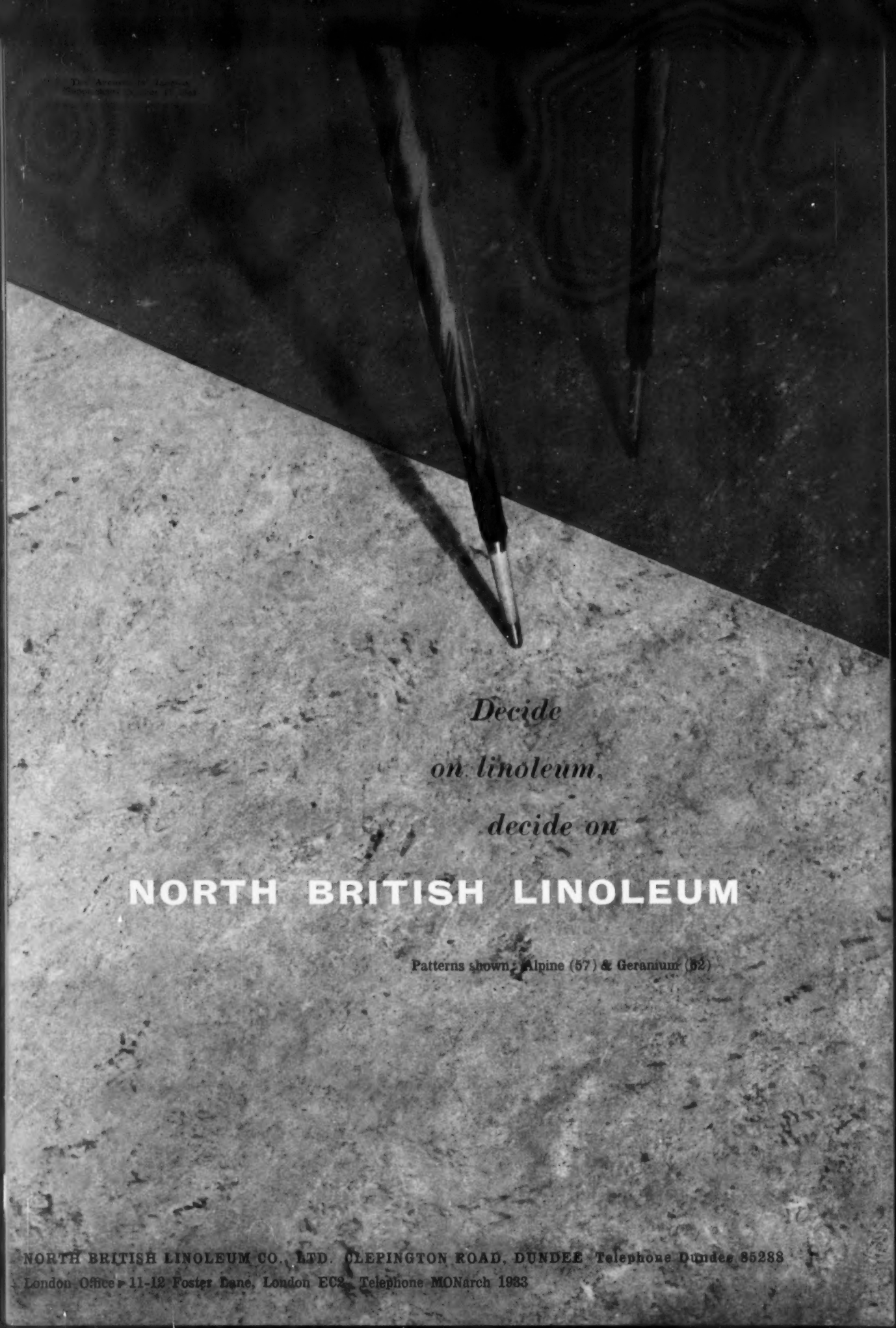
Please send me by return post your "Brochure & price list". AJJ

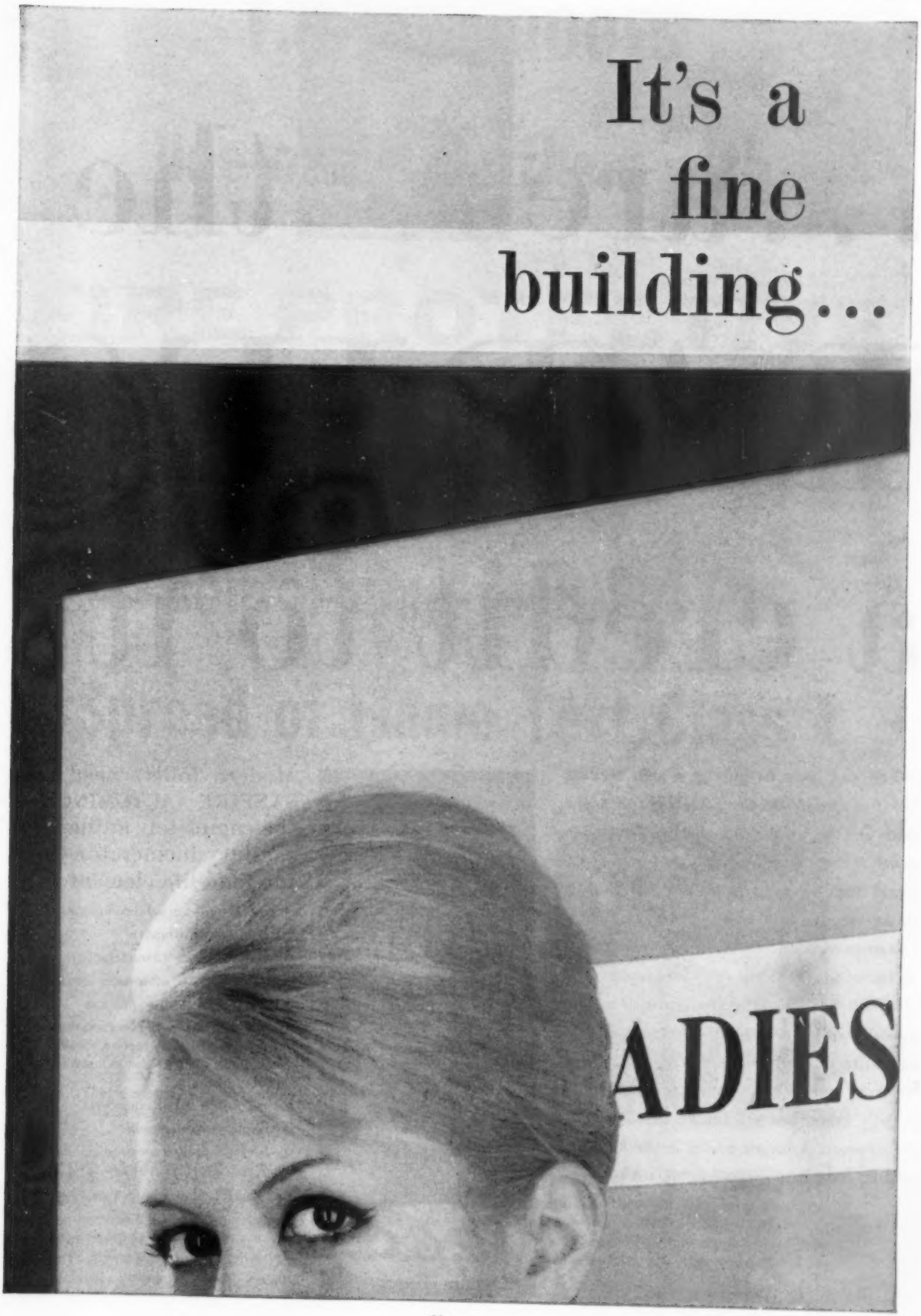
Name ..... (Block capitals please)

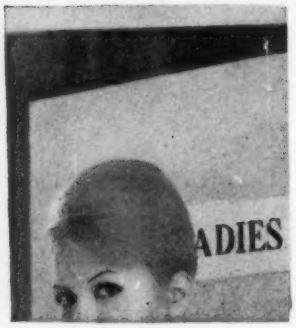
Company .....

Position in Company .....

Address .....


Decide
on linoleum,
decide on
NORTH BRITISH LINOLEUM
Patterns shown: Alpine (57) & Geranium (52)
NORTH BRITISH LINOLEUM CO. LTD. CLEPINGTON ROAD, DUNDEE Telephone Dundee 85288
London Office: 11-12 Foster Lane, London EC2. Telephone MONarch 1933


It's a
fine
building...
ADIES



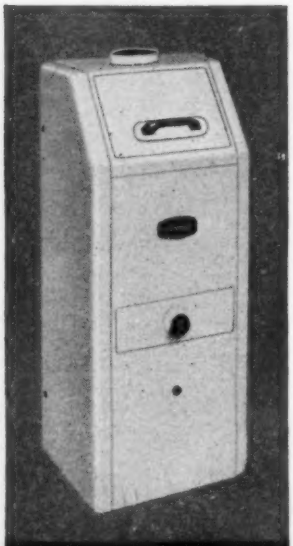
. . . are the LADIES a credit to it?

When you have to put up a sign reading "Out of Order" on the LADIES toilet, the odds are the toilet's out of date. That's because of 19th century methods for sanitary towel disposal, unhygienic disposal bins, or drains clogged with sanitary towels.

Get up to date with the SANFIRE AUTOMINOR. It burns towels at the lift of a handle. And it's built for life—long-life—with an exceptionally corrosion-resistant solid rod element, operating at low voltage.

Without fuss, the SANFIRE AUTOMINOR quietly takes care of a Ladies toilet with up to 50 users. A bigger model is the SANFIRE MAJOR, for toilets with up to 150 users.

Sanfire Autominor £33



G.E.C.

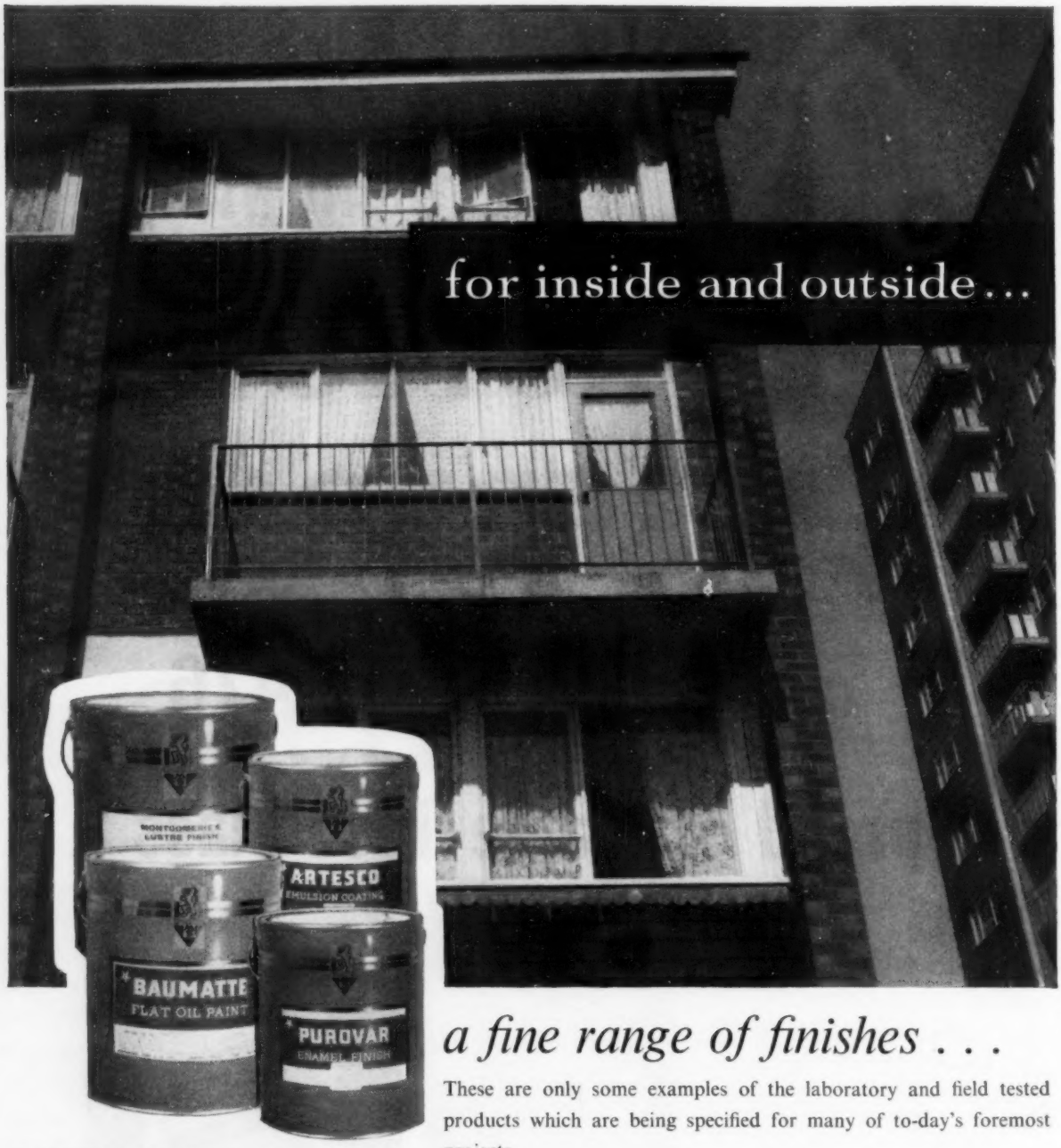
Modern toilets need the SANFIRE AUTOMINOR—the completely automatic sanitary incinerator with the long-life element.

- ✲ Special long-life solid rod element
- ✲ Completely automatic
- ✲ Guaranteed for 12 months
- ✲ Comprehensive after-sales service
- ✲ Slim-built to fit into alcoves
- ✲ Easy connection to common flues—1 common fan will serve a whole system of incinerators in a multi-storey building
- ✲ Easily emptied ash drawer
- ✲ Simple wall mounting
- ✲ Stove-enamelled cover in gleaming white with black fittings

THE STAFF WILL BLESS YOU FOR THIS

For more information write to:

THE GENERAL ELECTRIC CO LTD
LIGHTING & HEATING GROUP
Magnet House Kingsway London WC2



Montgomerie's Lustre Enamel: A superb Finishing Enamel with Gloss subdued to a rich lustre. Recommended for all interior decorations.

Artesco Emulsion Coating: P.V.A. Finish of superlative quality. Suitable for exterior and interior use on all surfaces including old gloss paint.

Baumatte Flat Oil Paint: Ease of application, obliteration and exceptional flowing properties are combined in Baumatte to give the perfect flat finish.

Purovar Enamel: Brilliant and Durable. Purovar is a full Alkyd Enamel, particularly recommended for severe exterior conditions.

Shades to B.S.S. 2660 — 1955

a fine range of finishes . . .

These are only some examples of the laboratory and field tested products which are being specified for many of to-day's foremost projects.

Montgomerie Stobo Gloss and Flat Finishes are well known for colour permanence and long life. Full details of the range available, plus shade cards and samples on application. Advisory service for colour schemes, etc., without obligation.

montgomerie stobo & CO LTD

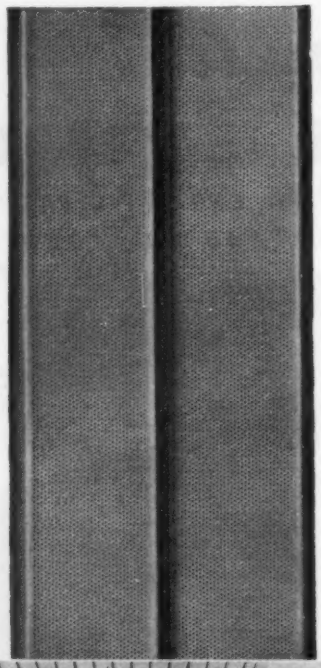
Deeside, Saltney, Nr. Chester
Telephone Chester 23128 (3 lines)
Telegrams 'Turpentine' Chester

136/154 Stranmillie Road, Belfast
Telephone Belfast 67978
Telegrams 'Turpentine' Belfast

52/72 Rogart Street, Glasgow,
Telephone Bridgetown 1005/6
Telegrams 'Turpentine' Glasgow

Also at Slough

A SOUND CHOICE



DAMPA ACOUSTIC CEILING

for architects....

When you tackle the question of quietness the word to remember is Dampa. This Acoustic Panel Strip offers you a really economical and easy method of providing efficient acoustic ceilings. Made from anti-corrosive stove-enamelled aluminium and inlaid with specially processed $\frac{5}{8}$" mineral wool and black tissue paper, the $2\frac{3}{4}$" wide strip is designed to give maximum efficiency combined with lightness and non-inflammability. The fine perforations—there are 40,000 holes per square foot—are virtually invisible when the ceiling strips are in position. Dampa requires the minimum of fixing, is removable, if necessary, and can be applied direct to the ceiling or suspended.

ALSO AVAILABLE IN PARQUET FORM

For conversion of existing buildings where the ceiling cannot be suspended Dampa Parquet is most suitable. In sections 3 35/64" x $23\frac{5}{8}$" it is also useful for small areas and for walls. Simply fixed direct to battens.

For full information write to the manufacturers

Approx. 120,000 sq. ft. of Dampa Strip was incorporated in the heated ceiling installed throughout Castrol House (illustrated above) the Headquarters Building of the makers of Castrol Oil. Architects: Messrs. Gollins, Melvin, Ward & Partners.

as quiet as a cat's paw

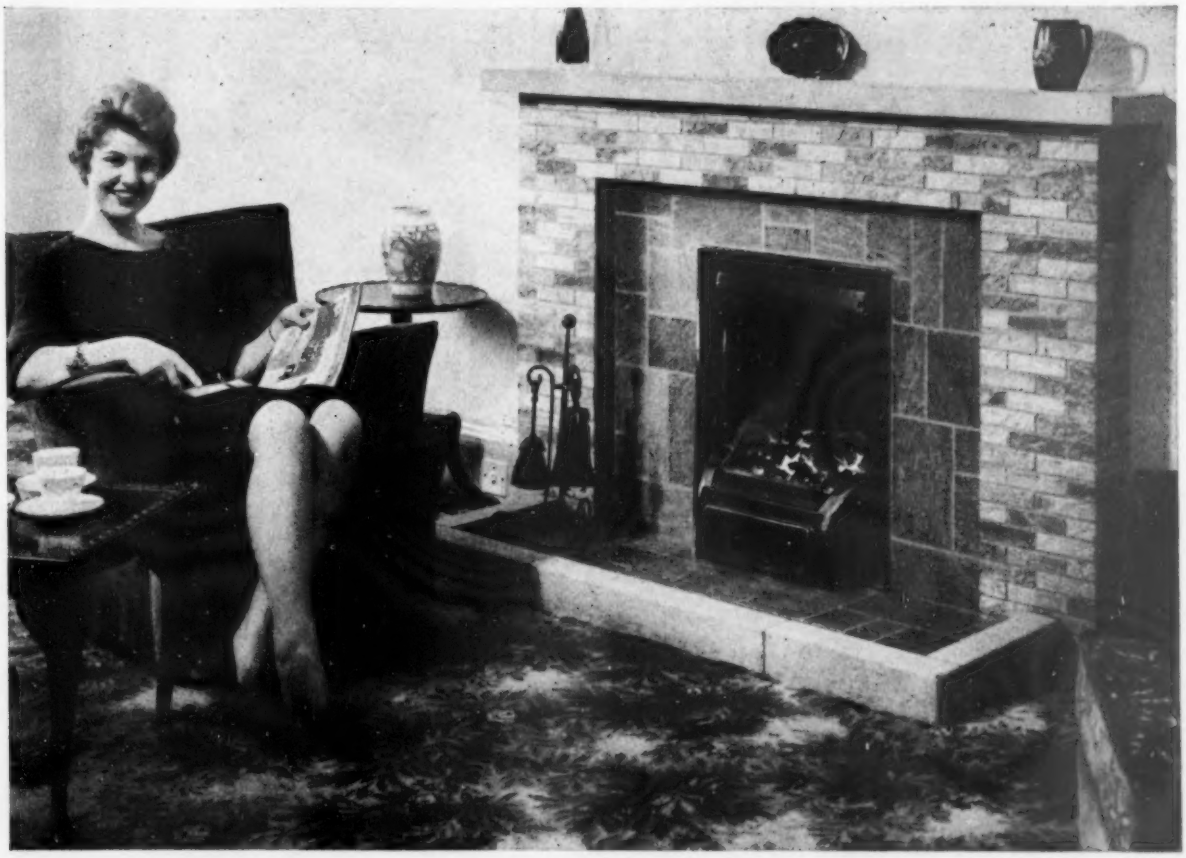
Dampa Acoustics

A SYSTEM OF SOUND ABSORPTION AND INSULATION

DAMPA ACOUSTICS LIMITED · 19 BERKELEY STREET · LONDON, W.1 · TELEPHONE HYDE PARK 7010

ON DISPLAY AT 19 BERKELEY STREET, W.1. 81 GT. PORTLAND STREET, W.1. AND 229 REGENT STREET, W.1.

SMOKELESS 'CALESTO' GIVES INEXPENSIVE CENTRAL HEATING



The 'Calesto' Firegrate, built by Carron, offers the least expensive form of central heating you can get—plus the cheerful comfort of an open fire.

Thanks to its restricted throat and scientifically designed fireback, the 'Calesto' has a larger room heating capacity than any other open firegrate. It eliminates room draughts and is continuous burning on all solid smokeless fuels. With Heavy Duty Boiler Unit, the 'Calesto' can service up to 50 sq. ft. of radiator heating surface through a forced circulation small pipe system, and also provides a plentiful supply of domestic hot water through 25/30 gallon cylinder. If domestic hot water supply is not required it can service up to 100 sq. ft. of radiator heating surface (inclusive of piping).

CARRON

CARRON COMPANY • CARRON • FALKIRK • SCOTLAND

Telephone — Falkirk 35

LONDON : 15 Upper Thames Street, E.C.4.	Telephone : CENtral 7581
LIVERPOOL : 22-26 Redcross Street, 1.	Telephone : CENtral 1945-6
GLASGOW : 125 Buchanan Street, C.1.	Telephone : CENtral 8226
NEWCASTLE UPON TYNE : 33 Bath Lane.	Telephone : CENtral 26940

. . . A TOTALLY-ENCLOSED REEDED DIFFUSER WITH END-PLATES IN colour

Here's lighting with a new look for stores and offices . . . a range of beautifully finished fittings combining the quality of 'New-Range' with a choice of three colours for the dished end-plates. The reeded opal plastic diffusers spring easily into position on the standard 'New-Range' chassis, and form a close dust-tight fit all round it. In 5ft. or 4ft. sizes, one or two lamp fittings with end-plates in red, primrose, or cerulean blue enamel; high power factor switch-start or snap-start control gear, and spring-loaded bi-pin lampholders.

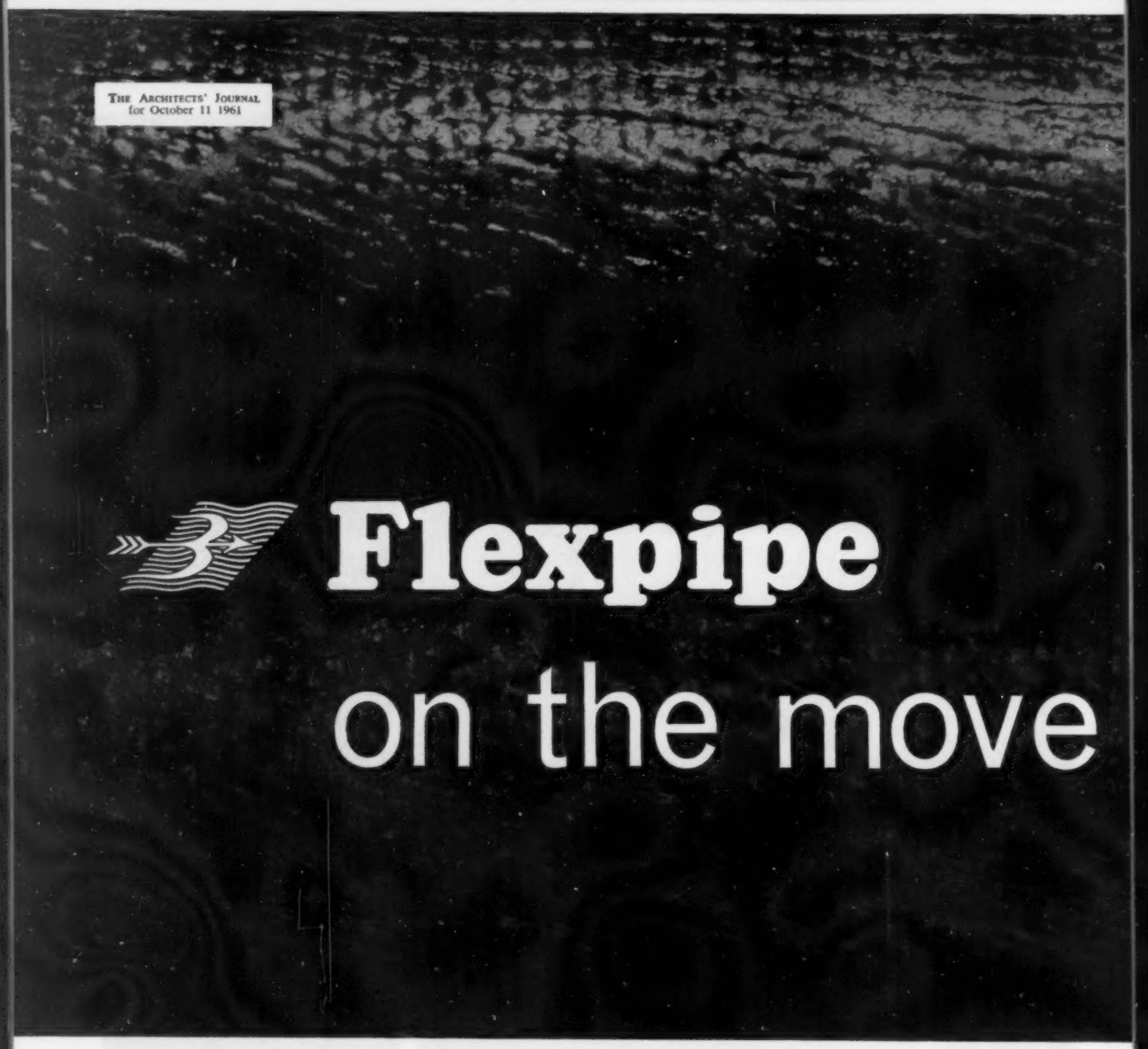
By Appointment
To Her Majesty The Queen
Manufacturers of
Electric Lamps

Crompton 'New-Range'

FLUORESCENT LIGHTING FITTINGS

ELECTRICAL EQUIPMENT

CROMPTON PARKINSON LTD., CROMPTON HOUSE, ALDWYCH, LONDON, W.C.2.



Flexpipe on the move

Now Flexpipe production and marketing moves into top gear. The new Merseyside factory—the most modern pitch fibre pipe plant in Europe—is in smooth production. A fast growing nation-wide network of distributors, backed by Flexpipe technical representatives, provide service and delivery from factory and stock to sites throughout the country. Flexpipe—in standard 10′ lengths and diameters of 2″, 3″, 3½″, 4″, 5″ and 6″—together with a wide range of fittings, is **Britain's newest, speediest, most economical drainage and sewerage system.**

Write now for technical data and
full information on costs and delivery.

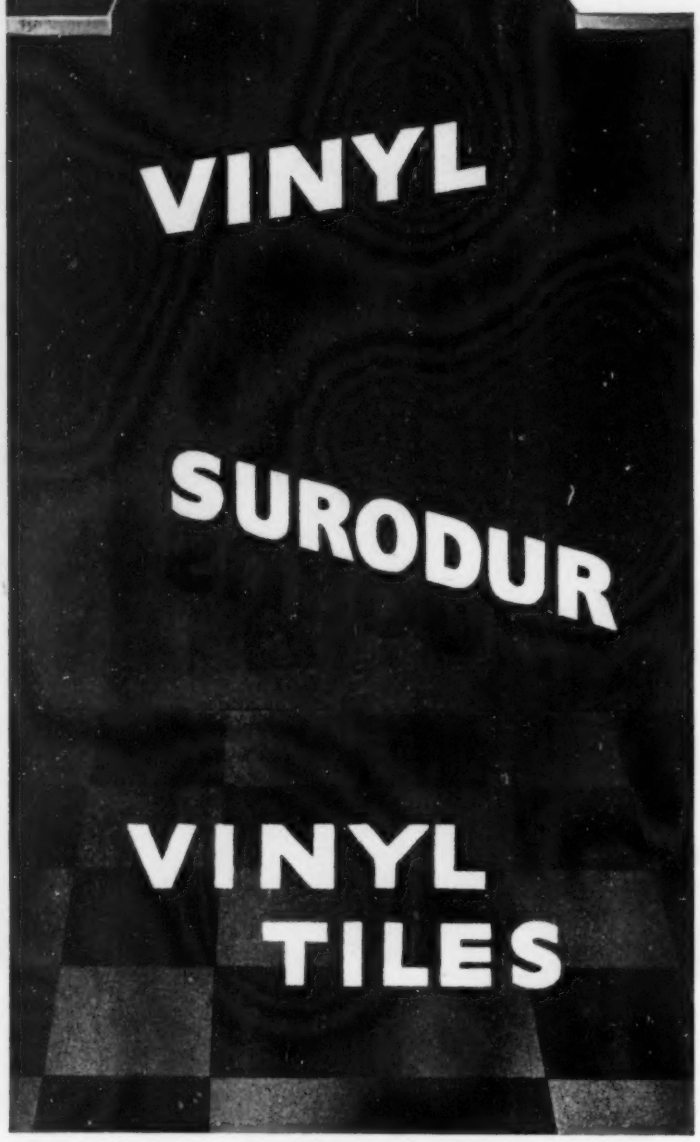
Flexpipe

2 FT EXTRA ON EVERY LENGTH AND AVAILABLE FROM STOCK

Bowater Flexpipe Limited
ELLESMERE PORT · WIRRAL · CHESHIRE
TELEPHONE: ELLESMERE PORT 3690

CRC 6

SURFEX FLOORINGS



—can be laid *without stopping production* by your own staff or builder. One application on any base—wood, concrete, etc.—sets overnight, providing a glass-smooth surface which will take a high polish. Easy to clean and requiring no maintenance, fireproof, insulated throughout and impervious to oil and grease. Hard wearing, yet very attractive, INDUSTRIAL VINYL is perfect for Stores, Schools, Banks, Hospitals, Canteens, Machine Shops and similar purposes.

SURFEX-SURODUR

—a heavy industrial flooring, dust-free and non-slip with a pure quartz surface as hard as titanium! Impervious to wet and dry abrasion and impact of the heaviest loads. Maintenance costs are negligible. A heavy-duty flooring, used even for tank-testing grounds. Recommended for aeroplane hangars, locomotive sheds, dockyards, quays, breweries, etc.

ASBESTOS VINYL TILES

—9in. by 9in. Available in a range of 17 attractive colours, these tiles, which are quickly and easily laid by means of a clean, permanent adhesive, allow an endless variety of individual floor patterns. They need very little cleaning and maintenance and are proof against grease, rot, water and fire. Dent- and crack-resistant under all normal conditions, they are very durable and never look shabby or dull. The bright and hard-wearing floor for offices, shops and homes.

ALL SURFEX FLOORINGS CAN BE LAID EASILY BY YOUR OWN STAFF OR BUILDER

We are specialists in flooring products and our technical experts are freely available to advise on all flooring problems

For full descriptive literature, complete and return this coupon today.

POST TODAY

Please send me FREE and without obligation your brochures on VINYL ☐ SURODUR ☐ TILES ☐
Your Representative may call ☐ (tick where applicable).

NAME .....

ADDRESS .....

..... AJ/12
(BLOCK CAPITALS, PLEASE)

SURFEX FLOORING CO. LTD.
48 HIGH STREET, CAMBERLEY, SURREY. Tel: Camberley 2263 & 2535

and it's
NYLON
too for
CORNAWAY
door gear

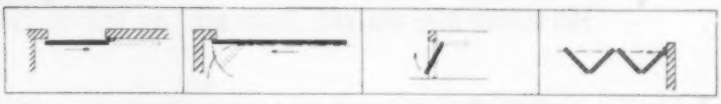
with acknowledgement to ballito

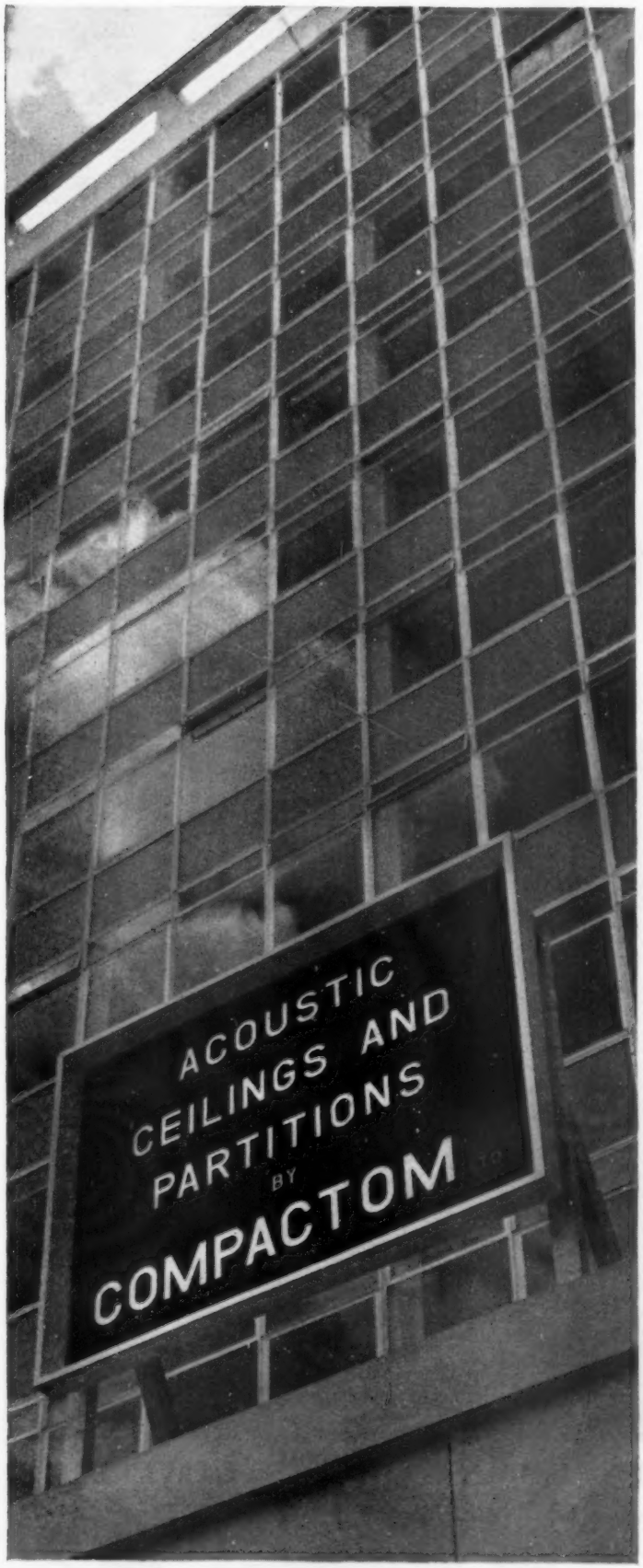
Nylon smoothness in ball bearing nylon wheels . . . quiet, long lasting . . . your CornAway door gear will move aside at the gentle pressure of a finger.
Nylon with sturdy CornAway door gear is an unbeatable combination that ensures long life and quietness and efficiency in operation. Literature with full working drawings, is readily available from

HILL ALDAM

THE SLIDING DOOR PEOPLE

E. HILL ALDAM & CO., LTD., BRITANNIC WORKS,
RED LION ROAD, TOLWORTH, SURBITON, SURREY
Telephone: Elmbridge 0090 (6 lines)
Telegrams: "ALDAMILLO" SURBITON





The Wincilate Group Service

Finest slate quarried and selected. Architects' requirements discussed and drawings prepared. Slate cills, surrounds, copings & cladding precision finished, delivered and fixed.

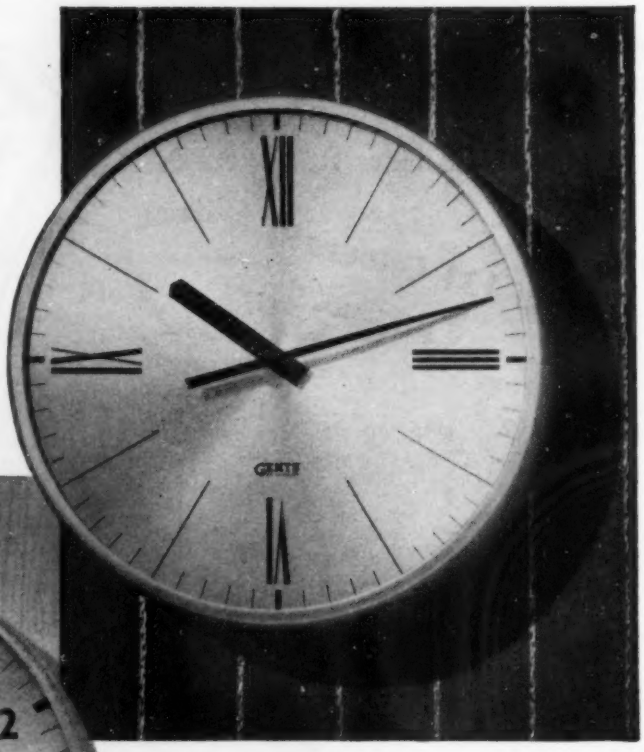
The Bow Slate & Enamel Co. Ltd
The Town Hall, Bow Rd. E3. ADV 2203

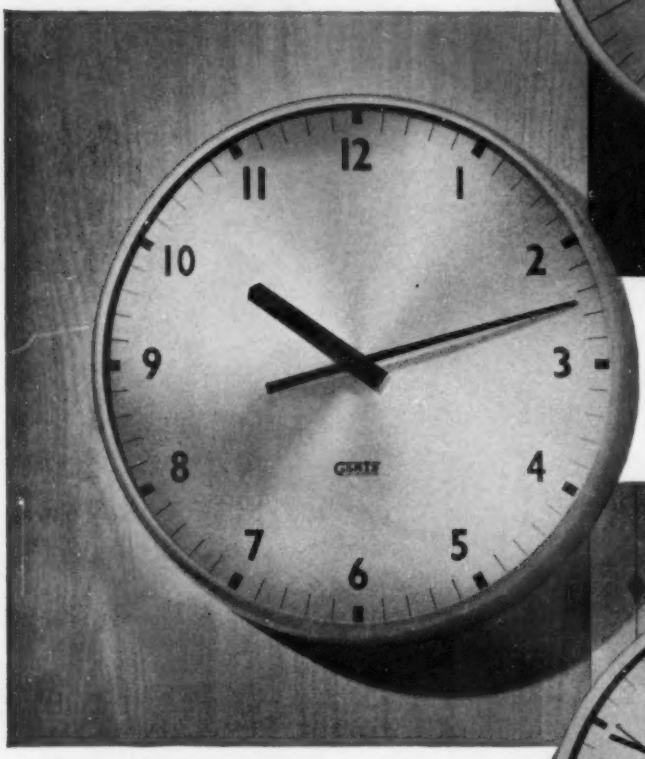
Maximum legibility and good taste are combined in the Gents wall clocks shown here.

Styled by a leading industrial designer they provide a choice of standard models which fit happily into present-day surroundings and décor.

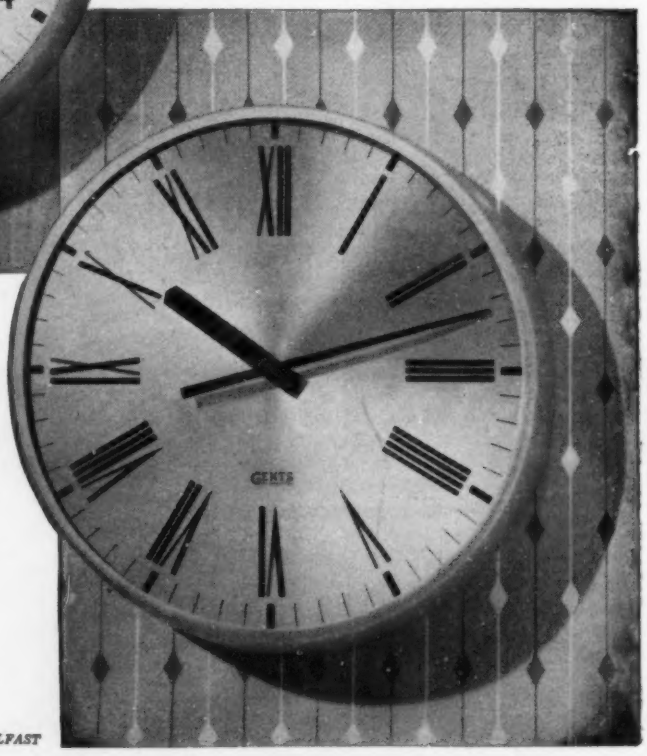
These and others in the extensive Gents range have been selected by the Council of Industrial Design for inclusion in Design Index.

All are available for operating either on A.C. Mains or as part of a Master Clock System.





In every way...Right!



May we send you literature?

GENTS
OF LEICESTER

ELECTRIC CLOCKS

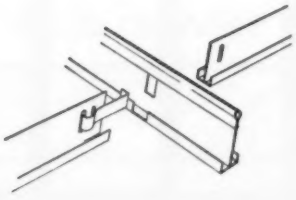
GENT & COMPANY LIMITED,
Faraday Works, Leicester. Telephone: 36151

London Office & Showroom:
47, Victoria Street, S.W.1. Telephone: ABBey 6888

Also at: BIRMINGHAM. BRISTOL. EDINBURGH. GLASGOW. NEWCASTLE. BELFAST

Accent on simplicity

circlgrid



Simplicity is the keynote of the Circlgrid suspension system. The 2′ 0″ square louver tiles drop into elegant metal tracks held in a rigid grid. Vertical adjustment is simple, and the tiles and supporting members can be easily cut to fit awkward shaped openings.

CIRCLGRID TILES ARE UNIQUE

They are made of self-extinguishing P.V.C. and give good diffusion with high light transmission.

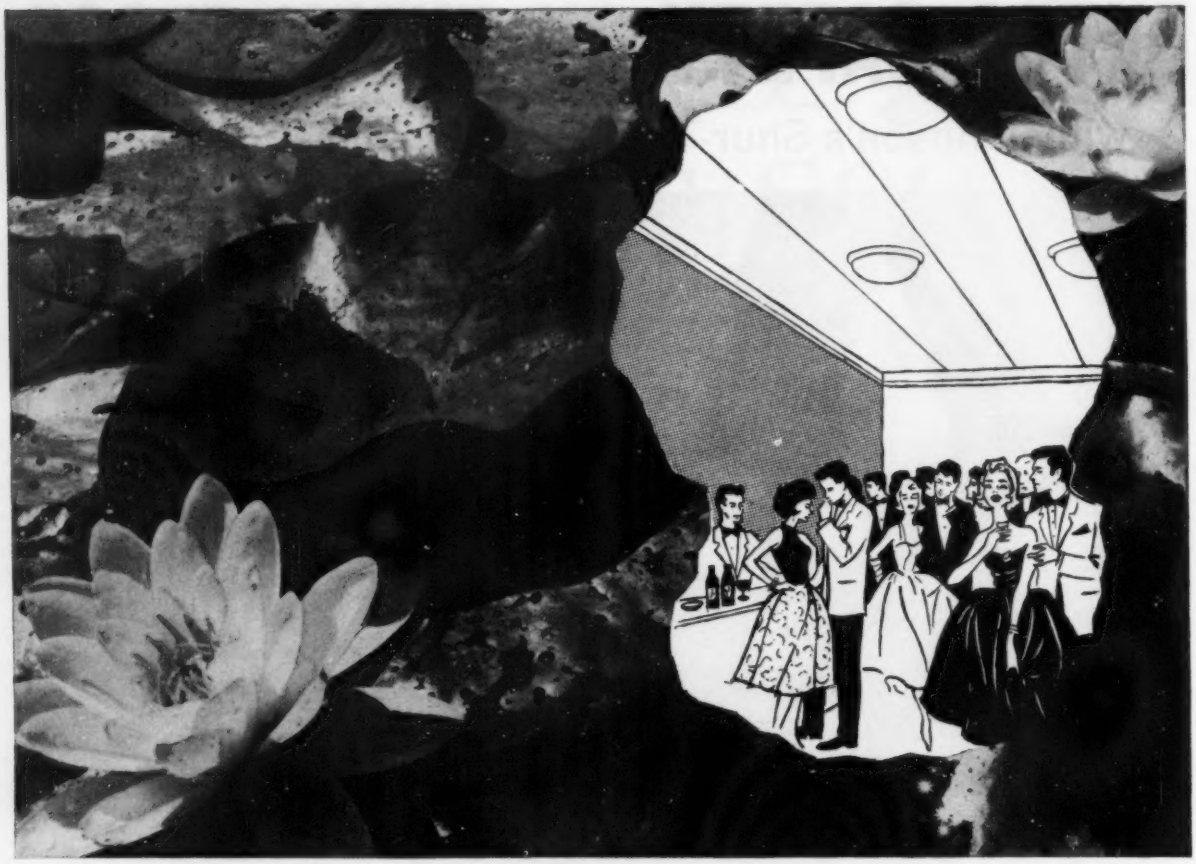
DETAILS OF PART OF THE SUSPENSION SYSTEM SHOWING THE NEAT SPRING-STEEL SUSPENSION CLIP AND THE METHOD OF JOINING CROSS BEARERS TO THE MAIN TRACK.

CIRCLGRID WAS DEVELOPED IN CANADA BY THE WILSON RESEARCH CORPORATION OF TORONTO AND IS MADE IN THIS COUNTRY BY

Harris & Sheldon ELECTRICAL **Ltd**

STAFFORD ST BIRMINGHAM CENtral 6272 · 46 GT. MARLBOROUGH ST LONDON W1 GERrard 0869

THE HARRIS AND SHELDON GROUP OF COMPANIES · SHOPFITTING · INTERIOR DECORATION · DISPLAY



FRESHEST CLEANEST COOLEST

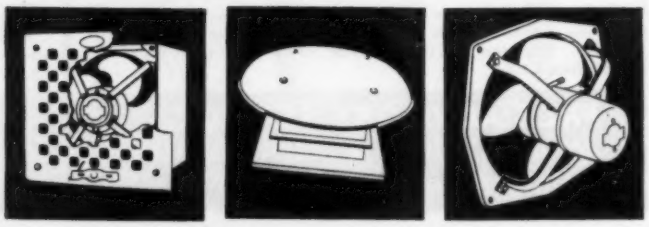
are the buildings and premises ventilated by ***FENTON BYRN Products***

There's no "making do" when you choose Fenton Byrn. A wide range of fans offers the designer scope and flexibility when planning a ventilating system.

If desired this planning can be entrusted to the Fenton Byrn Advisory Service.

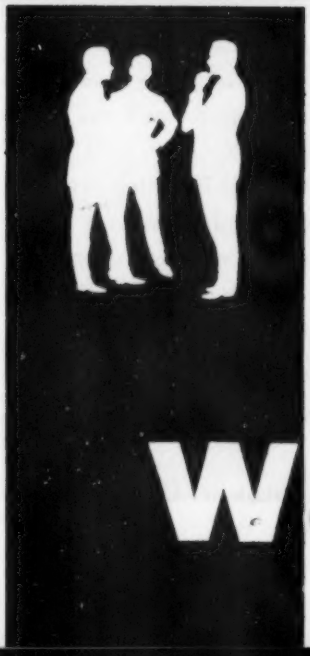
Fenton Byrn research into fan design and ventilating problems ensures that extra merit which inspires confidence, and ensures satisfaction.

Ask for leaflets:
Wall Fan, No. F/3/2;
Roof Ventilator, No. F/8/1;
Ring Fan, No. F8/9/2.



FENTON BYRN

FENTON BYRN & CO. LTD.
WEST MOLESEY SURREY
Telephone: Molesey 7777 Telegrams and Cables: Airlation East Molesey
P6791



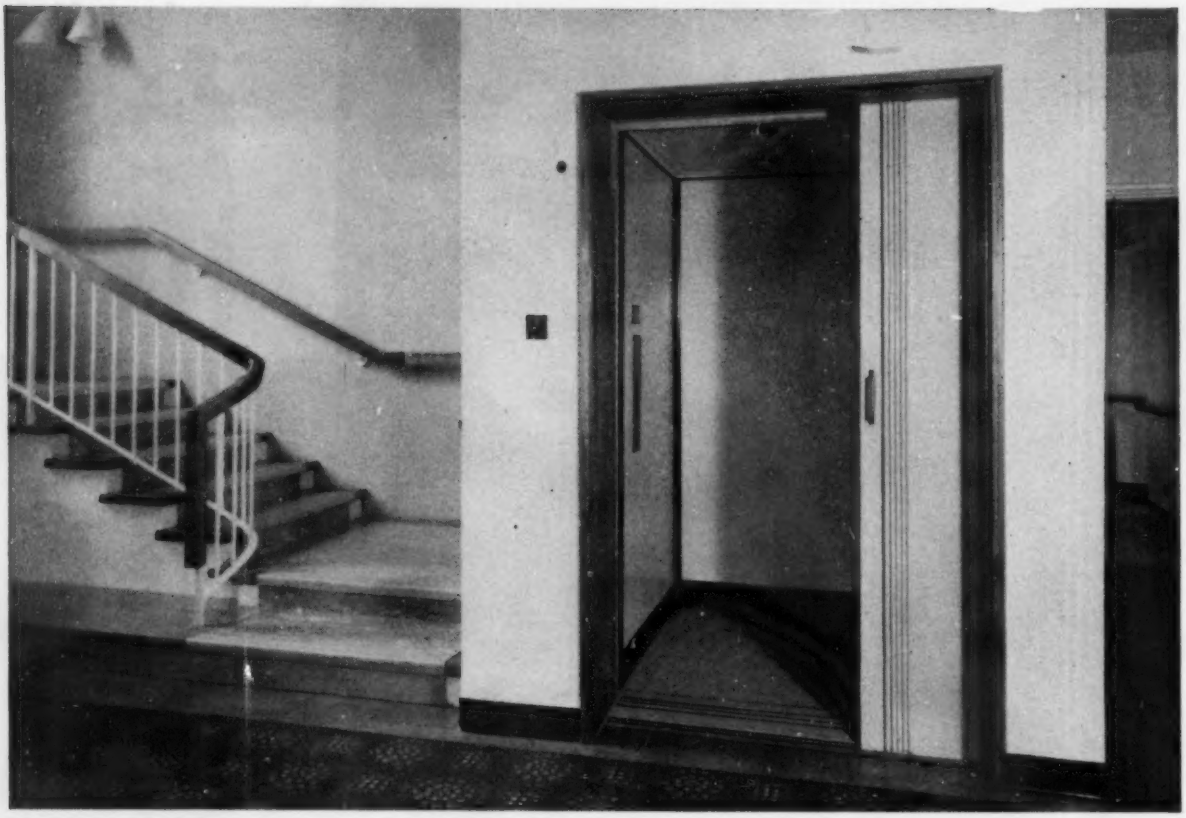
Yes, indeed, Wilson seems to be doing pretty well. Just look at those panelled walls . . . sheer luxury! The chap must be a business genius.
Truth of the matter is, Wilson is no genius. He's just a good businessman. He knows that a good-looking office is good for his Company's prestige and not only that . . . it's good to work in. Most people realise that, but Wilson went one better . . . he went to Walways. Wilson soon discovered that the *Walways System of Executive Partitioning* costs no more than ordinary partitioning, but it has that wonderful 'luxury look'.
More than that, *Walways* have an exclusive method of erection that makes them more economical than other systems. In fact, Wilson being a methodical man, has listed fourteen separate advantages of Walways Executive Partitioning. Perhaps he is a genius after all!
If you would like to study for yourself the fourteen advantages of the Walways system, please write or telephone to:—

Walways

EXECUTIVE PARTITIONS

Waddells (Stratford Steel Equipment) Ltd.
Stirling Corner,
Boreham Wood, Herts.
Telephone: Elstree 5441.

GO ONE BETTER—GO TO WALWAYS!



H & C

FOR AGED & INFIRM IN HOMES & HOSTELS

LIFTS

Further information and illustrated literature on request.

The Shepard Home Lift for small homes, requires no machine room, well or pit.

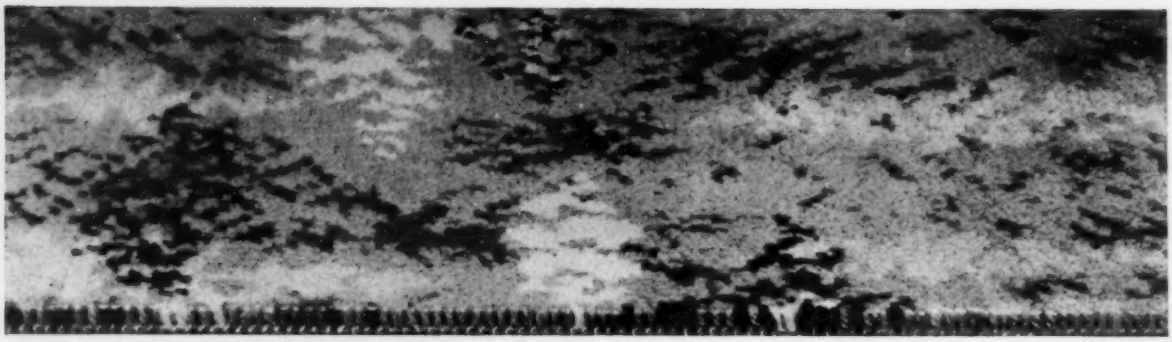
Above: Little Heath Hostel for the Aged, Chadwell Heath Lane, Ilford H. Conolly, C.B.E., F.R.I.B.A., County Architect, County Council of Essex.

Over the past few years Hammond & Champness have developed a lift specially designed for use in Homes for Old People. Purpose made to suit each job and to serve any number of floors, it carries 4, 6 or 8 passengers as required at 50 feet per minute. Landing gates or doors are hand or electrically operated and the car which is of simple design, may be attractively finished to clients requirements.

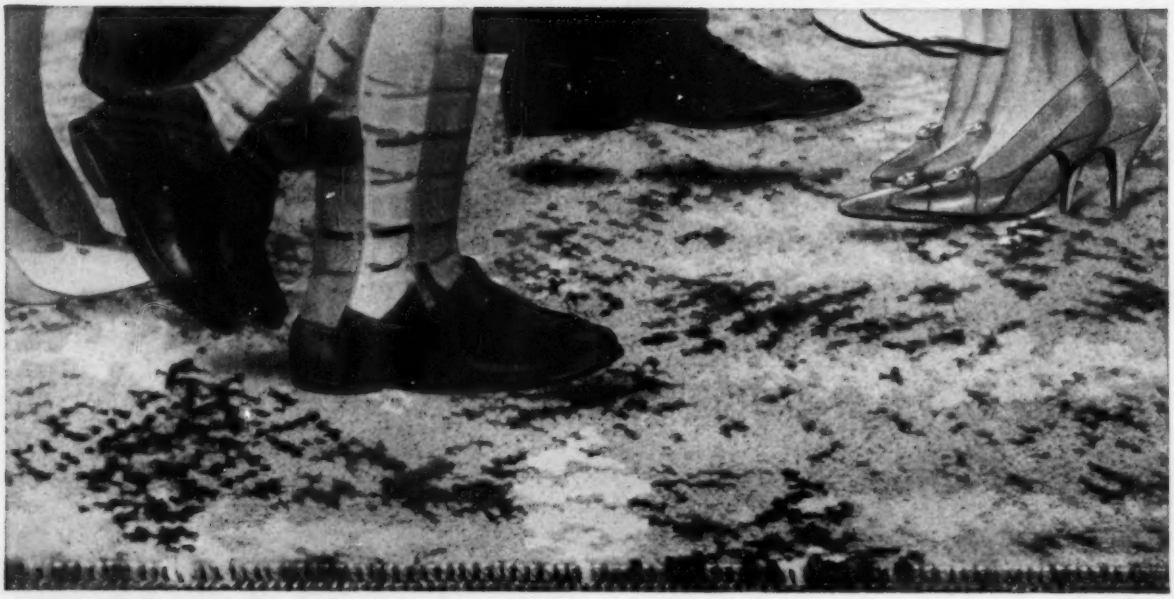
In the smaller Homes and for private residences where two floor travel only is needed, the well-known Shepard Home Lift is favoured.

H&C LIFTS

HAMMOND & CHAMPNESS LIMITED
Gnome House, Blackhorse Lane, Walthamstow, London, E.17 Telephone: LAR 1071/2622



SHOWS ITS BEAUTY...



BUT NOT ITS AGE...

Carpet with Acrilan 15

New Acrilan 15 carpet fibre has been specially developed by Chemstrand Limited for the carpet industry. Top manufacturers are using this high-performance fibre because its "built-in" characteristics make it ideal for use in both domestic and contract quality carpets.

Carpet with Acrilan 15 is made to master crushing and stains, made to stay luxurious and new-looking longer.

Because carpet made with Acrilan 15 fibre has a low absorbency—stains and dirt stay on the surface—it is easily spot-cleaned or shampooed.

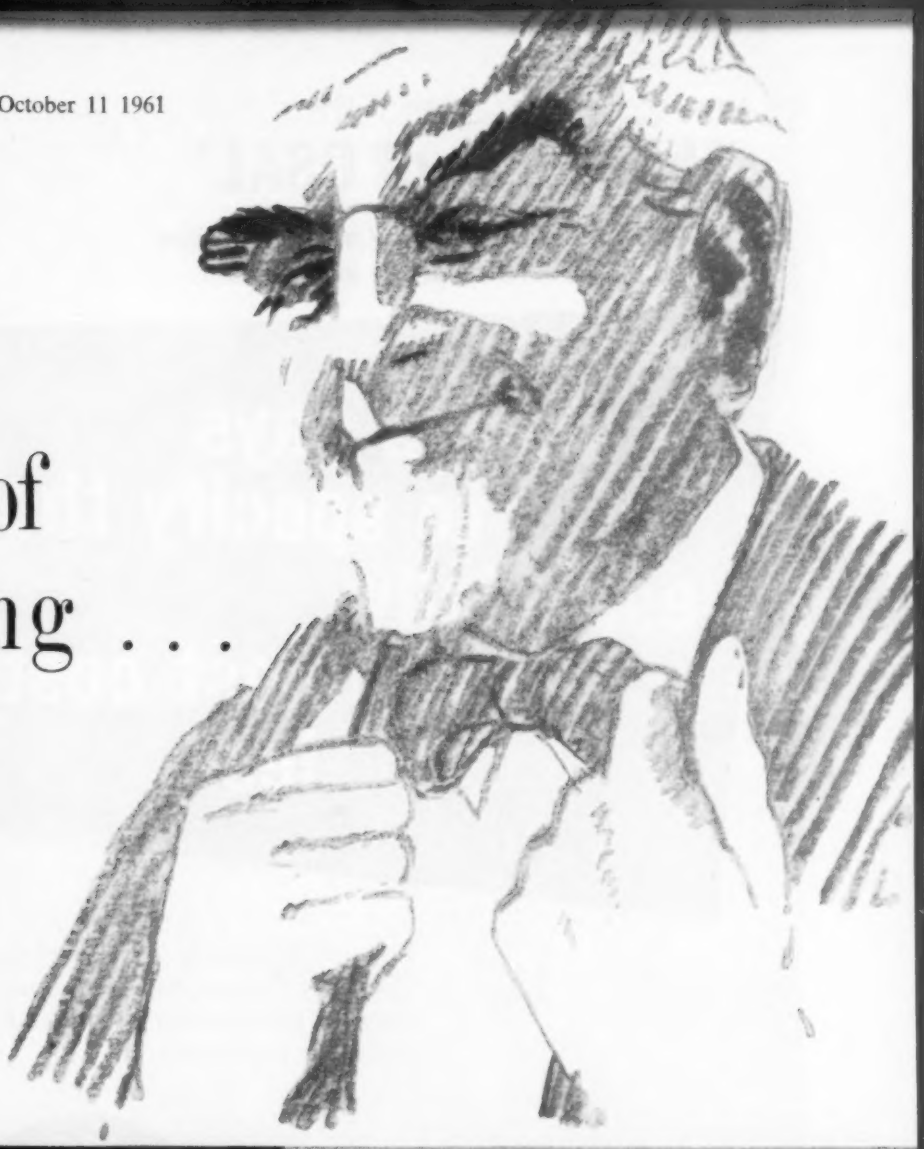
Also, carpet made with Acrilan 15 is more resilient and abrasion resistant than traditional carpets, therefore stays new-looking longer, resists permanent matting. It is impervious to moths and mildew.

Carpet of Acrilan 15 will stay beautiful for longer than any comparably priced carpet you have ever had before.

LOOK FOR the Crossley 'Broadway' Axminster range, 100% Acrilan pile, available on the Crossley cut-length broadloom service.

ACRILAN ACRILAN 15

For Modern Centres of Learning . . .



Leaderflush **BRITAIN'S FINEST FLUSH DOOR**

Schools and Universities demand the highest quality in a door — doors designed to withstand the hardest wear — doors like LEADERFLUSH. That is why LEADERFLUSH FLUSH DOORS were specified for Churchill and Emanuel Colleges, Cambridge; Worcester College, Oxford; Nottingham, Leicester, Durham and Southampton Universities, the Universities of London and Manchester; Eton and hundreds of schools of every kind.
For good looks, fine finish and above all hard wear specify LEADERFLUSH FLUSH DOORS.

Write for full details today

Leaderflush (Doors) LTD, TROWELL, NOTTINGHAM

Telephone: Ilkeston 4111 (6 lines)

613 Cogent

LONDON OFFICE: BUSH HOUSE, ALDWYCH, LONDON W.C.2 Tel: COVent Garden 2243

The £.s.d. of OSAL★

—Surface Hardening and protection of Concrete, Stone and Cement.

It always pays to specify the best especially if the best costs less

At a cost of only 6½d. per square yard. Florosal hardens Concrete, Cement and many building Stones. Effects chemical reactions that produce insoluble, indestructible, protective compounds.

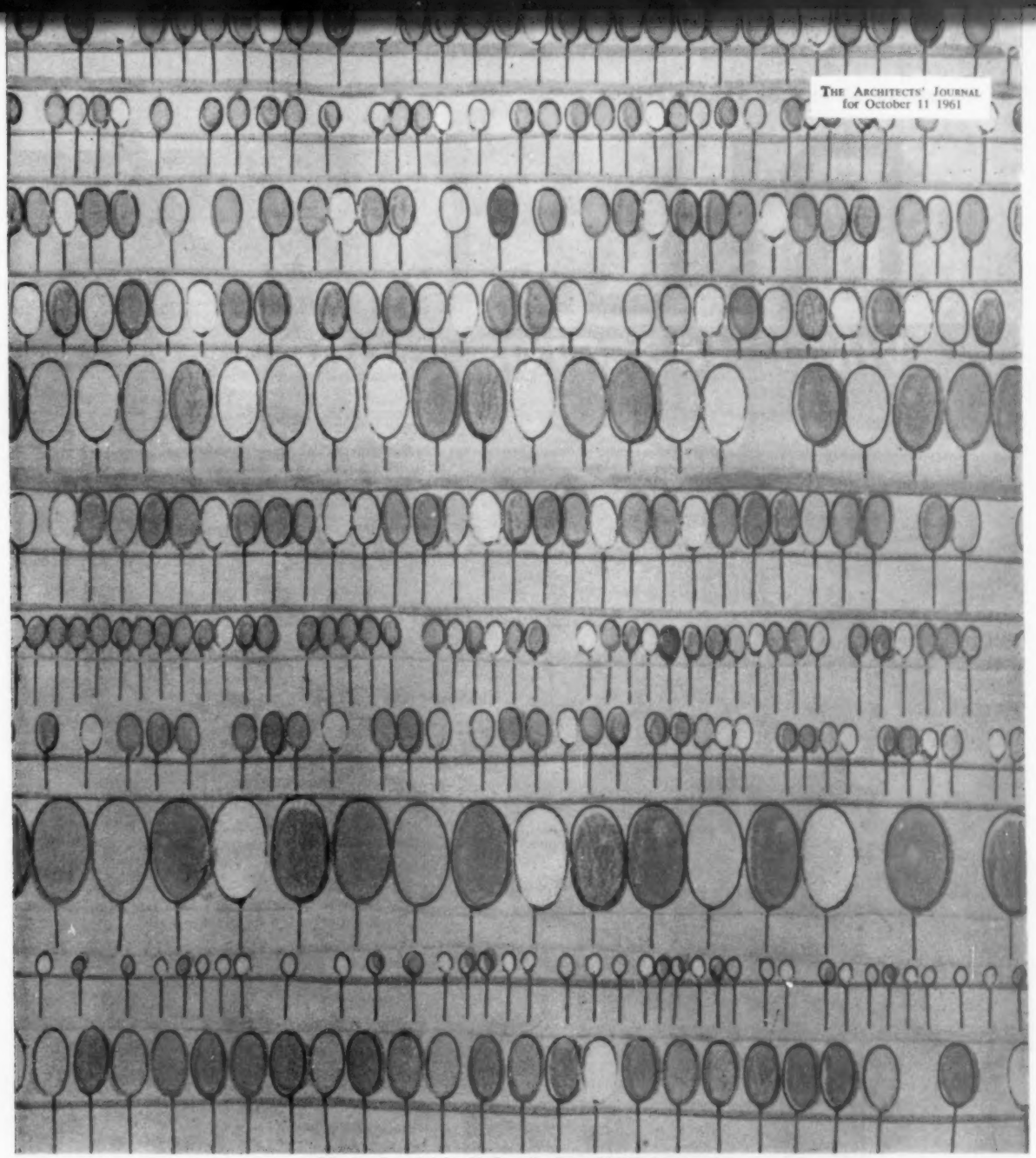
SURFACE
FLOROSAL
CEMENT HARDENER

For many years Florosal has been specified by leading Architects, not only for hardening, but to provide non dusting surface resistant to liquids, acids and oils. Send for Information Leaflet No. 2.

★ Osal is the generic name for the products of A. A. BYRD & Co. LTD., Florosal, Neocosal, Tricosal and Lubrosal. Literature about each individual product is available on request.

A. A. BYRD & CO. LTD. (DEPT. A10) 210 TERMINAL HOUSE, GROSVENOR GARDENS, LONDON, S.W.1

Phone: SLOane 5236 Grams: Byrdicom, Wesphone, London Works: Basingstoke, Hants.



"Precious Stones" designed by Jacqueline Groag. M 1079 shown to scale.

A new collection of machine printed wallpapers has just been compiled by the London Office of
The Wall Paper Manufacturers Limited 19/21 Mortimer Street, W.1.
and is now available through wallpaper suppliers. Many prominent designers are associated with this collection
among them Lucienne Day, Jacqueline Groag, Terence Conran, Joyce Storey and William Gear.
Modus wallpapers, because machine printed, are moderate in price,
and in order to increase their usefulness to Architects and Interior Designers
all these papers have been treated with a special protective coating.

YOU ARE INVITED TO VISIT THE EXHIBITION OF PALLADIO 5
SCREENPRINTED WALLPAPERS AT MORTIMER STREET (FIRST FLOOR)

WPM

MODUS

19/21 MORTIMER STREET LONDON W1
THE WALL PAPER MANUFACTURERS LIMITED

keep it gay... with CEMENTONE number seven

THE UNIVERSAL DECORATIVE FINISH

for buildings by the sea . . .

The only thing bracing sea air ever does for paint is harm. Not so with Number Seven gloss and flat finish and decorative primer. This is the finish that stays where it's put in sea air and city grime. And if you are troubled with alkali, remember that Number Seven Decorative primer has got you covered too. Its unique formula resists alkali in cement, asbestos roofing, brickwork and plaster. In certain locations, such as concrete paving, swimming pools, etc. Number Seven Primer acts as a finishing coat. Two coverings are enough.

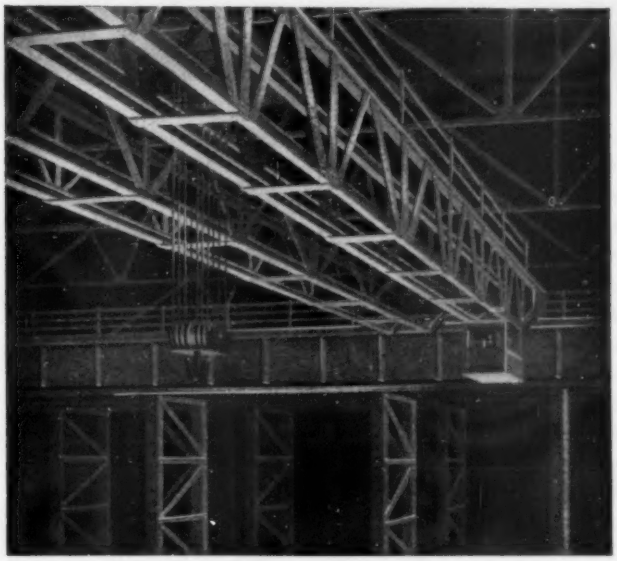
Cementone number seven

THE UNIVERSAL DECORATIVE FINISH

* *Write for your copy of the Cementone Handbook to:* **JOSEPH FREEMAN SONS & CO. LTD.**

Cementone Works · London · S.W.18 · Telephone: VANdyke 2432 (10 lines)

Anti-Corrosive measures ?



Sometimes, iron and steelwork can be protected against corrosion before it is erected. At other times it is necessary to carry out this work in situ. Either way, the most effective and simplest measure is the use of METAGALV, Expandite's cold-galvanising process applied by brush. It may be used either as a primer or as a self-finish.

In addition, EXPAFLEX Chlorinated Rubber Coating (available in twenty colours), and GEWI * all-purpose protecta-tape, for protecting pipes, steelwork and machinery, are two other invaluable aids in the battle against rust.

Contact Expandite Limited, manufacturers of sealing and jointing compounds, on all matters relating to corrosion. We offer practical solutions in the form of effective products and sound advice (given without obligation) on anti-corrosive treatments, based on our many years of experience in this field.

* GEWI—*manufactured under exclusive licence to N. V. Technische Handelsonderneming J. V. Meijer-Soest, Holland.*

EXPANDITE LIMITED

CHASE ROAD, LONDON, N.W.10 Telephone: ELGar 4321 (10 lines) and ELGar 1551 (10 lines) Telex: 25420

Trafford Park Road, Manchester, 17 Telephone : Trafford Park 1285/6
36 Great North Road, Newcastle-upon-Tyne, 2 Telephone : Newcastle 23992
Eire : EXPANDITE (IRELAND) LTD. Greenhills Road, Walkinstown, Dublin Telephone : 501512

ASSOCIATES AND DISTRIBUTORS THROUGHOUT THE WORLD

THE ARCHITECTS' JOURNAL
for October 11 1961

glass for depth of colour

in cladding

PILKINGTONS' GLASS CLADDING MATERIALS INCLUDE "ARMOURCLAD" AND "MUROGLASS"

For full information write to the Technical Sales and Service Department, Pilkington Brothers Limited, St. Helens, Lancashire. Tel: St. Helens 4001;
LONDON OFFICE: Selwyn House, Cleveland Row, St. James's, S.W.1. Tel: WHitehall 5672-6.

Supplies are available through the usual trade channels. "ARMOURCLAD" is a registered trade mark of Pilkington Brothers Limited.

a new pole top screwglass

An exciting new Pole Top Unit is now added to the extensive range of Simplex contemporary Screwglass fittings.

The Simplex Pole Top Screwglass is weatherproof and therefore suitable for all industrial and commercial applications.

It will take Tungsten or Mercury Fluorescent Lamps. The reflector is made from top quality anodised aluminium, stove enamelled red, yellow, turquoise, black or white as required. The moulded screwneck glass is internally etched to avoid glare and is protected by a strong galvanised wire guard.

The comprehensive range of Screwglass Fittings allow easy installation in any situation, top or side entry, or wall mounting. Interchangeable Nylon reflectors in either red, yellow, turquoise, white or black can be added to enhance appearance.

Galvanised steel wire guard is also available for all sizes from 40 to 200W.

Simplex

ELECTRICAL DIVISION

For full details please write to:
SIMPLEX ELECTRIC CO. LTD., LIGHTING DEPT., CREDA WORKS, BLYTHE BRIDGE. STOKE-ON-TRENT STAFFS.

Branches throughout Britain and agents throughout the world

L.8.

'Pudlo' provides proof . . . No. 4 of a series.

When this fine church was built 'Pudlo' Waterproofer was used in all cement work below ground level.
Mix: 5 lbs 'Pudlo' to 1 cwt. cement.

Architects: Ross, Doak & Whitelaw, 2 Clifton Street, Glasgow C.3.

Contractors: A. M. McDougall & Co. Ltd., Davaar Street, Glasgow E.2.

Quietly and efficiently 'Pudlo' cement Waterproofing Powder plays its part in all manner of building projects throughout the world—from underground reservoirs in Gibraltar to mansion blocks in Hong Kong, from power stations in Europe to the modern church illustrated above.
For more than fifty years 'Pudlo' Brand Waterproofer has maintained its reputation in the most searching conditions. 'Pudlo' can be used either to retain or exclude water in all types of concrete structures; our technical service is at your disposal and free advice may be had on any individual waterproofing problem.

'PUDLO'

CEMENT WATERPROOFING POWDER

OTHER 'PUDLO' PRODUCTS INCLUDE: Waterproof Cement Paints, Cement Paint Primer, External Water Repellent, Cement Bonder, Plaster Bonder, Frost Protector/Rapid Hardener, Concrete Plasticiser, Mortar Plasticiser, Cement Hardener/Dust Proofer, Permanent Colours for Cement, "Feusol" Fire Cement.

The word 'PUDLO' is the registered Trade Brand of Kerner-Greenwood & Co. Ltd. by whom all articles bearing the Brand are manufactured.

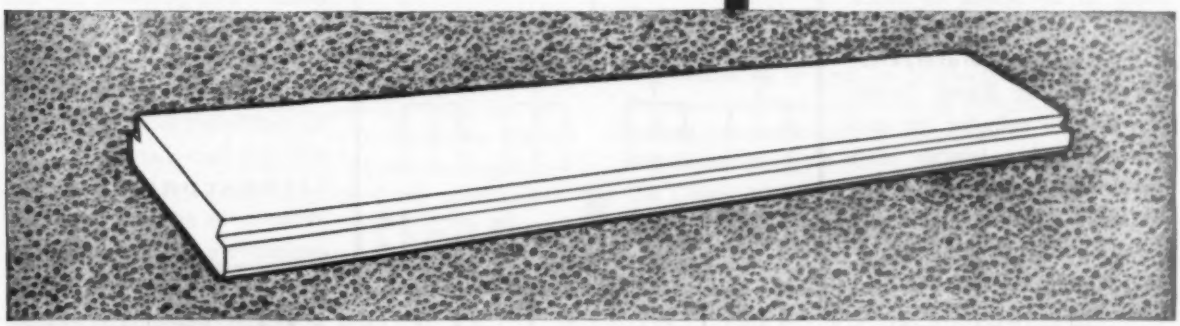
KERNER-GREENWOOD & CO. LTD.
KING'S LYNN, NORFOLK
***Telephone:* King's Lynn 2293**

WT. 19.

INDUSTRIAL ROOFING WELCOMES THE SIPOREX AGE

For over 25 years in widespread use in Northern Europe and many other parts of the world, SIPOREX, the lightweight cellular structural material *is now being manufactured here.*
Siporex revolutionises building techniques and offers architects and structural engineers many outstanding advantages.

- ★ 25 years successful experience all over the world are behind Siporex.
- ★ Over 30 million sq. yds. of Siporex roofing have already been laid, from the equator to the arctic.
- ★ Siporex is simple and rapid to erect—reducing site labour costs.
- ★ Siporex has a thermal insulation ten times that of concrete and is completely incombustible.
- ★ Siporex is only a quarter the weight of an equivalent volume of concrete, reducing the cost of structural framework and foundations.
- ★ Siporex compares favourably in price with other building materials.



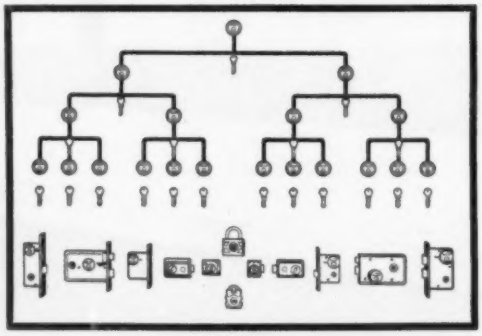
SIPOREX THE MODERN LIGHTWEIGHT CONSTRUCTION MATERIAL

Manufactured in Great Britain by: COSTAIN CONCRETE COMPANY LIMITED *(A member of the Costain Group)*
DUNCAN HOUSE, DOLPHIN SQUARE, LONDON, S.W.1. SIPOREX FACTORY, NEWARTHILL, LANARKSHIRE, SCOTLAND

SECURITY BEGINS HERE...

Specify a Yale Master Keyed Suite at the planning stage—and you ensure *built-in* security, with the maximum of flexibility and control. The number of differs obtainable is up to 12,200 and they can be arranged to cover every need likely to be found in office blocks, hotels, schools, hospitals and buildings of every kind.

Yale Master Keyed Suites can include cylinder rim and mortice locks, latches and deadlocks, padlocks and cabinet locks. And they can all be controlled by the same Master Key. Additional keys for Yale Master Keyed Suites are only issued on the written authority of the registered owner.



GRAND MASTER KEYED SUITES

Grand Master Keyed Suites are divided into Sub-Master Suites. Each Sub-Master Key operates all the locks in its suite, but not those in other suites. The Grand Master Key will open all—up to 2,200 different locks, in up to 36 different Sub-Suites.

LITERATURE

Write to the address below for explanatory leaflets and detailed specifications.

COME AND SEE US ON STAND 1047/1048

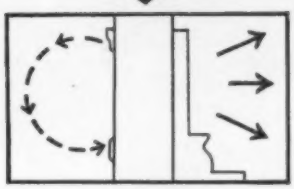
Building Exhibition Olympia 15-29th November 1961

YALE

REGISTERED TRADE MARK

THE YALE & TOWNE MANUFACTURING COMPANY · BRITISH LOCK AND HARDWARE DIVISION · DEPT A11 · WILLENHALL · STAFFS

warm air in the kitchen . . . from the living room fire



. . . and hot water too

The illustrations show just one of the ways the Chevin Mk IIIa convector fire can be put to work. Installed like this with closable grilles it will provide radiant and convected heat in the living room and circulate warm air to an adjoining room to provide background heating when required. Alternatively it can be installed with a louvred interior frame so that all the warm air is discharged into the living room. Or there is a range of closable grilles which can be fixed in the tiled surround. Whatever arrangement you choose, the Chevin can be supplied with or without a back boiler.

PRICE from £17 17s. 2d. retail (Supplied with throat restrictor, without interior frame or grilles).

Performance (*Boiler model*)

ROOM HEATING: full heating in rooms of traditional construction up to 1,500 cu. ft. *plus* background heating by convection in adjacent room up to 1,000 cu. ft., *or* full heating in one room only up to 2,000 cu. ft.

WATER HEATING: 7,500 Btu/hr. (Max. 10,000 Btu/hr.)

The Chevin Mk IIIa is approved by the Domesic Solid Fuel Appliances Approval Council.

Chevin 3A CONVECTOR FIRE

a Radiation product

See the Chevin Mk IIIa at the **Radiation Domestic Appliance Centre, 59/65 Baker Street, London, W.1**
or write to the Head Office: **RADIATION PARKRAY LIMITED, Radiation House, North Circular Road, London, N.W.10**

IBECO

WATERPROOF PAPER

IN BUILDING AND CONSTRUCTION

For concrete underlays, curing overlays, or other temporary purposes: IBECO No. 40 to BSS 1521/1949 Class B.

For structural concrete or covering screeds: IBECO No. 60 or 80 depending on the stresses involved.

For preventing draughts and penetration of moisture in walls and roof structure: IBECO No. 80.

For insulation work and reduction of heat losses: IBECO foil laminates.

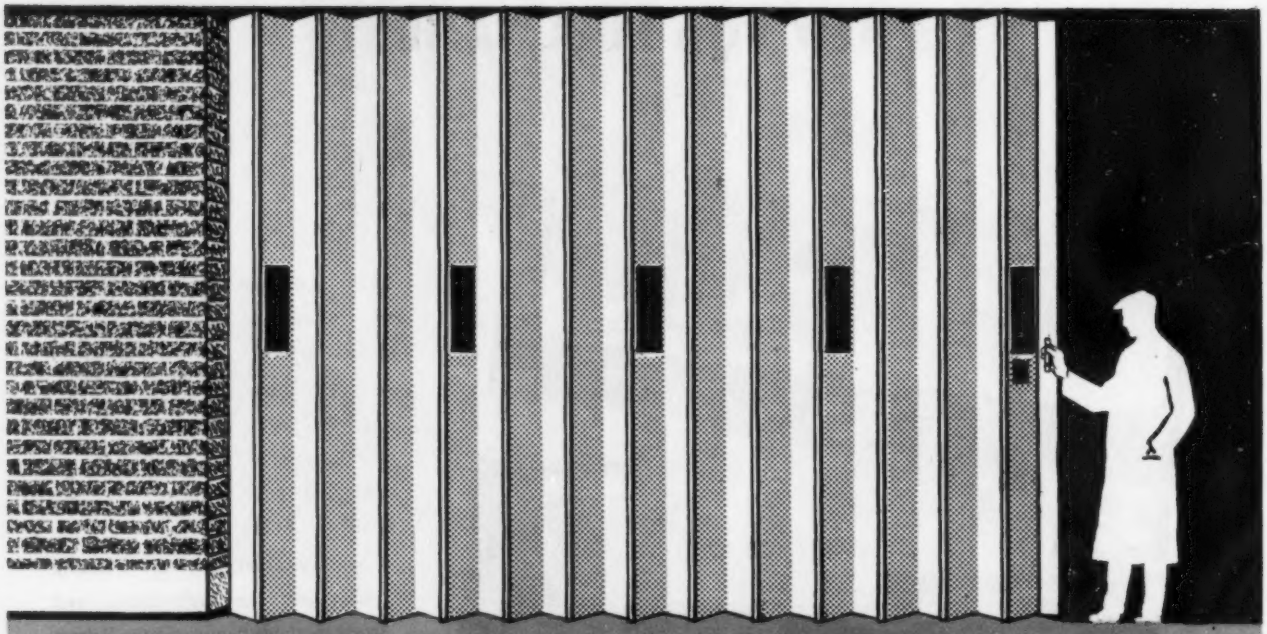
We will gladly send samples of these on request or a technical representative to discuss their application to your particular problem.

Neat, practical, economical answer to many problems of lining, proofing and insulation, IBECO has advantages no other product of its kind can offer . . . In IBECO the proofing is part of the paper itself, integrated with the paper's fibres while these are still fluid. Result: A paper waterproofed *throughout its substance*, with no 'free' bitumen to harden, crack, leak or sweat out. You can fold IBECO, crease it, trample it—it stays waterproof. Additionally, it's light in weight, small in bulk, easy to transport and handle on site, and very reasonable in price.. Where there's building, there's a job for IBECO.

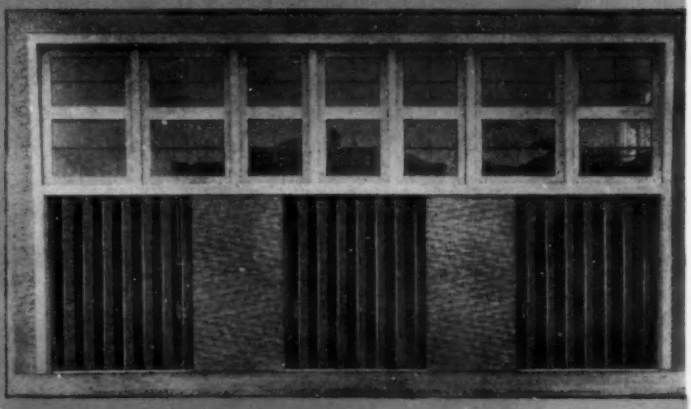
DAVIDSONS PAPER SALES LTD.

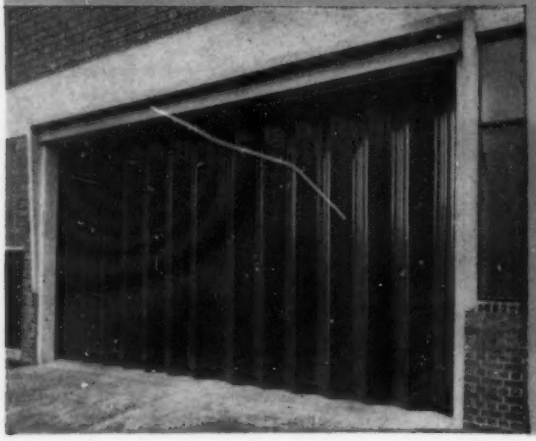
LONDON: 82/84 St. John St. E.C.1. LIVERPOOL: 31 North John St. 2. LEEDS: 9 Albion St. NEWCASTLE: 42 Corporation St. GLASGOW: Laird Place, Bridgeton, SE. EDINBURGH: Boroughloch Square. DUNDEE: 24 Lamb's Lane. ABERDEEN: 4 Trinity Quay. HEAD OFFICE: Mugiemoss Mills, Bucksburn, Aberdeen.

This is only one side of the story...



The story of Bolton Patent Shutter Doors is one of success in operation all over the world. It covers all sizes of doors for every type and style of building and it tells of special refinements to suit particular needs. These include clearance for railway lines, accommodation for runway beams and automatic, quick-opening devices where fast turn-outs are of vital importance.

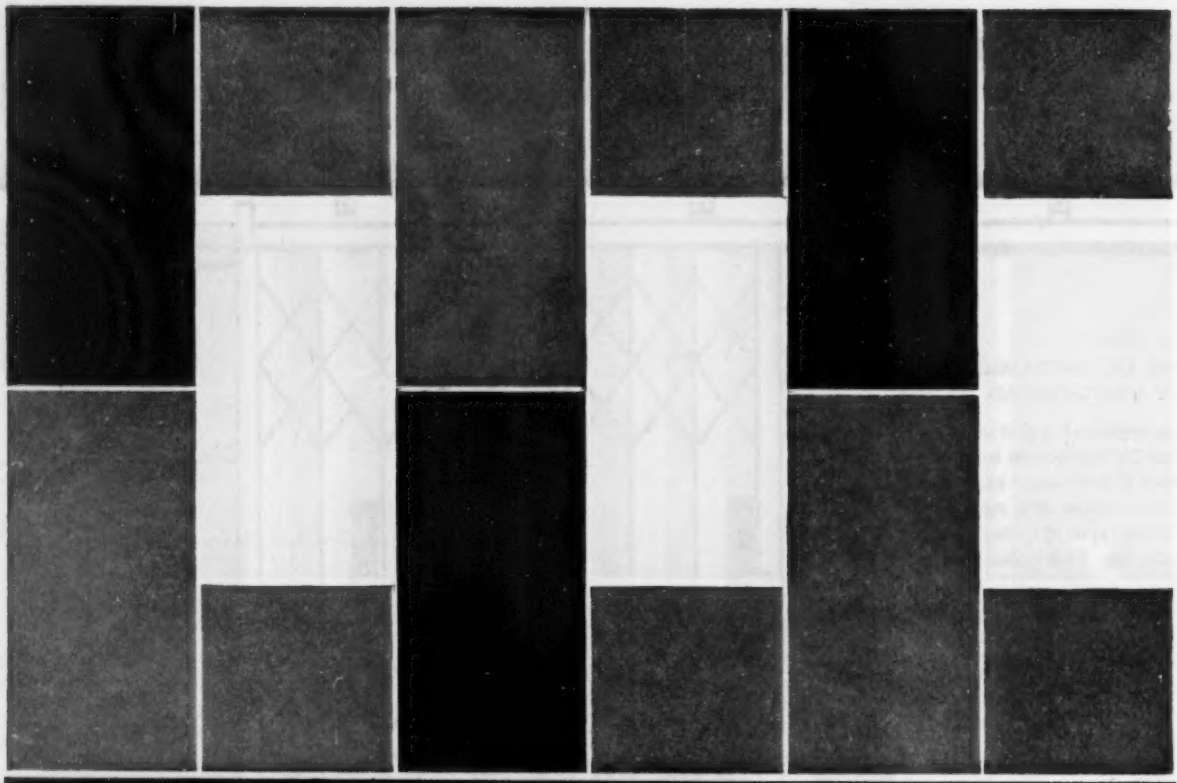




Above: Three single doors each 13 ft. wide x 14 ft. high for Metropolitan-Vickers Electrical Co. Ltd.

Far Left: One pair of doors, 26 ft. wide x 14 ft. high with 12 inch leaves to reduce bunching space.

Left: One pair of doors 20 ft. wide x 10 ft. 5 in. high, fitted with inspection windows.



MARLEYmura

12x6 Vinyl Wall Tiles

Durable, easily maintained Marleymura Vinyl Wall Tiles
in an interesting, all-through-colour range,
gauge jointed in white, are impervious to atmospheric conditions.
Particularly suitable for restaurants,
canteens, cloak and reception rooms, staircases and shops:
Marleymura Wall Tiles provid e attractive relief
for the monotony of large wa ll areas,
and contribute years of decorative practical beaury.

Complete technical information is available on request from

MARLEY SEVENOAKS · KENT · Sevenoaks 55255 London Showrooms · 251 Tottenham Court Rd. · W1

AJ

The Architects' Journal

Volume 134 Number 15 October 11 1961

Registered as a newspaper

The Architectural Press Ltd.

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

Whitehall 0611

Subscription rates: post paid, inland £2 15s a year; abroad £3 10s a year. Single copies, 1s; post paid, 1s 6d. Special numbers are included in subscriptions; single copies 2s; post paid 2s 6d. Back numbers more than 12 months old (when available), double price. Half-yearly volumes can be bound complete with index in cloth cases for £1 17s 6d; carriage 2s extra.

NOT QUITE ARCHITECTURE

In the condemned cell

It began simply enough. "Yes, X born and bred," he said, "lived here all my life. Used to be just over behind the old gaol there"—pointing to an impressive grim late-Georgian building which is now a corn store. "But it was pulled down. I live in a council house now, have done for years."

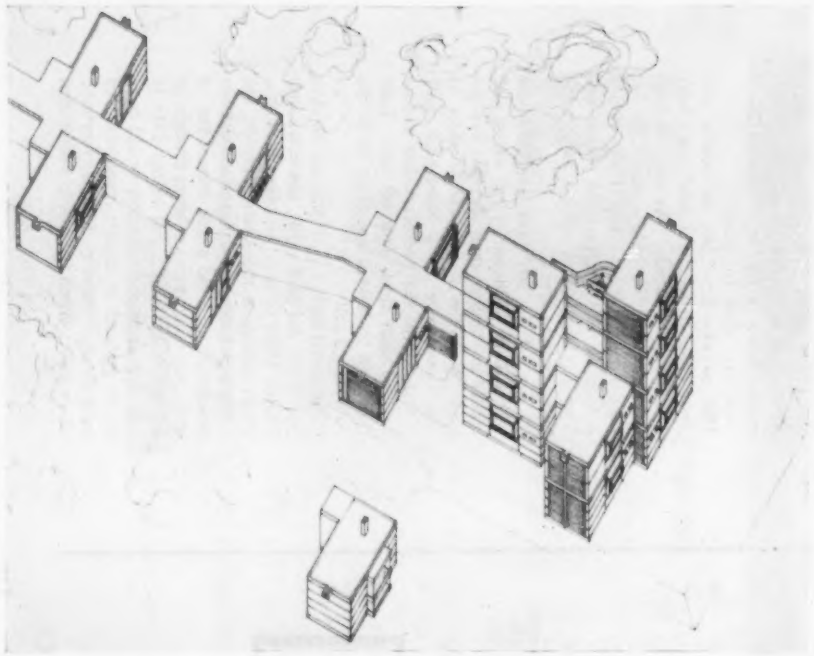
Did he like it? "No, of course not. They came to me, said now you'll have toilets and bathrooms. We used to have a lavatory in the yard: shared it, but kept ourselves clean. And if we wanted a bath we had one in front of the fire. The way they were talking, we hadn't had a bath in years."

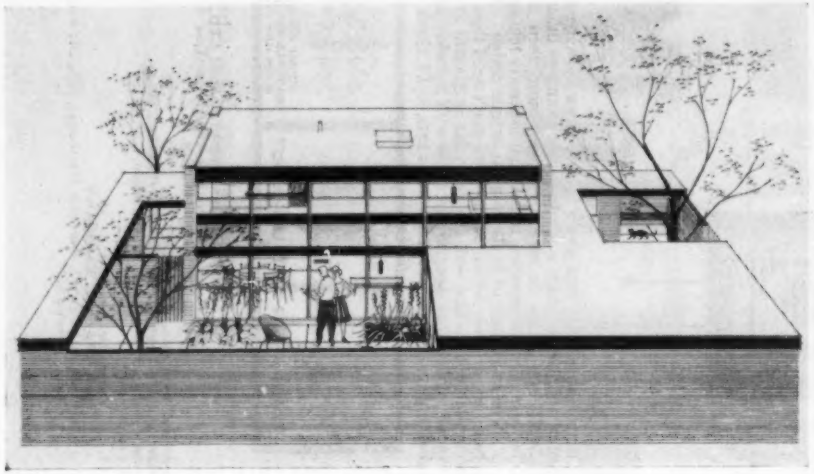
"I can tell you this much, the old house was a damn sight warmer in winter and cooler in summer than the one I've got now. Why, the walls were as thick as this,"—we were in a stone-built mill. "And one of the bedrooms had a door studded with thick nails all over. Took four men to hold it up. Used to be the condemned cell. . . ."

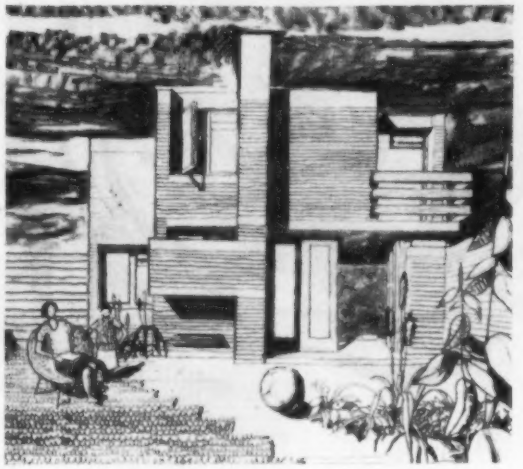
Condemned cell? . . . "Yes, we were in one of the old gaol yards, converted into houses. Used to be a bit queer at nights. Don't believe in those things myself, but some nights there were bangs and crashes downstairs as if the whole dresser full of china was coming down. Mum brought us up, my father was killed in the 1914-18 war. Me being the youngest would hang on to the end of mum's nightdress and we'd all go downstairs, to find everything all in place. When they were demolished

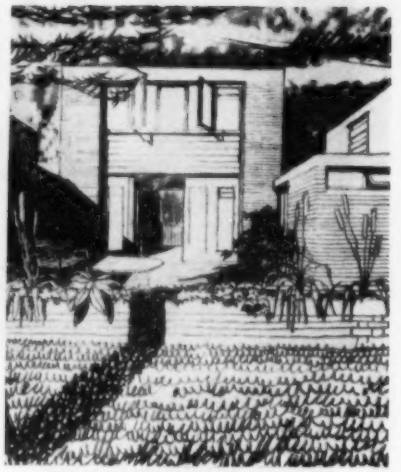
Fit for bulk production?

Competitors in the Gas Council's House competition were permitted to enter for one or more of four different dwelling types, and these are the four designs which won the top award of £500 in each case. Left, for single persons, by Peter Cook in association with David Greene; below left, detached family house of 1,500 sq ft, by Denys Callaghan; and below, the two winning designs by Lydia Dransfield in collaboration with Francis Bancroft for a 1,100 sq ft. detached or semi-detached house and for a 950-sq ft semi-detached or terrace house. Typical layouts of groups were required for each type, and in the case of two of these winning designs, they can hardly be regarded as answering the aim set out in the competition conditions of achieving "a reconciliation between social desires and aesthetic demands"; however attractive these designs may be, they can hardly be said to stand up to repetition. But the assessor, Grenfell Baines, makes it clear in his report that this factor was outweighed by such matters as internal planning and an intelligent use of gas equipment. This difficulty might be minimised in future competitions of this character by giving competitors an actual site so as to make layouts more definitive and realistic. For further details of the result, see page 591.









I was curious and went to look round the others. Under one of them was a huge lime pit. . . . They made a badminton court there."

"Rather like that place"—pointing to a Priory decorously (and nicely) done up to display local history. "Used to get under the floorboards, we did, as children, and then go all under the town. Tunnels, all the way. Closed them up, said they were unsafe. . . . There was a canal just here, full of barges. All filled in now. . . . And one of my mother's old relations remembers when Stert Street was a river, and you had to go from one side to the other by little bridges. . . . Still there's one thing, I sleep more easily at nights now."

X is still a very, very nice town. But I wonder just how much of the innate excitement has gone, to have to be recreated with parachute jumping or motor-bikes doing the ton. This was no olde-worlde nostalgia: the chap I was talking to was a sober, undramatic 50, a lorry driver for most of the time. Yet, he was inside that town: he'd put his finger on the thing that we spend thousands of man-hours compiling reports about—why New Towns are lonely and dull. The excitement and the variousness has gone, to be replaced by a vast nation-wide insurance policy against everything. If only we could insure *for* something instead!

I don't mean National Health or the man from the Pru—at least, not directly. I do mean the fear, particularly in councils, of the legal consequences of exposing anybody to any risk at any time. Understandable but terrifying. Because the fewer natural risks there are, the more unnatural ones we make up to compensate. So little Johnny, such a nice child, carves up his sister for kicks, and who can blame him?

*

The whole of society is becoming like an over-possessive, over-protective mother. All the dangerous tunnels are being walled up, and of course as fast as they are walled up, we open up more for ourselves. We have got to, it's human nature. A truly wise society would keep open as many as possible as the best safeguard against new and really horrible anti-social tunnels. The Wolfenden Act, and its misinterpretation by the coppers, God help them, walled up one of the most venerable, most humane, most valuable tunnels, for the sake of a few tidy streets. If little Elaine, aged 10, is assaulted and battered on an allotment near that nice New Town, where does the blame really lie?

If we tried to face a jet bomber with a couple of rifles, everyone would laugh. Yet we try to meet some of the deepest human impulses with a handful of bye-laws. God, or fate, has a quiet smile and is not mocked. People in Rochester's age, or Boswell's, may have died earlier and lived in peril for much more of the time. But they said and did just as much—and did they, I wonder, die of cancer?

IAN NAIRN

The Editors

THE NEXT FIVE MILLION . . .

When J. R. James, MOHLG's chief planner, talked to the Housing Centre last week about the housing problem, he did two things of great value: he brought home the extent of the problem when he put the "rock bottom" need for new housing at five million in the next 20 years, and he challenged some of the too facile hopes that are being pinned to higher densities as an alternative to further expansion of our cities.

Useful as far as it went, yet we would criticise Mr. James's analysis of the situation from two points of view: that his "rock bottom" figure of need is too low and that he underestimates still more what the building industry ought to be able to achieve in increased productivity over the same period.

His rock bottom need covered only the 150,000 obsolescent dwellings *over a hundred years old* which require replacement every year, and 100,000 additional dwellings a year for the proliferation of new households. This allows nothing for the many buildings which are obsolete rather than obsolescent and less than a hundred years old; it allows nothing for replacement of the buildings described so feelingly by Mr. Henry Brooke to the Association of Public Health Inspectors last month, houses wrecked by overoccupation, not age, and each requiring replacement by several new dwellings. It allowed nothing for the replacement of houses demolished for road improvements, new schools, open space or urban renewal, yet demolitions for these purposes are at the rate of 15,000 already and will surely increase. It looks, in fact, as if our rock bottom need is for nearly 300,000 houses a year rather than 250,000, and we cannot help the suspicion that the lower figure was chosen more in relation to present capacity of the building industry than to our social need.

And here we must urge our planner-in-chief to take his stand on the need for the building industry to equip itself to supply our wants, rather than to try to shape our wants to the present output of the industry. There is no reason or excuse for the building industry lagging behind all the other key industries of this country in increasing efficiency and productivity. In fact, as we know and have repeatedly emphasised, the building industry is facing a technological revolution which should enable it to double productivity or even more than double it in the next 20 years. Surely it is for the Ministry of Housing itself to take the most positive part in promoting this? Just as the MOE through its development work found out how to build schools faster and more cheaply, the MOHLG has to do the same for housing. Development work is only beginning there we know, but we look to Mr. James to put forward a policy which will stimulate the work, and indeed stimulate the whole building industry to adopt the new methods and new attitudes which are being talked about today by every intelligent building contractor. Supply follows demand, and if the Minister of Housing sets an ambitious target for the next twenty years of house building, the industry will organise itself to fulfill it.

PUNCH DRUNK

Having studied the endeavours of AJ editors and the printers to mark the position for punching holes on AJ pages at the continental standard of 20.80.20 millimetres, ASTRAGAL could not help asking why the AJ wasn't pre-punched. This, it seems, has been considered, but the printers have no method of drilling holes which will not delay the printing schedule. The editors would, however, be interested to hear from readers who think pre-punching to the dimensions given above would be of use to them. Pre-punching is an expensive service, so there would be little point in doing it if most readers kept the AJ in suspended files or box files.

*

Last week the editors reported an increase in subscriptions of 850. Last week's issue is already out of print, despite a massive increase in the number printed, and the new subscriptions have increased to over 1,350 in three weeks. Late-comers for this series of supplements need not despair. Anyone who takes out a subscription right away will receive a reprint of the October 4 issue. So there is still time to catch up if you fill in the reply-paid subscription form at the back of the JOURNAL.

LESS GROSS BY THE GROSS

A lot of good sense was talked at the International Design Congress—in London last week—in fact more good sense than is usual at meetings involving designers. The reason it was such a businesslike affair is that it had a businesslike subject, " Design Policy for Corporate Buying." For once the Council of Industrial Design, which organised the conference, was making an all-out appeal not to the shopper-in-the-street but to the organisations, institutions and government departments that have to do their buying on behalf of shareholders or ratepayers.

*

Most of the architectural stuff would have been familiar to AJ readers—Richard Llewelyn Davies and William Tatton Brown on hospital planning and equipment, Eric Bedford on the policy (sic) of the Ministry of Works, W D Lacey on CLASP and Donald Gibson on the work of his architecture and design department at the War Office. I think the War Office story was the most useful. The more publicity it gets the better, because if the British Army is prepared to go in for design in such a big way (about 630 items of soldiers domestic equipment are being redesigned, apart from barracks and married quarters), then there is some chance that other large organisations will sit up and take notice. It was nice to be reminded that the Army is cheering itself up not only on functional grounds, but for the justifiable æsthetic reason that it wants to attract wives to push their husbands into jobs as attractive as those offered by industry.

*

Other speakers included Leslie Julius (superbly cross about the mess the Ministry of Aviation has made of London Airport); Raymond Loewy (on How We Do It Over There); Sir John Cockroft, Master of Churchill College (really heart-bleeding stuff here about the need to " modify the design in the light of actual costs as revealed in tenders, so as to keep within the agreed budget "); and Sir Colin Anderson. Here was a speaker with a brave suggestion—that a board of directors should include one qualified designer (poor man).

*

I hope the conference has some influence through its delegates, though I can't help feeling that large-scale designing comes about usually by the luck of having imaginative brains at the top of an organisation, or the luck of a firm employing somebody who knows how to get his way with cussed laymen — somebody like Misha Black, for instance, who told the conference he loves committees.

THE TIMES IS OUT OF JOINT

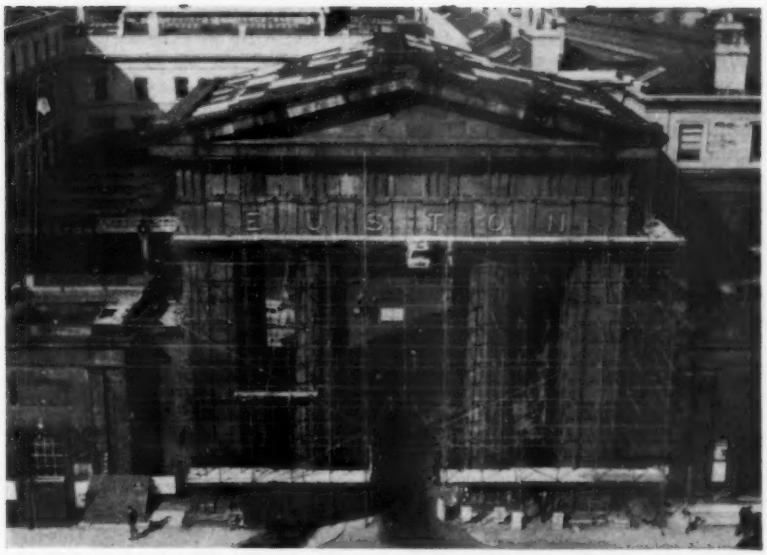
Guardian readers may care to know that *The Times* took the opportunity of using the conference as an excuse for another of its commercially-sponsored supplements. Why, I wonder, do we accept these issues with more tolerance than we give to ITV or to the ad-sponsored supplements in the popular Press? I usually try to read them with interest. But on Wednesday of last week I had to put the newspaper hastily away because of the strong smell of Public Relations. I don't mind seeing an article blowing the trumpet of the Council of Industrial Design, when it is signed (as in this issue) by " Paul Reilly, director," but I don't see why other articles which include boosts for this and other organisations should be given to the reader by their paid hirelings. Maybe W. H. Mayall *does* feel that the COID is worth a mention, but the reader ought to be told he is one of its industrial officers; maybe Robin Darwin is right to feel that the Royal College of Art deserves a good big plug, but *The Times* should also plug his relationship to it. And how independent can Michael Middleton (of the Civic Trust) be in a piece about civic design, or A. H. Milward (of BEA) in a piece about civil aviation? I don't suppose, by the way, that it was Misha Black's fault that the two pictures used to illustrate his article were of work done by his Design Research Unit, which, of course, the newspaper fails to connect him with.

*

Auntie *Times* should realise that this sort of treatment of her readers, though not exactly dishonest, is not quite nice.

WANTED, £49,200

Readers will be glad to know that Euston Arch is doing somebody a



Last Stand . . . demolition begins this Friday unless . . .

bit of good. Frank Valori, the manager of the demolition company, had two bidders for the stones when I last inquired: they were both monumental masons, and they wanted the stuff so that they could sell it again for patching up old buildings. Mr. Valori, who is getting £12,000 for the job—too small a sum to include the dismantling and numbering of the immense blocks of sandstone—says that £50,000 could still save the arch. It is a pity someone didn't ask him earlier: we have all been thinking in terms of that £190,000 quoted by Mr. Marples as the figure for demolition and re-erection.

*

At the time of going to press the fateful scaffolding is going up, but no demolition has begun. So as a last-minute attempt to rouse a few consciences I did a quick round of telephone calls. The British Transport Commission was playing safe and sticking by its Minister. The Ministry of Works felt that "the Ministry of Transport is—er—the—er responsible body." The Ministry of Transport read me a description of the splendour that was soon not to be and said it didn't think the LCC had ever been consulted. And the LCC was cagey, though its town planning committee once strongly recommended preservation of the arch. The Midland Region was helpful but impecunious, though its statement that it could not offer a storage site seemed odd.

And the Victorian Society? It had been burrowing around for money and had obtained £800. If this fund could be boosted and then bolstered by the LCC and a site found for the stones. . . . But by the time you read this it may be too late anyway.

CALL ME EARLY

A lot of culture vultures will be annoyed at being roused from their Sunday nap by ABC television's rival to *Monitor*, called *Tempo*, which is being put on at the difficult time of five o'clock. Why, during all that ham-handling of the Chichester theatre model by Sir Lawrence Olivier and the Earl of Harewood (Larry calls him George), was there no mention of the architect's name (Powell and Moya)? I'm told that the programmes director, Reg Collin, is repentant and hopes to make amends when he and Kenneth Tynan and their producer do some specific features on architecture and design. Good luck to them. And let's hope they don't try to popularise the thing by asking the public, *Tonight*-wise, what it thinks about good design.

PLATER'S PLAYTIME

A more cheerful début in TV last week was an architect's first play, *The Referees*. The author, Alan Plater, is not only one of the brighter lights of architecture north of the Humber, and also "Not Quite Architecture." His drama included no references to architecture (though there were hints of external cladding materials) but there was some crisp dialogue and some likely characters—except that I don't remember any mad psychiatrists in any of the Rowton Houses of my wild oat years.

MACHINED BY HAND

When I could drag my eyes away from the Carlton Tower penthouse's superb view I managed to examine thirty new wallpaper designs shown there by Wall Paper Manufacturers. Although printed mechanically they retain the nuances of the artists' original drawings in the way that hand-blocked papers do. The designs are called *Palladio Mondo* and cost from 8s. to 22s. 6d. a roll. They will therefore make available a quality of design and an appearance previously possessed only by the more expensive, screen-printed Palladio range. Audrey Levy has a charming leaf pattern in soft related colours, at once crisp, modern and English. There are also several excellent, more severe, architectural designs by Michael Partridge and Julius Frank. Some vignettes of Brittany described in a blurb as "acute and witty" make sure that every taste will be satisfied when the papers come on sale in January.

LONDON PRIDE?

While all building tenders have risen in the past few months, the prices for mechanical installations seem to have been rising more steeply still. So when a friend of mine received a tender which was more or less reasonable, he asked why. It appeared that the successful firm had no London office and therefore hired all its labour at country rates. Apparently when a firm has an office in London, employees insist on "signing on" there, rather than on the site, even though they may live outside the city and have no intention of working far from home. By this dodge they become entitled to London wage rates *plus* "country" allowance. This may mean an extra 50s a week on a man's pay-packet. "No man," said Dr Johnson, "is so innocently employed as when he is making money." Dr. B. no doubt thinks the same. But will this sort of practice enable us to compete with Dr Erhard?

ASTRAGAL

LETTERS

Eric Heaf, ARIBA

A. W. Benn,
Sales development manager, Charles Winn & Co Ltd

Brian Falk, ARIBA, AMPTI

Priscilla Metcalf

SfB

SIR: The complexity of the SfB lists resulting from the complete and detailed breakdown of their subject matter will probably discourage, for a time, the most enthusiastic classifiers. However, its adoption *in toto*, probably requiring the full-time services of an assistant or secretary, would be inappropriate in many offices, and fortunately is not necessary.

SfB is a system for the whole building industry. Building centres and architectural libraries will require all the headings and sub-headings, and builders will be more interested in the Construction headings D-X.

Architects most frequently require references during the consideration of a functional element, comparing the properties of products and specifying the techniques of construction with reference to a particular part or problem of design. THE ARCHITECT'S JOURNAL is right to stress the prime importance of sections (1)-(7) and the desirability of placing information about products and operations under the element headings. Fortunately SfB is a flexible system which can be condensed to suit the needs of a particular user. The extent and form of the condensing will depend on the size and the interests of the office. In its simplest form all information on products and operations can be filed in the Functional Elements sections (1)-(7) and the Materials section D, *providing they are classified under the prime purpose of the product.*

For example: High tensile steel reinforcing wire, fully classified under *Jd2 wires and mesh: steel*, has a prime purpose of *Ed2 Concrete: reinforcement*, which in turn is principally used in (2) *Eq4 Structures: Concrete, heavy*. Or: Expanded aluminium sheet classified under *Jd4 wires and mesh: aluminium* is principally used for decorative screens, etc, and therefore appropriately filed under (42) *Finishes: internal*.

Similarly the Ab: Technology sections can be associated with functional elements.

Expansion from this simplified form is achieved by extracting the capital letter sections into separate files.

For example: Ab8/697, Heating Engineering and K, Insulation Products can be sub-divided from (56) Installations: Heating.

The acceptance of some form of condensing will simplify classification in many offices, but it could not be incorporated in the lists without detriment to the use of SfB in other sections of the building industry. Therefore, although all information should be marked with the full classification number and letter arrangement, individual arrangement is practical and possible within the system. When elements and products are filed separately the necessary reference in the elements files referring to the associated products files could be provided by the Trade Associations and Development Organisations. These bodies should prepare the "special trade literatures for inclusion in each element file," drawing attention to the products of their member firms which should be considered during the design of the element.

ERIC HEAF

Sheffield 7

Hole punching

SIR: We would very much appreciate your comments on the following. We have received a note from a firm of architects acknowledging receipt of trade literature from us, in which they request us to conform to BS1311 using the A4 paper size. This is fair enough, but they also go on to say, "including 1in blank filing margin and containing two prepunched holes 3¼in. apart." It is this part that we are wondering about.

We do not believe that this requirement of the filing margin, and of the two punched holes is included in BS1311, and these architects, we think, may be going a little too far. We would not criticise them for trying to persuade us to do this, but we do rather deprecate the fact that they appear to infer that this is a requirement of the British Standard, and, at the moment, we are very doubtful whether it is. On this latter point we should like your confirmation.

As to the question of the 1-in. blank filing margin, we note that the RIBA industry note referring to the A series does not include such a margin, and we should imagine that, if anything was intended to be kept for future reference, that would be.

A. W. BENN

Birmingham

BS1311 says nothing either about margins or punched holes. We, in the JOURNAL, use a filing margin of 1in on all fileable pages. The punched holes requirement is more debatable. We are of the opinion that, if a reference is used often, two punched holes are not enough and will tear, and that four holes are better; although some may not want to file in this way we consider that four, or two, holes are better than none.

THE EDITORS.

Cotton, Clore & Cambridge

SIR: I should like to add to Derek Senior's interesting article on the Central Area of Cambridge (AJ 16.8.61) and the effort to induce the Fitzroy-Burleigh Street area to take over the functions of the Central Area proper.

Recent studies carried out in the county planning office with which I have been associated, indicated that it is highly unlikely that any trend now apparent will have the effect of substantially shifting the centre of gravity of the Central Area. It is expected that the market population, calculated from population totals and locational factors, will increase from 284,000 persons in 1949 to only 308,000 persons in 1974. The market area will contract as peripheral centres improve their facilities and transport to London becomes more easy.

To cut down the time of the train ride from Cambridge to London reduces the day-time shopping population in the Cambridge Central Area. The policy of increasing the size of Thetford, a town orientated towards Norwich, will further reduce Cambridge's market population. Should Cambridge itself be expanded the potential of the Central Area expansion will increase but it is unlikely it would reach that high level needed to relocate a Central Area.

At present the Central Area is located at the meeting of the main traffic routes and the abutment of main land uses. Too small to have allowed the development of specialist sub-centres, the Central Area is a hodge-podge of retail outlets, service outlets, offices, amusement and recreation establishments and institutional and governmental establishments. The inter-action of all these uses and the way they generate "custom" for each other is a potent force in the Central Area, too well embedded to shift.

The Fitzroy-Burleigh Street area is restricted by rail, road, river and existing blocks of development. It can act as a focus for the east section of the city, but little else. To increase its impact would require topographical changes and a programme of road and building realignment that would affect over half the city. The sub-centre certainly does not display the kaleidoscopic range of activities and functions essential should it try to become a Central Area in its own right. From 1949 to 1957 total "Central Area Use" space in the Fitzroy-Burleigh Street Area increased 6 per cent (31,000 sq ft) as against 2 per cent (120,000 sq ft) in the Central Area. Although this may appear as if the Fitzroy-Burleigh Street is expanding faster, a closer look reverses this conclusion. Expansion in the Central Area has been, and is, devoted to those uses that show high intensity of sales/use per square foot, high

stock value and small area requirements. The space increases in the Fitzroy-Burleigh Street area are the opposite. The sub-centre is expanding but not raising its intensity of sales per square foot.

The expansion of Central Area Uses from 1949 to 1957 (2 per cent) took place at the cost of non-Central Area Use space; the total space in the Central Area hardly changing. In 1957 only 53.1 per cent of all space was devoted to Central Area Uses. The projected space requirements of the Central Area in 1974 (calculated by population growth, daytime and shopping population, expenditure increases and intensity of turn-over levels) show that an additional maximum of 75,000 sq ft sales space and 135,000 sq ft office space would be sufficient. This space is available in the non-Central Area Use space now existing in the Central Area without the addition of the proposed Lion Yard project.

As only 10.3 per cent of the total floor space is taken by University uses it cannot be said that the University is stopping expansion at the present time. It may be stopping spread, but spread is a debatable virtue. The Central Area (as defined under an extended Murphy-Vance method) consists of 52.5 acres, 36 acres of which can be classified as Core. The Fitzroy-Burleigh Street area has 12.3 acres of which 4.4 acres are classified as Core under the same definition. These figures illustrate not only the massive investment needed to bring the Fitzroy-Burleigh Street area to Central Area Standards, but, due to the limited development potential, the staggeringly restrictive policies that would be needed to eliminate the existing Central Area.

Due to its position within the City, the Fitzroy-Burleigh Street area had a supporting population in 1949 of 17,000. It is anticipated that, including new housing projects, this will increase by 1974 to 19,000 persons. The Sub-centre with 7 per cent of all city establishments, now takes 8 per cent of the total trade. This is typical suburban centre behaviour and cannot compete with the Central Area which has 26 per cent of all establishments and takes 54 per cent of all trade.

By 1974 it has been calculated, admittedly by crude projection methods, that expenditure will have increased by 80 per cent in the market area, and that 37.5 per cent of this increase will be spent on central area goods. If by some extraordinary policies of development and restriction half of this increase were directed towards the Fitzroy-Burleigh Street area, this would still leave the Central Area in a position of enormous dominance.

From these few arguments, these few figures, it can be seen that it is supremely improbable that the Fitzroy-Burleigh Street area can ever supplant the existing Central Area. The centre of gravity of the Central Area (calculated from land use movements) is located near the site of the Lion Hotel. The centre of gravity gives the location of the peak land value potential in the Central Area. As new developments occur it moves usually in a spiral. With the latest developments adjoining Christ's College the centre of gravity moved to the east. The Lion Yard project will draw it further south, all these movements being along the site boundaries of the Lion Hotel. It may well be that the Lion Hotel has been purchased for its intrinsic site value, rather than with any intention to sabotage the Central Area.

The major planning problems now facing the Central Area are the service space needs generated by the central area uses. By 1974 it is calculated that there will be a daytime visiting population in the Central Area of 80,000 persons, of which 26,000 will be shoppers; 18,500 vehicle journeys per day will be made to the Central Area, and there will be a demand for a mean of 3,500 parking places . . . a patent impossibility for any city Central Area of this type and size. The problem is to match service requirements with existing and new Central Area facilities without destroying inherent qualities of the existing city centre.

One possibility is to use the Central Area fringe zones as service spaces. This has the advantage of providing these facilities in the correct locations; and the disadvantage of making the Central Area an island in a sea of service space. Another possibility is to create a special service centre adjoining the Central Area. Again the Fitzroy-Burleigh Street Area is not well located or well-constituted to serve this function. The distance of the sub-centre from the Central Area, although short, effectively prohibits a linking of the two centres. In the same way its capacity as a developed sub-centre for the east of the City prohibits it from becoming a service centre for the Central Area.

A possible location for such a specialised service centre does exist and provides an adequate connection with the new bus station. Although its size is limited, if established a satisfactory balanced development could be achieved.

The problem of the future of the Cambridge Central Area can be solved using the potential of the under-developed and undeveloped space within the Central Area, and by the provision of service space closely allied to existing established Central Area functions.

BRIAN FALK

Euston Arch

SIR: It is no use trying to move men like Mr Marples and his engineers with historical parallels because he and they have no sense of history; but for those who have there are two better parallels than Temple Bar for moving Euston Arch: the moving (and presumably storing?) of Marble Arch around 1848-51, and the moving of Wellington Arch, about 1882 I think.

PRISCILLA METCALF

London W1

NEWS

Youth service buildings by MOE

Sir Basil Henriques once gave warning that an invitation to "come and play pingpong in the crypt on Thursday" was not the way to attract the young into the youth clubs; the Albemarle Committee, which examined the Youth Service and reported in 1958, developed this sensible approach, and recommended that the Ministry of Education should undertake a study of premises required for youth work. The first result is, "Youth Service Buildings," an admirable report (MOE Building Bulletin No. 20, HMSO, 2s 6d) by the development group of the Architects and Building Branch, on the requirements of present day general mixed youth clubs. Later bulletins will deal with other types of club, but, says the report, "there is little doubt that the general mixed club is the most popular among the older age groups and is likely to prove the strongest element in the youth service."

After visiting four different types of youth club, from a small club in a converted railway booking office to a large club with 1,000 members occupying two converted Georgian terrace houses, the group came to the conclusion that the siting, character and planning of any youth club must be decided by a consideration of what sort of youngsters it is setting out to attract. Its design must depend on the place of the particular club in the local youth service development scheme, expected total membership, and whether it is to be open to all or have a formal membership system; the age range to be provided for, its range of facilities (itself depending on what existing facilities there are in the neighbourhood), and whether it should be designed for future expansion.

Club premises, says the bulletin, should provide "an uninterrupted space or series of linked spaces, sub-divided by partial or discontinuous screens, within which social, practical, physical and cultural activities can be pursued in proximity and harmony." Proximity, in fact, is a keyword for the satisfactory design of a youth club.

"The integrated character of club life is such that few spaces can be discussed in isolation. Practically every space will connect with and influence one or more other spaces devoted to other activities. Compactness and flexibility require great freedom of circulation and the interpenetration of spaces and functions which can promote a sense of belonging to a larger group. The individual member must be aware of and feel related to all other activities."

On entering the club, members should get a feeling of "warm hospitality," says the report. "The brilliance and sparkle, the liveliness and sophistication of the best coffee bars may point the way . . .

The position and design of the bar are therefore of great importance. The kitchen/servery/canteen conception of this area is irrelevant in the youth service . . . Eating, drinking and talking are an important part of the social activity of a club and the word 'canteen' has no place in this Bulletin."

This section, on aspects of club design, goes on to outline the other needs of such a club, provision for dancing and music, with sitting out spaces, an "irregular coastline of alcoves and bays which offer a variety of different kinds of immediate environment . . ." generous space for meetings and activities of large numbers of members. "What is wanted is a space so planned that activities may flow, expand and contract; and so that as many dissimilar activities as possible can be carried on simultaneously." The report comes down against any fixed proscenium stage, as being too limiting, but suggests that a movable stage made of portable units would be useful.

"There is no doubt that young people, perhaps more than any other section of the population, are highly responsive to their environment," the report comments, "and no pains should be spared in creating and furnishing a club room of the highest architectural quality . . . the character of the space, together with the finishes and equipment should be firmly adult and, in the best sense of the word, sophisticated." It goes on to consider provision for the various practical activities youth clubs may undertake, workshops, a craft area, separating "dirty" crafts from "clean" but otherwise making no division between girls and boys. In general, they recommend "a studio or design workshop so arranged that quiet, messy and noisy activities can be carried out simultaneously and without undue interference with one another." They suggest, however, that there is "a strong case for making specific provision for photography," with a dark room with space for several people to work.

The bulletin then turns to questions of structure, where "the development of new activities must not be inhibited . . . by the load bearing component" and "the advantages from this point of view of a framed building should not be overlooked"; finishes, which must be robust, durable and sophisticated; partitioning—interlocking spaces are preferable to expensive folding and sliding partitions in the Group's view; sound—the young call for "lively" acoustics rather than heavy insulation; colour, services, furniture, and—in a detail which marks its central importance to success—the design of the bar.

The Bulletin assumed a net cost of 75s per square foot at October 1961 prices, in the case of a mixed club for about 200 members, allowing for a total area of about 45 sq ft per unit of average nightly attendance, but points out that such calculations must be used with flexibility to fit in with the very varying activities of the clubs.

The development group is now putting these recommendations to the test in a project for a general mixed club to be built at Bristol in collaboration with the city architect, and this will be the subject of a further Bulletin.

COMP & BETT—

The new look

When the financial provisions of the 1947 Town and Country Planning Bill were first published, the *Economist* was not sure they would work. But the *Economist* (of all papers) was quite sure that if they failed to work we should have no choice but to swallow the pill of land nationalisation and like it.

These financial provisions were, in effect, a failure; but (it is customary to add) the planning provisions of the same measure have been, within their limits, a success. So indeed they have—in the sense that they have proved themselves potentially workable. But they cannot in practice work as they were intended to work, simply because the Act's financial provisions were their necessary foundation, of which the development charge was the corner-stone.

When that was removed, the eventual collapse of the superstructure became inevitable. Without it, there was nothing to prevent the sheer force of political gravity from bringing down the 1947 basis of compensation for compulsory purchase. And with that gone, the 1947 basis of compensation for refusal of permission to develop has lost its main moral support; a little more erosion of the overstressed mortar of municipal integrity, and no effort will be needed to dislodge it. Development control will then be as wobbly in practice as positive planning has already become.

This prospect has stimulated the canvassing of schemes to shore up the sagging structure of our planning system with some other form of betterment levy, or to rebuild it on a new financial foundation. Devices for the collection of betterment are legion, and some of them are very pretty on paper; but their practical weaknesses (as indicated by the Minister of Housing, Hansard, July 20, col. 1495) are undeniable. None of them, as the 1945 Government rightly concluded, is a better bet than the development charge.

In short, if we want to make planning effective, or even to keep it ticking over, our choice must lie between the resuscitation of that discredited device and some form of public ownership—national, regional or municipal—of all freeholds, or at least of land ripe for development or redevelopment.

Nationalisation is, of course, the obvious, simple and complete answer. But would nationalisation by any other name be less malodorous than a development charge? Hitherto it has been taken for granted, even in the ranks of the Labour party, that any wholesale public acquisition of freeholds would be politically so unpalatable as to be a non-starter. Now, however, it is not only in the running: it looks like a winner.

The experience of an informal study-group at the recent TPI summer school is in a small way illuminating. At its first session the group turned its back on public ownership because each member assumed it would be unacceptable to the rest, but it eventually emerged from the discussion of alternatives as the least unacceptable solution.

It would be nice to think that a similar process of logical elimination had inspired the Labour party's change of heart—that land nationalisation was being officially embraced because the party's leaders were determined to make the planning system effective, had recognised that this could not be done without solving the compensation-betterment problem, and had found the alternative solutions wanting.

That, indeed, was the rationale behind the scheme proposed by Socialist Commentary's group of experts in its report, "The Face of Britain." But it was not the rationale behind the land nationalisation plank in the party executive's platform statement, Signposts for the Sixties.

This was prompted by a very different motive force—namely, public indignation about the soaring prices of building sites. It is this new political factor, and not any rebirth of political interest in the cause of good planning, that has deodorised the idea of land nationalisation.

It is important, in any realistic consideration of the form which a public ownership solution might take, to get this distinction clear at the outset and to bear it constantly in mind. For the "Socialist Commentary" group, the whole and sole purpose of public ownership is to make development control effective and positive planning possible. But this would be no more than a welcome bonus for the authors of Signposts for the Sixties, for the Labour members who took part in the Commons debate that followed its publication, and for the local Labour parties that submitted 46 resolutions on land and housing (more than on any other domestic topic) to last week's party conference at Blackpool.

For them the primary purposes of public ownership are (a) to reduce the cost of house-building and public works, and (b) to divert from private pockets to the public purse the capital gains accruing from the enhancement of land values by planning permission, by public enterprise and by the pressure of increasing population.

If the Labour party gets a mandate to carry out its land policy it will be because there is widespread sympathy for its emotional reactions to the land boom, and the legislation it introduces will be designed to give expression to these social and moral sentiments. No doubt

the responsible Minister's advisers will do all they can to see that such legislation is workable, and that it facilitates the planning process as much as possible.

No doubt, too, those Labour politicians who are interested in planning will make the most of the opportunity the current wind of change affords them to educate their colleagues. But the final decisions on ways and means will be taken by reference not so much to the needs of good planning as to the prevailing sense of equity, and by people who are more concerned to get houses built and social facilities provided than to ensure that these things are done in the right places. It is only in this context, and not simply on their intrinsic merits, that the alternative schemes for the public acquisition of freeholds can usefully be compared and criticised.

DEREK SENIOR

HOLFORD SEIZES HIS GOLDEN OPPORTUNITY

The presentation of the TPI's gold medal to Sir William Holford at the Carpenter's Hall in the City last week was quite an occasion, and made so above all by Holford's own contribution to the speechifying that marks such events He had been subjected to a barrage of fireworks from his sponsors, sparklers from Desmond Heap (comptroller and solicitor to the City Corporation), and a warmer, cosier display from Professor J. S. Allen, and he could easily have come back with a display of roman candles. Instead he used the opportunity to talk seriously about the desperate plight our towns and countryside are in, and to urge the need for "two major repairs to our planning machinery."

"The planning system of the 1940s has been dismantled, and although it has left us a valuable collection of spare parts, they hardly represent a useful machine any longer," said Holford. The second major repair he proposed was to establish "the link between planning and design," which would call for a revised code of practice, and new methods of thought.

In our cities, office blocks and roads, which were like "the rooms and corridors of a hotel," were designed by different departments, and public transport was "in danger of becoming a liability and being treated as such" when it was in fact the essential solution to the "ferocious impact of the motor vehicle on city life."

Sir William is the fourth planner to be honoured by the presentation of the TPI's gold medal: his predecessors were Sir George Pepler, Sir Patrick Abercrombie and Lewis Mumford.

RIBA IS REVISING COMPETITION REGULATIONS

The RIBA council has asked the competitions committee to revise the regulations governing the promotion of conduct of competitions, and to prepare a new Model Form of conditions and directions to assessors for consideration at a future meeting.

A report from the competitions committee was the subject of a lively discussion at last week's council meeting, which finally agreed that, while present conditions and competition documents are basically sound they are sometimes valueless, uninspiring and unattractive, and even lacking essential information. The proposal that the competitions committee rewrite these so as to make them clearer and more attractive was accompanied by the idea that a pamphlet be prepared, which would give the background of the architectural competition, explain the system to promoters, including the duties of the assessor, and give some practical guidance to assessors covering presentation of conditions, scale and type of drawings, methods of easing competitors' work, preparation of reports, exhibiting the results and publicity.

Revision of By-laws

A special general meeting is to be held at 66 Portland Place on November 7 to consider and, it is hoped, approve, the revised wording of a number of RIBA by-laws, and a further special meeting on November 28 for the purpose of confirming resolutions passed at the November 7 meeting, so that the revised by-laws can be submitted to the Privy Council for approval in time for the new constitution to become operative at the next RIBA election.

Early in August the Clerk to the Privy Council wrote to the RIBA with regard to the by-laws as a whole, to explain that the Privy Council would approve them only on the understanding that during the next three years (the transitional period for the new constitution) the Institute would carry out a systematic overhaul of the existing Royal Charter and by-laws to remove inconsistencies between them so that it could then come back to the Privy Council with a draft for consolidating the Royal Charter and for a new set of by-laws.

MORE USEFUL TRADE LITERATURE

Bristol discussion

Manufacturers were urged to make their trade literature more useful to architects, by adopting A4 size, SfB classification and hard facts instead of sales talk, at a discussion at Bristol Building Centre last month, held when the prize-winning entries in the RIBA-Building Centre trade literature competition were on show there.

R. Towning-Hill, consultant architect to Alumin Building Components Ltd., the firm which won a certificate of exceptional merit in the competition, described the problems arising from the daily outpouring of trade literature received by architects. The reaction of many architects to the problem was simply to throw it all away, he said.

Michael Hitchings, a partner in Alumins went on to specify what was required: standardisation of size, using the International A4 size not only for pamphlets and catalogues but for drawings which could fold down to the size and for headed notepaper; technical information instead of sales talk (Mr. Hitchings recommended the check list given in the competition rules as a guide); and classification so that it could go into the architect's filing system.

"The SfB system is new and has not yet been thoroughly tried out," he said, "but already enough architects are using it to make it worth while for manufacturers to print the SfB numbers on their literature."

Mr. Mitchell-Thompson of Universal Asbestos said that architects really need only a basic library of technical information from which to make their selection; anyone confining himself to date sheets could easily and economically keep an up-to-date library. He drew attention to THE ARCHITECTS' JOURNAL's campaign for more informative advertisements which would provide a library of information sheets.

DIARY

Swedish design awards: display at Design Centre in the conference room.
UNTIL NOVEMBER 4

Wallpapers: display at Wallpaper Manufacturers Ltd., 19 Mortimer Street, London W1. UNTIL NOVEMBER 24

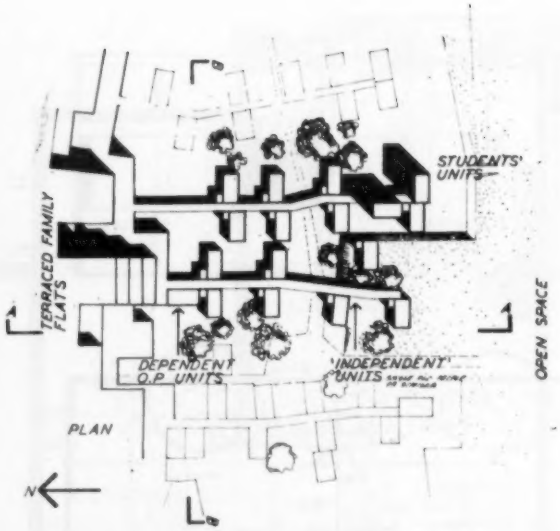
Architecture in relation to everyday life: lecture by Charles Blake, at the Queen's Hotel, Torquay, at 8 p.m. OCTOBER 13

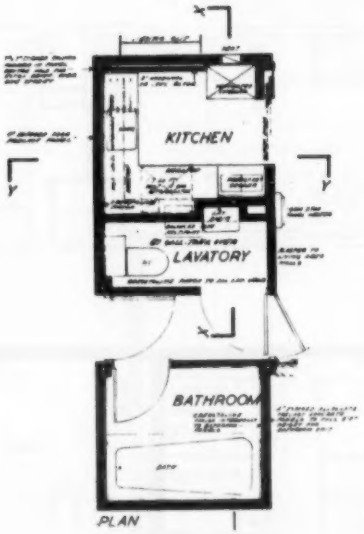
The site and foundations: film show at the Manchester Building Centre, 6 p.m.

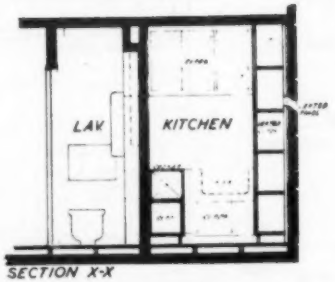
Correction

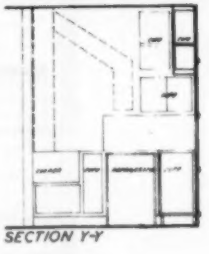
In the assessors' report on the Lincoln competition (AJ 4.10.61, page 502) the authorship of entry No. 7 should have read James Bourne, David Button, Stephen Osgood and H. Werner Rosenthal, and that of No. 59, Andrew Renton, Peter Howard, John Kennett and Gerald Levin.

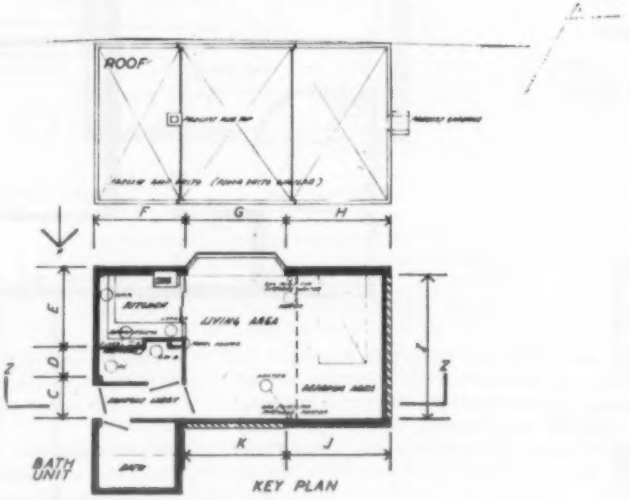
Gas Council House Design Competition











Winning design type 1 by Peter Cook and David Greene

FROM THE ASSESSOR'S REPORT: *These competitors not only plan a good dwelling in itself, but show imagination in devising a system of grouping that is socially good and therefore naturally finds architectural quality in expression.*

Each dwelling has its own kitchen, separate wc and wash basin—the minimum personal equipment vital for comfortable living—then the grouping allows for alternatives of exclusive or shared bathrooms, older people having their own bathroom, young, as students, sharing. The unit is so simple in form it would construct economically in almost any mass wall technique.

Four main types of dwelling design could be submitted in this competition sponsored by the Gas Council, separate awards being made in each case.

For type 1, dwellings for single persons, the first prize of £500 has been awarded to Peter Cook in association with David Greene, the second prize of £300 to Bernard Hartley and the third prize of £200 to Michael Clements and A. Horan. For type 2, a detached family house of 1,500 sq ft net area, the first prize of £500 has been awarded to Denys Callaghan, the second prize of £300 to Hugh Harwood, and the third prize of £200 is equally divided between A. J. Molyneux-Smith and Michael O'Connor in association with Lingard & Associates. For type 3, a detached or semi-detached house with a net area of 1,100 sq ft, the first prize of £500 has been awarded to Lydia Dransfield, in association with Francis Bancroft, the second prize of £300 to Dennis Stephenson, and the third prize of £200 to the design submitted by Bernard Hartley and Roger Edmundson. The winning entry for type 4, a semi-detached or terraced house of 950 sq ft net area was also won by Lydia Dransfield in collaboration with Francis Bancroft, and the remaining prizemoney of £500 was divided equally between the three entries by Arnold Moss in association with Harold Baxter, Albert Vasbenter and P. D. Udall in association with B. Reynolds. The assessor George Grenfell Baines highly commended the entries by John Greenway and W. Nicholson, William Ladbrooke, Andrew Purves and Roger Edmundson.

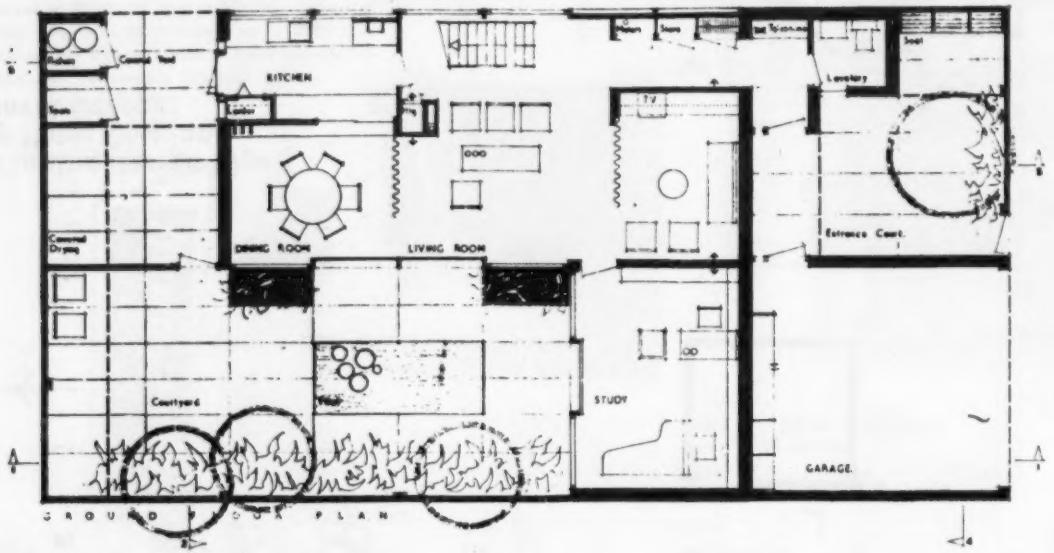
Winning design type 2, by D. Callaghan

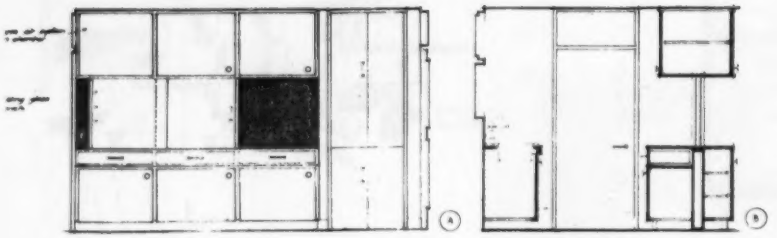
FROM THE ASSESSOR'S REPORT: *I awarded first prize to D. Callaghan principally for the interesting living spaces and their associated courtyards. From the point of entry—a spacious covered porch, also linking the garage to the front door—through the reception hall with lavatory, cloaks and telephone recess, into the main living space with dining and TV recesses, and finally to a really spacious study where not only the children, but parents, may practise the piano in comfort, for everyone, this scheme provides an imaginative setting for a full family life.*

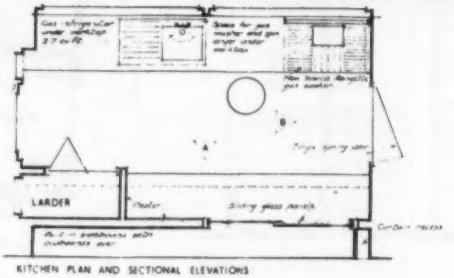
In the design these indoor spaces are pleasurably related to courtyards which might, for some, provide all the private outdoor space they desire. For this reason the layout could have been given a higher density or, alternatively, more open space for children's play.

In the conditions, the assessor set out in an imaginative way a number of trends in social habits which are creating fresh demands on domestic planning, and set these as a challenge to the ingenuity of competitors. In addition, in a lengthy and lucid report, he sets out a series of criteria which have been the basis for his assessment. These two documents together form a valuable if highly personal statement on domestic design, and make perfectly clear the broad reasons for the selection of the prizewinners. In addition, Grenfell Baines has had at his elbow the benefit of Gas Council advisers on both the technical side and kitchen planning, who have injected a useful measure of realism. On the question of gas equipment, for instance, there is the comment that insufficient thought had been given to the ancillary requirements of units, the most obvious being the question of flues. The kitchen adviser, in addition to perceptive indication of faults of detail, also managed to lay bare at least one architectural cliché. "What," she asks about one of the winning designs, "is the viewing slit? It smacks of secret police."

The main exercise, however, which seems to have excited the interest of competitors is that of making the best advantage out of limited floor area, so that the types 3 and 4, for 1,100 and 950 sq ft respectively, attracted the highest number of entries. By comparison, the entries for the single person and large house types were slightly disappointing, both in number and quality. At the same time, it is clear that there has been a tendency, probably growing out of the very nature of the competition, to start, as it were, with the gas equipment and the kitchen plan and work outwards from them, so that matters of layout, access, and the creation of a satisfactory street pattern has often been given only scant attention. There is no doubt that this state of disbalance has been encouraged by the fact that the competitors were not given a real site to tackle. This is regrettable, since the whole matter of achieving private living units within a compact, workable, and visually urban environment is one in which the greatest progress in design is still required, even though the assessor says that "the factor of housing layout has necessarily in this case been considered less important than the design of the houses themselves."



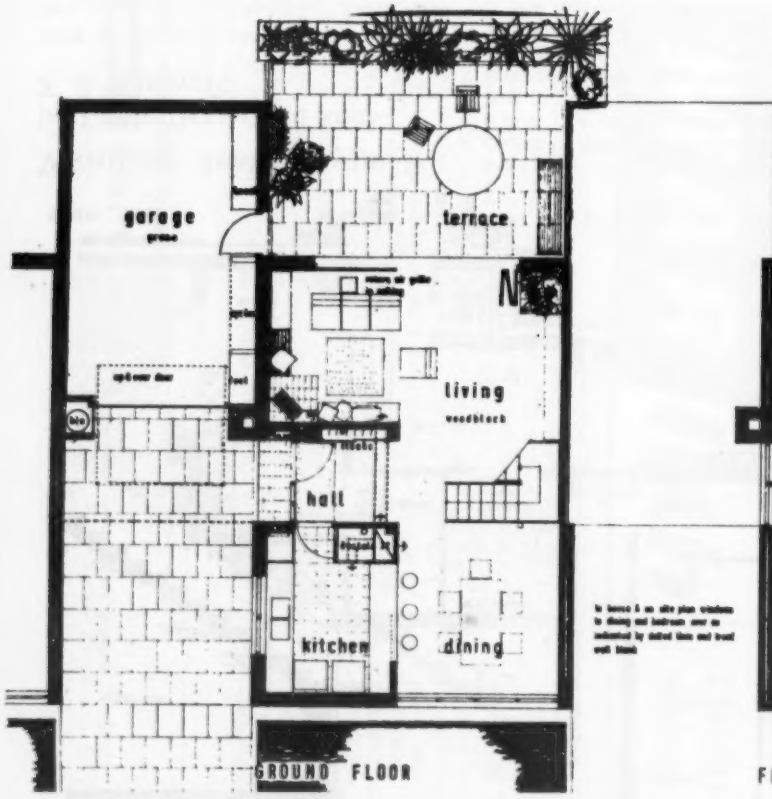


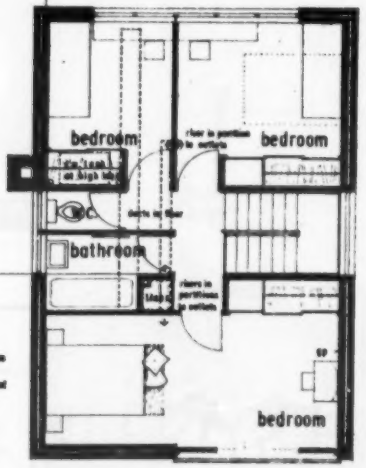


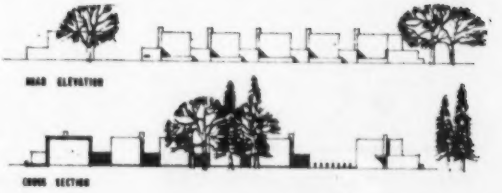
KITCHEN PLAN AND SECTIONAL ELEVATIONS

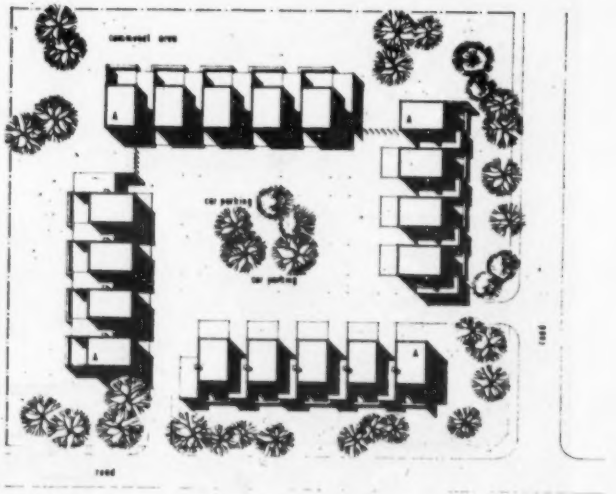
Winning design type 4 by Lydia Dransfield and F. J. Bancroft

FROM THE ASSESSOR'S REPORT: *These competitors really know how to dispose of space in small house design. The entrance is compact yet not poky, the dog-leg stair is made a feature of dividing the living and dining spaces. The living space is interesting in shape offering views as extensive as are only found in much larger houses, yet possessing its cosy corner and an attractive view on to its own partially enclosed terrace. Upstairs good bedrooms, particularly for the parents, and a separate wc are grouped about the minimum amount of landing which being at the head of a dog-leg stair with generous window will yet look spacious. The whole is a triumph of handling space, though the excellence of the design does not end here.*

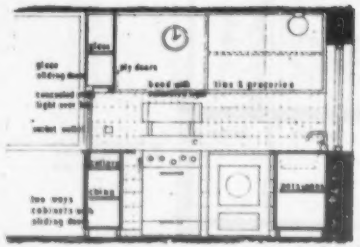


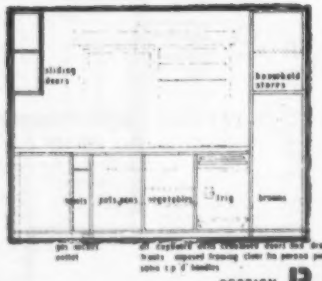


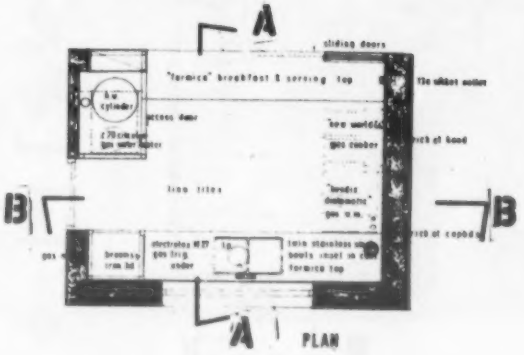


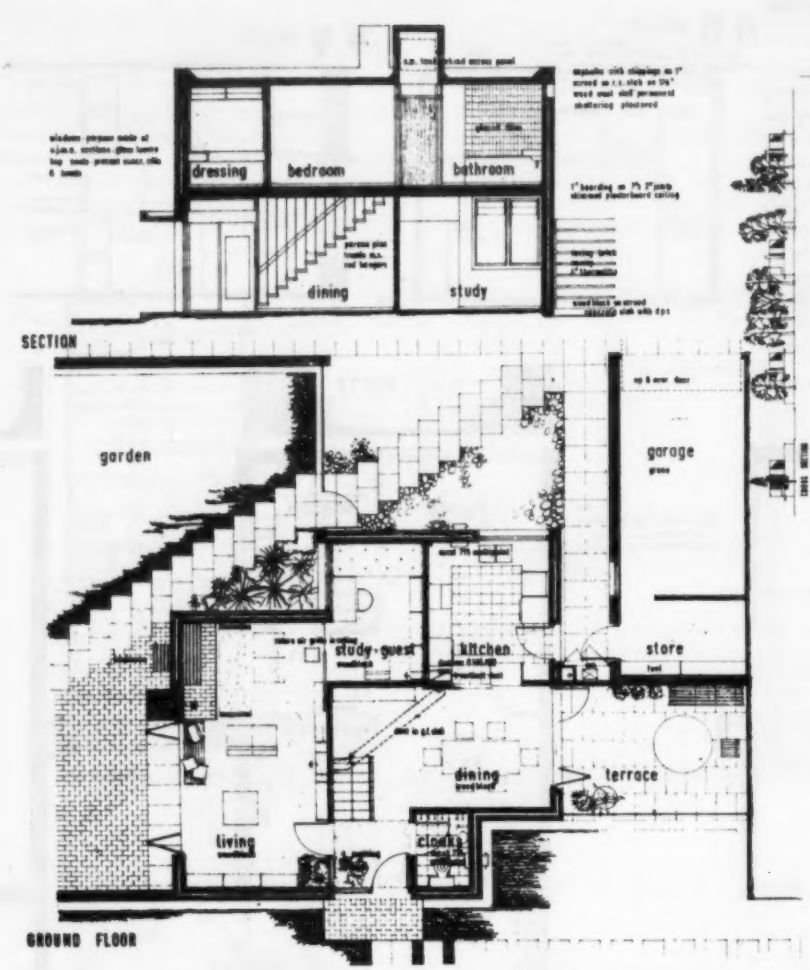


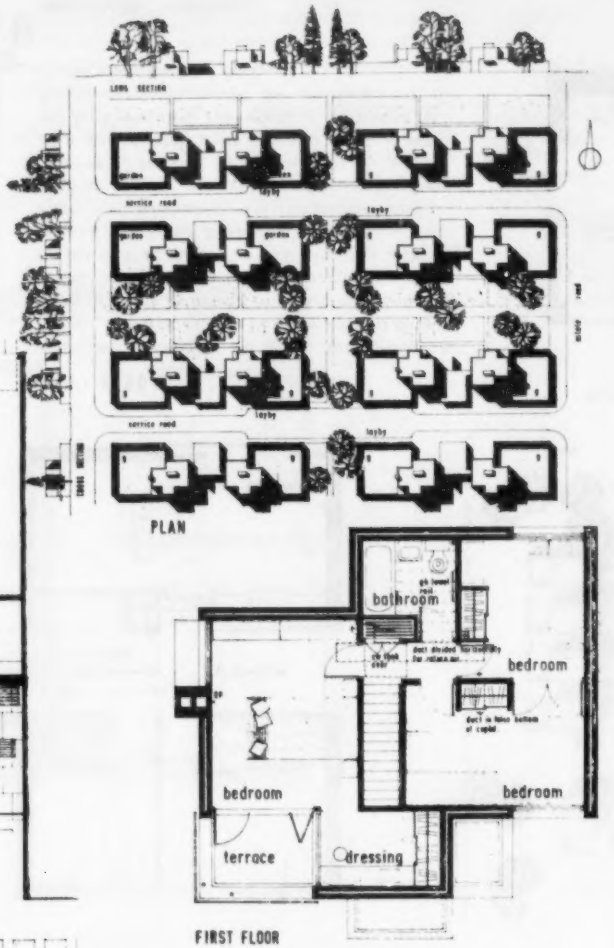
SITE LAYOUT

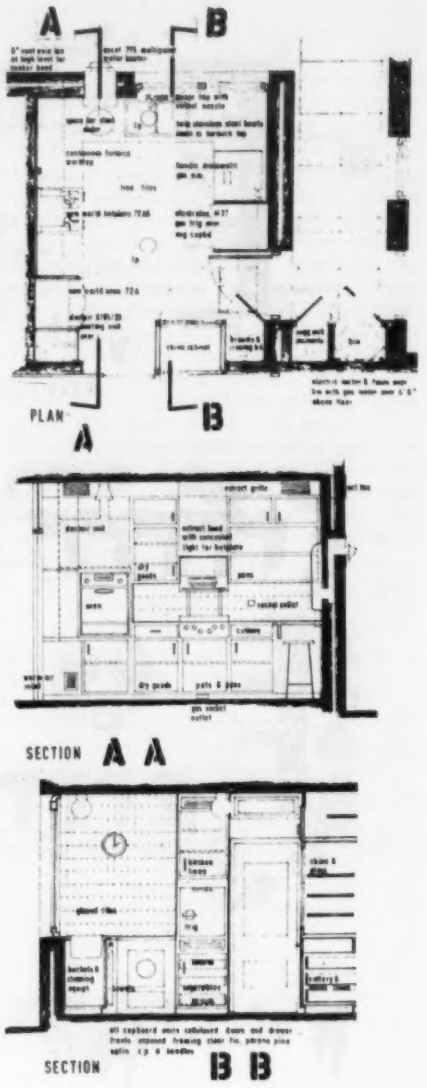

SECTION A A


SECTION B B









Winning design type 3

by Lydia Dransfield and F. J. Bancroft

FROM THE ASSESSOR'S REPORT: *The competitors have produced a detached house design very attractive in itself, but having the desired quality of being a good grouper. In their layout, like other competitors, they provide both for small private gardens and public play space for children. In my opinion it would be possible to increase the density of the layout without detriment to the house itself.*

A very spacious living room, also looking on a garden terrace, has a study-guest bedroom annex at one end which can be opened up to make a welcome addition of space for the big occasion. Parties in this house could be a joy.

A good kitchen with generous worktop and equipment space neatly links the service and living areas without in any way being sacrificed to passage-ways.

MARlith

channel reinforced wood wool building slab

Channel reinforced Marlith provides a double advantage in the construction of flat roofs. There are all the benefits of Marlith itself; intertwined wood fibre, chemically impregnated, cement bound and formed under pressure. Fire and moisture resistant, vermin and fungus proof. Can be sawn, shaped and nailed, etc. Available in a number of different finishes—open texture, special texture—for direct painting or distempering—and acousti-Marlith for effective sound proofing. The added channel reinforcement allows a greater span with less structural support, cutting time and cost of construction.

Marlith is light in weight yet has great structural strength. It is a splendid insulator against sound and heat, ideal for roofs, floors, walls and ceilings, reducing fuel consumption and costs.

Marlith can be used in perfect safety in conjunction with any other building material. It is also available with pressed metal T-sections.

technical facts:

Standard sheet size: 6'x 2'—other sizes available—in 2" and 3" thicknesses: British Standard 1105: 1951

- *Thermal Conductivity (K) 0.58 (N.P.L. Test)*
- *Thermal Resistivity (1/k) 1.72*
- *Weight Average 25 to 30 lb. per cu. ft. all thicknesses.*
- *Sound absorption of 60% over the middle cycles (N.P.L. Test)*

Make sure you get further details from

MARLEY **MARLITH DIVISION** Chantry Lane, Storrington, SUSSEX. Tel: Storrington 2322
London Showrooms: 251 Tottenham Court Road, W.1

Less frustration for every square foot of Weyroc thinking You may be leaning or sitting on Weyroc now. This versatile and amenable constructional board can core good architectural ideas. Smooth, homogeneous and waste-free, it can be jointed, bonded to films, veneers or laminates or painted with outstanding effect. Thinking Weyroc into a project can put a cutting edge on your intentions without ever blunting your pencil. For partitioning, interior walls, ceilings, floors and built-in furniture, Weyroc is a brilliantly logical choice.

Weyroc is a product of the Airscrew Company & Jicwood Limited, Weybridge, Surrey.

— think **weyroc**

AP 14

The Architects' Journal for October 11 1961

EDITORIAL

This term BASA enters its fifth academic year, but it has nowhere near completed the course on architectural education.

As is common at this time of year, the association is asking for recruits, firstly the new students entering the profession to whom it is even more important that BASA exists than to those now entering the wicked world of practice. For BASA's eventual philosophies of education will not only affect them but will be formulated by them.

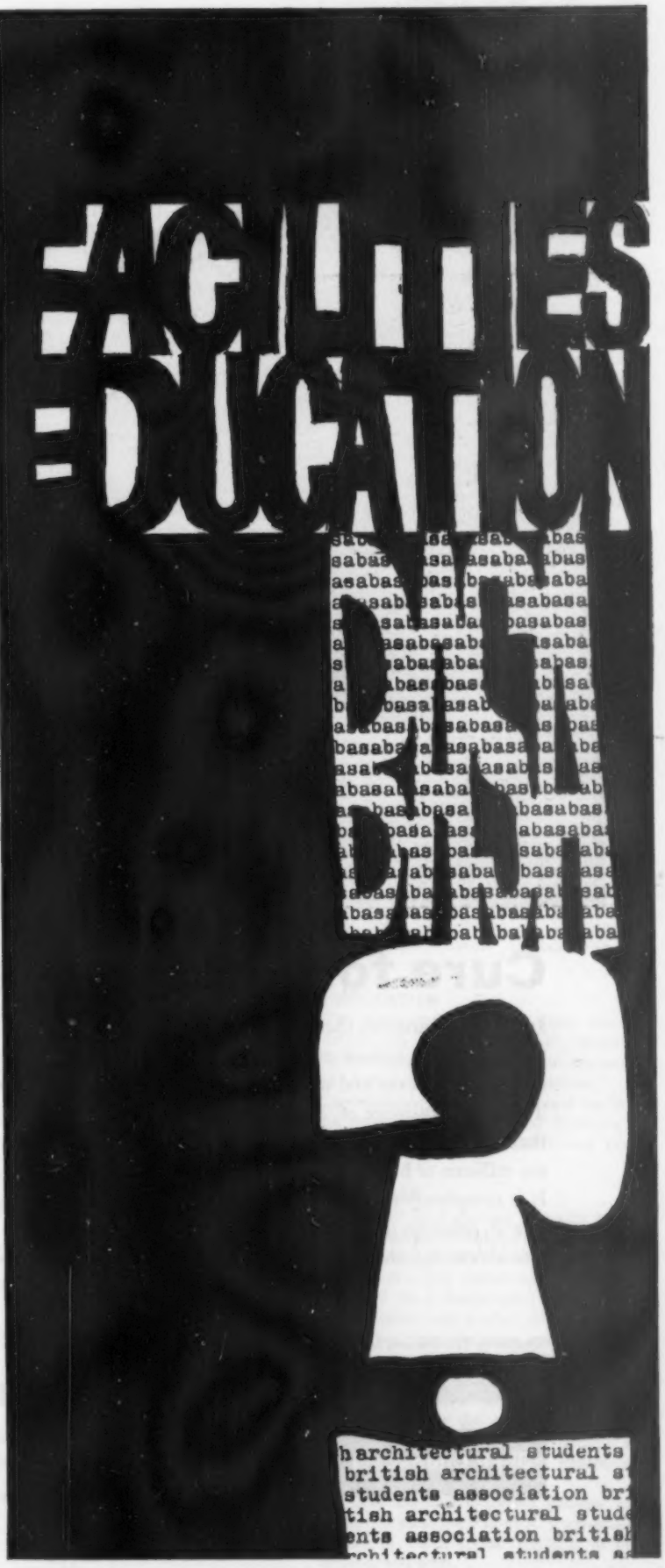
Secondly, BASA will be recruiting new student representatives. Even although the Council directly has no control over the election of these representatives, the executive must express its deepest concern on their choice.

BASA has before it much work resulting from the York Conference, but it is also in retrospect concerned with its own organisation. The executive is aware of its shortcomings and is actively revising and amending its own administration.

The executive now appeals to BASA members to be conscientious in the election of representatives, who must be aware of their duties. These are briefly as follows: to represent their groups at conferences, to vote at all general meetings, to recruit students to BASA, to present BASA with student opinions and feelings, to present BASA policies to students and to co-ordinate BASA facilities.

Student groups, whether in schools or allied societies, no longer can afford to underestimate the position of the representative. His duties are many and success depends upon his personality. Every representative is important, and it is imperative that the members realise his importance.

Only through constant contact can BASA exist. BASA does not exist for its own procreation, it grew out of students and still is "the students."



BASA

When was it formed?
What are its aims?
What can it do for me?
How is it organised?
How can I join?

BASA

was formed in 1957 by a small group of students at the Liverpool University School of Architecture who were alarmed at the isolation of the individual schools and the general inadequacy of the educational system. There are now some 2,000 members in almost all established schools of architecture, and it is hoped over the next two years to recruit further membership outside the schools as well as inside.

BASA AIMS

to represent the interests and publicise the opinions of the architectural students of the British Isles

to promote a better system of architectural education

to make students aware of their fellows in other schools and systems of education

to break down barriers between students and the profession and between schools of architecture and other fields of learning.

BASA

publishes a monthly supplement in THE ARCHITECTS' JOURNAL.

organises circulating exhibitions of student work.

provides a pool of lecturers on a nation-wide basis.

finds opportunities for vacation work abroad.

undertakes special duties at such events as the IUA Congress.

holds conferences twice yearly to formulate an advanced policy on architectural education.

represents student interests and views at the RIBA especially with respect to education.

maintains contact with central and local government and grant authorities through its affiliation to National Union of Students.

encourages members of the profession and educationists to take part in the activities of the association through its scheme of associate membership.

services are as a matter of principle made available to *all* students of architecture in Britain, irrespective of membership.
Non-members, however, must pay the full economic costs of the services, whilst members qualify for substantial subsidies.

BASA

membership costs five shillings per year for individuals with reductions of up to 40 per cent for "block" subscriptions from whole schools.

subscriptions fall due on October 1 and reductions are available on fees paid before January 1 of the following year.

associate membership costs one guinea annually.

ORGANISATION

The individual members of BASA are organised into local groups, or CONSTITUENT BODIES; these usually consist of students at a school of architecture or members of the junior section of an RIBA allied society, but any other group may apply for recognition. Each constituent body elects a voting REPRESENTATIVE and a non-voting OBSERVER. Representatives direct all BASA activities within their own constituent body, and may also undertake special responsibilities within their regional group; their duties are more fully explained on the first page of this supplement. The representatives and observers from all constituent bodies make up the COUNCIL, which is the ruling body of the association; it is the council which decides policy and elects the officers who comprise the EXECUTIVE; the executive implements BASA policy and co-ordinates the activities of all constituent bodies and regional groups.

REPRESENTATION

While maintaining close contact with the council and committees of the RIBA, and with central and local government through NUS, BASA remains fully independent and can represent the interests of architectural students without fear or partiality.

PUBLICATION

The BASA supplement appears once a month in THE ARCHITECTS' JOURNAL. It provides a forum for the exchange of student ideas, news and opinions.
Contributions, which will be paid for, will be welcomed by: The Basa Editor, c/o The Building Centre, Store Street, London, W1.

EDUCATION

One of the most pressing problems facing the architectural profession in Britain today is the inadequacy of the educational system. BASA believes that educational reform must be based on a fundamental reassessment of the theory and practice of architecture and architectural education, and not simply on the streamlining of the existing system. Through a series of three-day conferences, and with the help of leading educationists and members of the profession, BASA is formulating an "Educational Charter" as the basis for an improved system of architectural education.
All students and interested persons are invited to participate in these conferences, notices of which appear regularly in the architectural press.

FACILITIES

LECTURE POOL. This provides a pool of lecturers willing to give talks and film shows on a large variety of subjects more or less related to architecture.
The whole system is simple and inexpensive to use.

EXHIBITIONS. In addition to large exhibitions such as that mounted for the IUA Congress, circulating slide exhibitions of student work are organised on a regional basis. Student groups submit slides and written commentaries to their regional organiser, who compiles a single composite exhibition and circulates it within his region. Once the circuit has been completed, an exchange takes place with another region. In this way students are able to study the work of their fellows throughout the country.

VACATION WORK. Many students wish to work in architects' offices abroad during the summer vacation. To meet this need BASA has co-operated with IAESTE (International Association for the Exchange of Students for Technical Experience), and by the summer of 1962 it is hoped to provide vacation work on the Continent for up to fifty British students.
There is also a limited service for vacation work in this country, mainly in large offices or with public corporations.

FUTURE SERVICES. In the future BASA intends to expand its existing exhibition and lecture pool facilities and to add a general information service for architectural students. It is also hoped to provide more active support for local student organisations in the way of subsidising activities, arranging exchange visits, etc, etc.

Information about the association and its services may be obtained from the individual officers listed above or from:

**THE PERMANENT SECRETARY,
BRITISH ARCHITECTURAL
STUDENTS ASSOCIATION,
THE BUILDING CENTRE,
STORE STREET,
LONDON W1**

Regional representation

The BASA council must maintain contact with the student organisations, either in schools or allied societies. Unfortunately architectural students are dispersed throughout Britain from Aberdeen to Plymouth and it is difficult to retain constant co-operation, consequently some schools revert to introspective isolation. This is often accentuated by problems of executive administration and the conflict of personal ability against regional representation, resulting in a biased executive from one area.
BASA has been fortunate in electing its executive from students who although working in London have been trained provincially, thus achieving regional representation and administrative ease.
However the executive feel that this is not a foolproof insurance. Neither does it solve the basic aim of attempting integration and co-operation between student groups, it only fosters an exchange of personal griefs.
The executive is pursuing an active policy on regionalisation and initially will co-opt resident officers from those regions not represented.
Although the executive has direct contact with student groups, through BASA representatives, the student groups have little interrelation.
To correct this inherent fault the executive wish to stimulate regional committees, based on those existing regions used for BASA facilities, whose boundaries coincide with allied societies. Below are listed these regions.
Initially BASA will convene a meeting of student representatives in a region to be addressed by a member of the executive. These new committees will be in constant contact with the executive, who wish to insure the widest national opinion and representation, whilst maintaining personal contact through the student representatives.

Region 1. *Scotland and North.*

All Scottish Allied societies, Ulster and NAA.
Schools at Aberdeen, Dundee, Glasgow, Edinburgh, Belfast, Newcastle and Middlesbrough.

Region 2. *Yorkshire and Lancashire.*

Allied Societies—Liverpool, Manchester, York and East Yorkshire, West Yorkshire, Sheffield and South Yorkshire.
Schools at Liverpool, Manchester, Leeds, Hull, Sheffield, Huddersfield, Blackpool, Burnley, Wigan, Preston, York, Bradford, Stoke, and Blackburn.

Region 3. *Midlands.*

Allied Societies—Birmingham and Five Counties, Nottinghamshire, Derby and Lincoln, Leicestershire and Rutland.
Schools at Birmingham, Nottingham, Leicester, Coventry, Wolverhampton, Shrewsbury, Burton, Derby, Lincoln and Mansfield.

Region 4. *Wales and West.*

Allied Societies—South Wales, Wessex Federation, Devon and Cornwall.
Schools at Cardiff, Bristol, Plymouth, Cheltenham, Swansea and Exeter.

Region 5. *South.*

Allied Societies — South - east Society, Hampshire and IOW.
Schools at Canterbury, Portsmouth, Brighton, Bournemouth, Hastings, Maidstone and Southampton.

Region 6. *Home Counties and London.*

Allied Societies—Berkshire, Buckinghamshire and Oxford, East Anglian, Essex, Cambridge and Hertfordshire, Northants, Bedford and Hunts.
Schools at AA, Bartlett, Poly, Northern Poly, Hammersmith, Oxford, Southend, Cambridge, Kingston, Brixton, Luton, Norwich, Chelmsford, South-east Essex, Willesden, Northampton.

Letters

BASA IVA EXHIBITION

SIR: Rodney Mace's report on his BASA exhibition (AJ 2.8.61) is such an exception to the series of carefully considered statements by the BASA executive that he can hardly complain if he is criticised in turn.

If Mr. Mace had logically analysed and formulated his programme—the design of an exhibition of architectural drawings and models—the exhibition might have been much better and he could have avoided many of his difficulties.

The Schools were asked to prepare from scratch at six weeks' notice a literally top-class display for overseas visitors, just before the summer examinations when both students and staff are already fully occupied and at the end of the University Session when funds are inevitably almost spent.

The displays had to be designed for screens of which the lower half was useless for the display of architectural drawings without the observer being bent double, which in width would take nothing larger than an imperial sheet, and half the number of which was found to be 6 in below the rest when actually in position, making nonsense of any coherent horizontal design pattern. Mr. Mace did not explain this construction in his line drawing of the framework, nor did he say, until asked, what materials the screens and framework were to be made of, nor did he ever indicate which particular—varied—cell was allocated to each school, thus making the preparation of a key layout plan impossible.

Mr. Mace specified "cardboard to the same size as the screens" which was not a stock size and for which card could only be obtained to special order in bulk, which is impossible to piece together rigidly and keep flat, and which is too prone to damage at the corners to be transported to London by any means unless accompanied. Hardboard, however, satisfied all the requirements and the pieces which I saw were quite securely fixed, if not "pinned" at least secured by those other fixing methods, nails and screws.

The ridiculously small useful area of screen made small drawings or Photostats essential and small print was inevitable. The cost of the Manchester exhibit for this item alone was over £10 and the total cost of only 5 screens was well over £30. These and other points could have been improved by better design. The exhibition should have been designed using horizontal screens at eye level. They would not then have curled up as much, or swung loosely at the bottom, fixing would have been more secure along the long side, double elephant sheets could have been submitted and the usable area would have been doubled.

Whilst Mr. Mace is right to thank the College, and School of Art for the loan of their pieces of abstract sculpture, they would I think have been better omitted. The space which they occupied amounting to no less than half that available, would have been better used for the display of architectural models for which, incredibly, no arrangements were made whatsoever!

Mr. Mace can hardly complain of the content of the displays (though he could objectively criticise) when item 4 of his brief commenced, "The content of each school's submission is left to the discretion of the staff and students of each school." He then went on to say what "must be included" making his own instructions on this point quite ambiguous. Finally, in my opinion he was asking not to be taken seriously in setting a submission date three weeks before the opening of the Conference when it was known that the work could not be put up in any case until after the dinner in the hall only three days previously.

I agree that the standard of some displays made one ashamed of British schools and that the general level was appallingly low, but I do not think it surprising under the circumstances that only five were classed as "outstanding" and if Mr. Mace desires to improve matters, he will not do so merely by being rude.

JAMES B. HARRIS
A.R.I.B.A.

The University,
Manchester, 13

Rodney Mace replies:

I do not, in turn, intend to criticise Mr. Harris. This is not soft soaping, for he is to a certain extent correct in many of the points he makes.

I am going therefore to consider each of Mr. Harris's points in turn. The fact that I and not the BASA executive was responsible for the complete organisation and design of the exhibition may explain why my statement seemed out of line.

It remains a mystery to me (concerning the capabilities of schools to prepare their exhibition in Mr. Harris's six weeks) that some schools managed it quite well. Do curricula vary so much?

I will not comment on Mr. Harris's statement on "coherent horizontal design" as I consider this to be essentially a matter of opinion.

In the original brief I asked schools to reply as soon as possible as to whether they wished to participate or not. In spite of sending out 29 invitations in April it was only within days before the exhibition opened that I knew which schols were participating. And as I said in my previous statement some did not even get their exhibits in by the opening date. This I think will explain why I was unable to delegate a particular cell to any one school beforehand. I believe that in my correspondence with Mr. Harris at the time I made this point clear.

He mentions the difficulty of obtaining the specified cardboard: this was not peculiar to Manchester alone. Other schools encountered the same difficulty to varying degrees. But all these schools were outside the London area.

As I had enquired in London as to the availability of cardboard it was an oversight for me to assume that the cardboard I specified would be available in most major towns and cities.

Damage in transit.—Hardboard is just as prone as card to damage on corners if sent improperly packed. Surely a simple deal frame, as many schools supplied, to surround their card would not have incurred much effort or expense and would have survived any BR journey?

Hardboard did not fit all the requirements. I am sure Mr. Harris is aware of the difficulties of nailing hardboard without using expensive hardboard nails. As to screwing, this would involve drilling and all its complications. Both these methods take a considerable time.

Here perhaps I should point out that the dinner to which Mr. Harris refers was not three days beforehand but on the Friday evening, the Sunday being the Press opening. We had to clear the room of tables and chairs on the Saturday morning, so we were unable to start the erection before midday, 24 hours before the exhibition was due to open. This small amount of time was anticipated when designing the exhibition and played a major part in disciplining the conception.

I would, as would Mr. Harris, have liked to have seen more models at the exhibition but the problem with models was storage. During the period before the IUA Congress the RIBA just could not accommodate any models, there just was not any space. Accommodating the timber and the screens for two days was difficult enough. They had to be scattered about all over the building on odd landings and in various stores. This decentralisation of 300 previously sorted pieces of timber to various rooms took some three hours to reorganise. The exhibition also had to be dismantled in a short period of time and moved out of the building before the gala evening.

Concerning Mr. Harris's remarks on item 4 of my brief, I think it was quite obvious that I should have emphasised "must be included" (this applied to résumés or explanations of content) from the general lack of compliance with this request.

Yes, Mr. Harris, I was serious about the setting of the submission date three weeks before the opening. I did this in the hope of getting in all the exhibits and organising them, avoiding the pre-Congress rush at the RIBA. But as I have made clear before so few people complied that I was unable to do this organising until a day before the opening.

The use of alternate spaces for schools, the others containing either sculpture or lithographs, or perhaps nothing, was an attempt to create a break visually from one school to another, so hoping to avoid the confusion that can arise.

Perhaps by being rude I have provoked one person into making a statement

about what was in fact their own exhibition. But I am surprised in a way that it came from Manchester as Mr. Harris proved himself to have been hyper-efficient in his correspondence and in presenting an extremely well-organised display for his school. By the way the total cost of the exhibition was £160.

The design of mental health clinics

Schools interested in both (1) making programmes more realistic and (2) introducing the human element as user in school projects, will be interested in the developing interest being taken by public authorities in the work of architectural schools. Recently the National Association for Mental Health contacted BASA in connection with their Annual Conference for 1962, to be held at the London School of Economics. Since environment is of such great importance where sub-normal children are involved, the NAMH plan to hold an exhibition "concerned with the physical premises of a child guidance clinic." There are apparently very few clinics in purpose-built premises and the majority are situated in any accommodation that can be found. The NAMH are aware that people are now thinking more about the kind of building that would best suit the functions of a clinic and they wondered whether (1) any architectural students might be interested in co-operating in the preparation of the exhibition and (2) whether any students would be interested in designing an ideal clinic for a thesis and then showing it in the exhibition next year.

Arrangements are being made for the exhibition to re-use the framework of the BASA-IUA exhibition at the RIBA, and anyone interested in helping the BASA executive with the exhibition, or who would like to make a thesis project from the NAMH suggestion, should write to the BASA president, c/o The Building Centre, as soon as possible.

The following extract from the Underwood Report 1955 [the report of the committee on maladjusted children] will show how important non-architectural considerations must become when dealing with new problems of design:

Premises and equipment

A clinic needs to be adequately housed; if it is in poor or makeshift premises, it puts off parents and is tiring and distracting for the staff. It is also important for parents that a clinic should be easily accessible, preferably on a bus route. There is no reason why a new building should be needed. Indeed in some ways an old house makes a better setting, as it is easier to create there a friendly atmosphere, and it is often an advantage for a child guidance clinic to strike a different note from the other kinds of clinic and hospital departments which children may have attended previously . . . there is much to be said for proximity to other services; and in an area where the idea of a child guidance clinic is still unfamiliar, a clinic would be accepted more readily if it were situated close to a known institution such as a child welfare centre or a school clinic.

The number of consulting rooms required and the size of rooms generally will depend on the ideas of the people using them. There should be sufficient accommodation to make it possible for every member of the clinic staff, full- or part-time, to work undisturbed and have his possessions about him in safety. Other needs to be remembered are: a waiting room with space for children to play under their parents' eye: two playrooms, one with water laid on and suitable for messy play.

All rooms into which children or parents will come should be as comfortable and homely as possible. The room of every psychiatrist, educational psychologist and, where one is employed, child psychotherapist, should be provided with the kind of furniture, including a kindergarten, table and chairs, which will enable the children to feel at home, especially small children. Adequate testing materials are needed for assessing a child's abilities, attainments and personality, with books and other equipment necessary for remedial education. A wide variety of materials for play are required: usually these include stuffed and miniature toys, bricks, plasticine, drawing and painting materials, and sand trays.

Student magazines

The response to the BASA editor's appeal to school representatives to send in all available information they could provide concerning magazines or other publications has not been particularly encouraging. Apparently only six schools have student publications of any kind. The various types of magazines students may usefully produce were discussed last month by Maurice Golding. It cannot be emphasised enough that whether a magazine supports or opposes its school's educational establishment, its role in stimulating student activity is most important and can contribute to the vitality and coherence of any student organisation. The following information is intended to help and stimulate students at schools without any publication to pressurise their school society to start one.

ACCENT. Leeds College of Art

Accent is the most enterprising and professional of all architectural student publications. Its standards of presentation and contents have been consistently high since it was first published in 1959. It is so far the only AS magazine employing letterpress printing. "*Accent* accentuates ideas" (*Accent* 1 Editorial). Contents, Accent 1: Campus Planning; Alan Darie: Education of German Architects; Italian architecture at mid-century: Problems in railway carriage design: book reviews. Contents, *Accent* 2: Lynn Chadrock: Constructive use of materials; Aspects of the teaching of modern art; Felix Candela: Aspects of Bibliography: Aldous Huxley: construction in colour, time, space: book reviews.

All editions of *Accent* have received critical acclaim from *Architectural Design, Art News and Review,* and *Design.*

AGORA. Leicester School of Architecture

Agora, magazine of the Society of Architectural Students, was started in 1960. The editorial stated: "The time has come when the LSAS has felt the need to make itself heard as an intelligent thinking body," ". . . it is not a magazine purely for architects but also for other like-minded students. . . ." The first issue was printed using a photo-litho process. The College printing department made the necessary plates, but unfortunately withdrew its help for the second edition. The editorial committee decided that, since the only alternative printing technique (letterpress) which would produce a high enough production standard was too expensive, they would cease publication. J. A. Mobbs, writing on behalf of the editors, says: "We are, however, loth to capitulate entirely since we feel that a live magazine is an essential part of the life of an architectural student. We are therefore proposing a broadsheet to be published each term which could cover similar topics." Contents *Agora* 1. Thesis design for Moslem Centre: Town Planning: Poetry: Thelonius Monk: City Centres.

NEWS SHEET
Birmingham School of Architecture

As a first step towards a magazine proper, the student committee publishes a *News Sheet* once a term. This was initiated in 1960, and one is produced each term. Contents include internal news of student activities, lists of coming events, and notes on school programmes, results of sports fixtures. The *News*

Sheet has the support of Birmingham school staff. The committee is at present considering the possibility of starting a magazine, probably in conjunction with other departments at the Art College.

POLYGON. Regent Street Polytechnic
Poly students have produced six editions but have not sent in any additional information. *Polygon* 6 is reviewed elsewhere in this Supplement.

VISTA. Glasgow School of Architecture
Having been revived in 1955, *Vista*, the magazine of the students' club published three editions, only to stop again in 1957. An analysis of the causes of this failure appears in *Vista* 4, revived in 1960. In the editorial, Frank Walker says: "No doubt the real reason for this failure was its pretentious nature. *Vista* 3 . . . contained only one student article of any architectural interest." As a reaction to this analysis *Vista* 4 "is the work of Glasgow students for Glasgow students. . . ." Contents of *Vista* 4 included a professor's preface: Land o' the Leal (architectural nationalism): poetry; German expressionism: A new approach to staid design: The great McCaw: Notes on aluminium. The magazine was Gestetnered with a hand-printed cover.

OUTLET. Bartlett School, University College, London
The magazine *Outlet* was started in 1959, and three issues have so far been produced. It was founded as a constructive gesture by those concerned with the student revolt against the antiquated school methods operating then. It wished to make use of the school's position as part of UCL by enlarging the range of stimuli on the architectural student. Contents *Outlet* 1: Scandinavian architecture: notes on proportion; Newtra; Gascape: time change in housing.
Contents *Outlet* 2: Synthesis of Arts and Building; Churchill College; Kiwi on a Hot Tin Roof; Thoughts on architecture and city planning: E. Kistics: The *Lijis baan*: BASA at Bristol: Funnies and drawings.
Outlet 1 and 2 were Gestetnered and suffered considerably through unsophisticated production techniques. Both, however, were produced on a very small budget. *Outlet* 3, reviewed last month, marks the end of the magazine as an internally revolutionary publication. It succeeded in using the available resources of University College for the first time. It receives the active support and co-operation of all school staff under Professor R. Llewellyn Davies. *Outlet* 3 was produced by an offset-lithograph technique which is much more costly than Gestetner but less costly than letterpress.

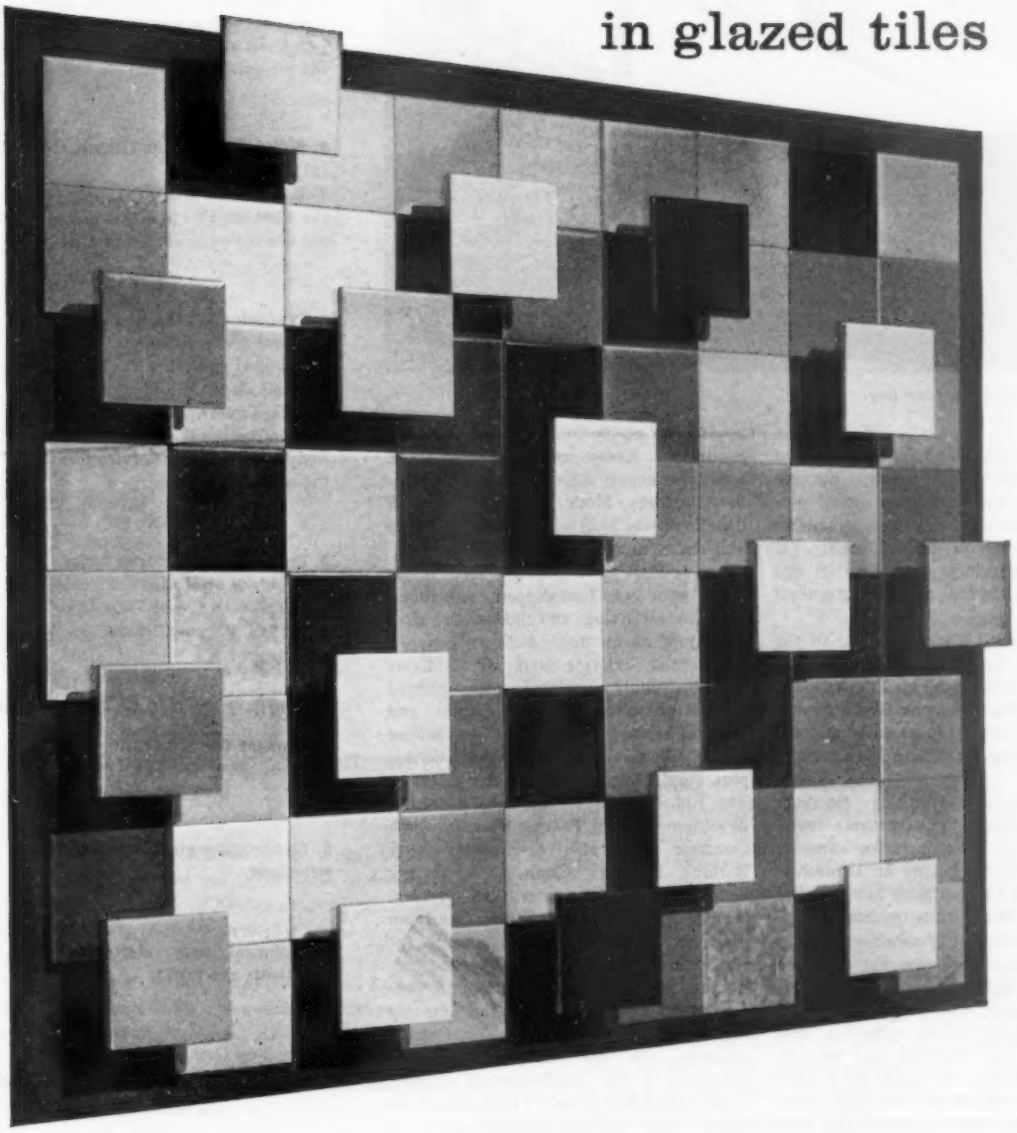
Review

Polygon
This magazine is produced by students at the Polytechnic, Regent Street School of Architecture. It is published annually, and this issue (Polygon 6) contains 10 pages of text and illustrations. Material includes four editorial contributions, ten general articles, and five sections related to the work of each year in the school. Polygon costs 5s.
Tim Street-Porter describes the now burnt-out church of St. John, Smith Square, SW1, in a subjective idiom which sounds curiously dated—the sort of thing one read in the late forties.
Denys Lasdun contributes some notes for a lecture on technology and building which are outstanding in precision and quality; the lecture itself must have been a seminal experience.
Robin Clarke, in a short piece on Technology, Italy, and National aesthetics makes the case for Neo liberty but somehow gives an impression of panic in the face of technology; taking refuge in words like 'tradition', 'architectonic', which are so conveniently ill defined.
John Spece follows with a plea for Applied Humanism. This contains some good points and a lot of rather quaint ideas, all expressed in a patchy style, eg. "Then there is the Use, which is directly tied up with the Spaces, but I think it is important to put them in this order because too many people take the use to be the only thing which governs the design of buildings" (do they?).
Chris de Peyer takes us back to the polemics of the early thirties only in reverse. The title "Technology versus Form" tells us all we need to know.
Joe Mayo contributes a long and sympathetic analysis of our present discontents. This piece, "Meeting Point," needs to be read very carefully.
Malcolm Hughes and John Ernest publish a "Discussion" which is in fact an interview in which Ernest describes his methods and materials.
Ove Arup and Partners deal very effectively with five questions.
Paul Ritter restates his views on the Human Sciences and Architecture.
The work of the school, presented year by year with very little text is decorative and relatively uninformative; apart from the fourth year where Kit Evans blows the lid off! "For BASA attacks the current teaching system . . . but for sheer apathy in the face of a real and urgent problem this year were exemplary . . . total indifference . . . All the students would say was "I think," "I feel," "I want" . . . never a fact or a commitment . . ."
The contributions are drawn almost entirely from architects or architectural students. This has produced (with one notable exception) a slightly stuffy parochial outlook but has nevertheless resulted in a magazine of urgency and drive—as is often the case with dedicated, closed societies. PETER COWAN

Term begins

CARTER

the best-known name in glazed tiles



QUICK DELIVERY SERVICE

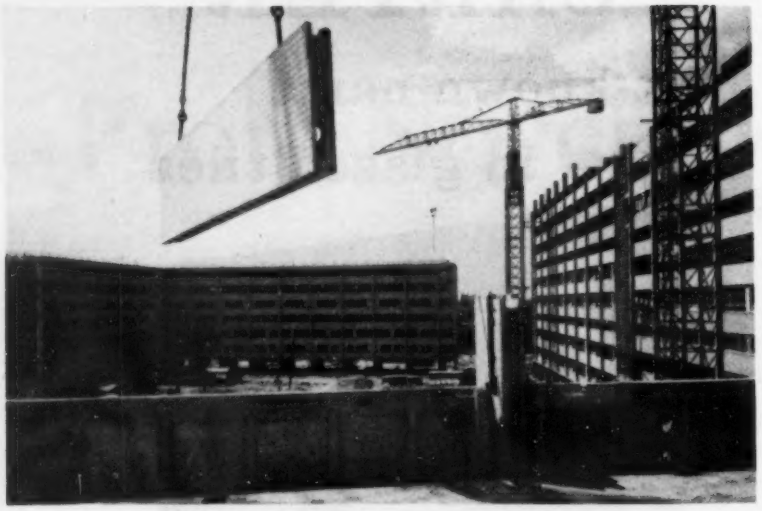
From the CARTER range of seventy-two DOLPHIN colours, sixteen* stand out as the most popular. Large stocks of these tiles are always available and an express delivery service covers the country.

**Please ask for colour card.* *Barbour Index File No. 363*

CARTER TILES LIMITED · POOLE · DORSET Poole 125

London Office & Showroom: 44 Bloomsbury Street, W.C.1 Langham 0941-2

Prefabrication at Barking



Progress in Barking flat building

Barking Borough Council's Luton Road and Mayesbrook Meadow housing scheme shows how extensive use of precasting can save money which can be spent elsewhere on better finishes. It is also the first large scale use in this country of external precast structural panels.

Only Luton Road, the first phase of the scheme is so far structurally complete. It is a cleared site on which 252 dwellings have been replaced by one 16-storey and three 7-storey slab blocks, all of cross wall construction, providing 384 flats and maisonettes.

Matthew Maybury, Barking Borough Architect, designed the structures specifically to fit the manufacturing capacity of Concrete Ltd. (Bison) at Hounslow and designated the company as structural contractors. The main precast components are three-storey columns (equivalent to the height of one flat and one maisonette), hollow floor and load-bearing wall slabs (two floors high in the maisonettes) and ribbed spandrels that run beneath the windows and provide structural stiffening. All joints are welded and grouted. Extensive use has been made of mosaic and quarry facing tiles to vary the exterior appearance of flank wall panels and spandrels. Both types of decoration were incorporated in the precasting.

Except for the solid cross wall panels of the lower floors of the 16-storey slab block, precast components are uniform and interchangeable among the various buildings.

Some economy resulted from this standardisation and from the use of factory production. Avoidance of scaffolding and speedy erection also contributed; thus the 16-storey block, incorporating 158 dwellings, was built with two tower cranes and on average 20 men in 25 weeks.

The dwellings have double-glazed, reversible windows (hot-dipped galvanised iron) in all living and bedrooms, glass fibre quilt on all floors between concrete and screed, exterior walls of all living and bedrooms insulated with quilting between exterior concrete panels and clinker block lining, floor to ceiling glazed tiling in bathrooms and kitchens plus vinyl tiling on all corridor floors.

The Luton Road scheme was a natural development from Thames View in which Concrete Ltd. also co-operated with Barking Borough Council. A further 9-storey block is being worked on now. According to Mr. K. M. Wood, Chairman of Concrete Ltd., there is room for further economies through improved precasting technique if architects and prefabricators co-operate from the first. He said, "Compared with continental examples we are by no means as advanced in the installation of services as we would like to be." The Luton Road blocks have services concentrated in a single duct rising through each column of dwellings. Mr. Wood suggested that with greater pre-planning, services could be cast into floor and wall panels. Other savings could result from casting load bearing cross walls vertically to achieve a finish that obviates plastering and from casting external panels with integral insulation on the outside instead of inside to achieve higher U value.

T. BENDIXSON

File this week

The AJ's Element File SfB (13) Retaining Structures starts on page 621. From the opposite page onwards readers should tear the pages out and file them. They are in the following sequence:

1. Structural Shells in Timber, SfB (27).**Hi**
This should be filed separately from the Element File in SfB sequence (see the SfB tables in AJ, September 27).

2. Products File: this record of new products and services on the market is arranged so that it can be torn into A6 sized sheets and filed in SfB order as a card index. For further information on the products, fill in the reply-paid Enquiry Service form at the end of this issue.

3. Building Study, second series.
Office block at Motherwell. This cost analysis and appraisal should be filed under SfB (92) UDC 725.23.

Then follows:

4. Element File SfB (13).
Containing:

5. Element Design Guide: **Retaining structures.**

6. Technical Study: **Waterproof basements and tanks.**

7. Working Detail: **Retaining wall at Park Hill, Sheffield.**

8. Information Sheets on the **types and basic forms of construction of retaining wall.**

All these last four items should be extracted together and kept intact. Next week you will receive SfB (14): Roads and pavings, general.

Correction

We apologise to readers for an error that appeared in the SfB/UDC main tables which we published in the issue of September 27. On page 479 under the heading "Insulation Products" the classification should read:

Kf4	Insulation products:	Lightweight concrete	*Only special products*
Kh1	Insulation products:	Asbestos	*Only sheets with special properties*

AJ SfB (27) Hi

Technical study UDC 69.024.4: 694·1
Roofs, structural, pitched: Shells

Structural shells in timber

1: Historic development and present economic position

The timber shell roof has become an English speciality, being, in these islands, one of the most interesting expressions of the use of timber as an engineering material. We publish this week the first of a series of articles on this subject by Hugh Tottenham and Charlotte Hume. They are, respectively, a structural engineer and an architect and together have had more practical experience in timber shells than anyone else in the country or, indeed, in the world. In this first article they describe the historic development of timber shells and the economic forces which have conditioned their use.

In the first quarter of this century some thin concrete vaults had been constructed, but these could not be termed shell structures. It was only when the mathematical analysis was sufficiently developed and the structural behaviour sufficiently understood, that shell structures could consciously be designed as such.

Early work in Russia

The basic theory for cylindrical vaults was established in the mid-1920s and it was then necessary to investigate the potentialities of various building materials in order to assess their suitability in this form of construction. In Germany engineers concentrated on the newest and then most exciting material, namely reinforced concrete. In Russia, however, the acute steel shortage and vast forest reserves influenced engineers to turn their attention to timber. As early as 1929 cylindrical shells of considerable span were being constructed and by 1931 instructions for the design of timber barrel vaults were issued.

The principal difficulties in using timber are:

(a) that it is supplied in relatively small sections and short lengths, and

(b) that its strength properties are very directional, as timber has considerable strength only along the grain.

In a cylindrical vault the forces are distributed in various directions in different parts of the roof. It is therefore necessary to have several layers of boards with the grain running in different directions in each layer. To achieve sufficient rigidity in the shell one could either provide a large number of layers or stiffen the membrane with a series of ribs. The second method is obviously the more economical and this was realised by the designers of the timber barrels constructed in Russia 30 years ago.

Amongst these the shell roof of the glass factory at Gorki is a good example. The span of this shell was 140 ft and the width approximately 70 ft; the construction consisted of two layers of 1 in boarding, laid diagonally on a series of 7 in by 5 in stiffening beams spaced at about 2 ft centres. Beams and shell were simply nailed and there is no evidence that any adhesive was used.

It was found that with the earliest cylindrical shells the construction cost was rather excessive, outweighing by far the cost of materials; the main item of the constructional cost being the very complicated method of scaffolding employed. It is interesting to note, however, that nevertheless cost of the roof of the above factory proved to be more than 40 per cent less than a reinforced concrete shell and 5 per cent less than any other form of timber construction. After some investigation into simplifying the methods for erection, a system of prefabrication was evolved and tried

Fig 1 The dome of the assembly hall at Rangoon University

out on some aircraft hangars in 1933. In one particular case the structure consisted of 12 elliptical timber vaults, each approximately 86 ft by 37 ft. Each bay was constructed completely on the ground and then lifted into position by means of 4 winches, one at each corner. This technique could only be used because of the very low weight of timber. Each shell bay complete with gable beam, weighed only 12 tons. A reinforced concrete shell of comparable size would weigh in the region of 60 tons.

In 1935 a chemical factory, also in the USSR was roofed with a ribbed cylindrical timber shell of 330 ft span and 95 ft width. This, if still in existence, is undoubtedly the largest cylindrical shell and, until recently, the largest shell of any type yet built.

Advent of lamination

All the examples of timber shell roofs erected in the years prior to World War II, relied solely on nails as means of fastening and connecting the boards; the laminating techniques being still in their infancy and the available adhesives somewhat unreliable. On account of this these structures, although daring at the time, would by present day standards be considered rather clumsy and uneconomical.

During the last war great advances were made in the

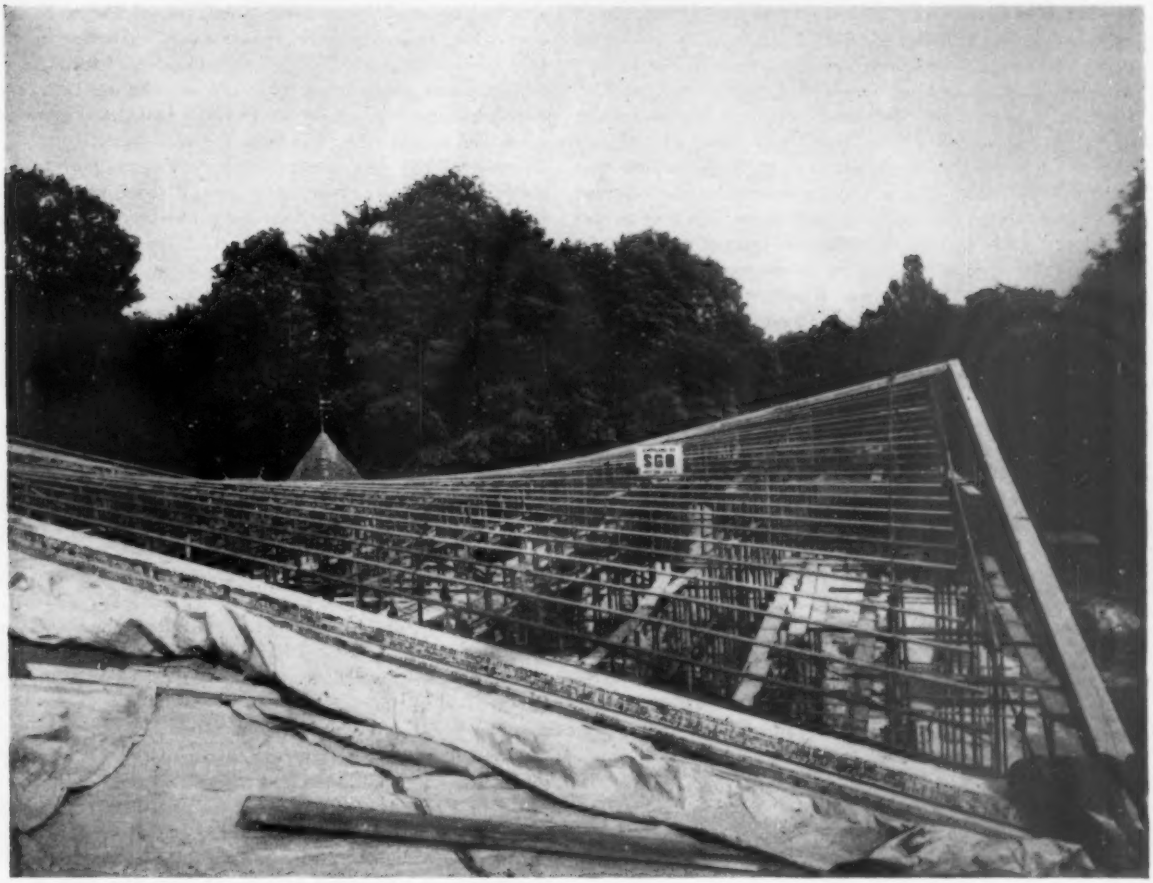


Fig 2 Scaffolding for hyperbolic paraboloid roof of carpet factory at Wilton

improvement and production of adhesives and in the immediate post-war years this knowledge was applied to the development of timber shell construction. Yet in 1945 models of north-light cylindrical timber shells were fabricated and tested in Switzerland which did not include any laminated construction and although structurally the tests were extremely successful, economically they did not appear to have been so. The barrels had a span of 23 ft and a radius of 10 ft and were made up of 4 layers of $\frac{3}{8}$ in thick boards, the top and bottom layer running the direction of the span, the intermediate two running diagonally at 45 deg to each other. Two years later the same structural form was used to roof a large brick factory in Switzerland, but this time the construction was quite different. The north-light barrels, constructed in accordance with a system of prefabrication patented by a Swiss engineer, consisted basically of laminated grids forming a curved shell unit, a flat gable end, gutter and north-light units. As far as is known this type of construction was applied to only two buildings with 65 ft and 80 ft span respectively.

First timber dome

All the timber shell roofs built before 1954 were vault-shaped, the first dome-like structure, ie translational shell, roofed the Assembly Hall at Rangoon University. (Architects: Raglan Squire and Partners, consultant engineer:

Ove Arup and Partners.) This shell had steel ties and steel edge beams and a timber membrane made up of five layers of teak boarding, which were nailed and glued (Fig 1).

At about the same time the first saddle-shaped shell, a hyperbolic paraboloid, was constructed on the other side of the Atlantic, in the US. There again steel edge beams were used bolted through the timber shell, which was built up of 3 layers of $\frac{3}{4}$ in t and g boards laid in different directions and simply nailed to each other. The roof covers an area of 4,000 sq ft with a diagonal span of nearly 90 ft. The thrust of the shell was taken on two reinforced concrete buttresses at the low corners which were tied together with three 1 in diameter post-tensioned cables housed in an underground beam.

In 1956 the Timber Development Association instigated research and development work on timber shells and in the following year an opportunity occurred to put into practice some new ideas on the extension of the Royal Wilton Carpet Factory (see Fig 2 and AJ 8.2.57). This created a great deal of interest in this country and stimulated a rapid development of this form of construction. Since then numerous timber shells have been constructed in Great Britain, not only hyperbolic paraboloids as at Wilton, but also many different forms of dome-shaped, vault-shaped and saddle-shaped shells and some of these will be illustrated in a later article. No comparable development has taken place in any other country. So far is is known, there are only three examples of timber shell roofs elsewhere, all of them hyperbolic paraboloids.

More recent foreign examples

The first of the three foreign examples is the Information Office at Brussels built in 1958 for the International Exhibition. Originally the roof was designed as a suspended roof with suspended joists and timber edge beams, but a construction in the form of a hyperbolic paraboloid proved to be more economical. The shell is not a complete hyperbolic paraboloid, with the consequence that the edge beams are curved and not straight. The roof covers an area of 4,300 sq ft and consists of laminated edge beams and a shell membrane of three layers of $\frac{7}{8}$ in boarding glued together over the whole surface. Extra insulation was provided in the form of foam plastic over the shell and a false ceiling was suspended underneath. The shell is supported on two reinforced concrete buttresses at the two low points connected by a steel tie under the floor. The metal mullions were designed to stabilise the shell, which is not symmetrical.

The roof of the Caltex Fuel Station at Utrecht, built in 1959, is of special interest, as it is the only example of timber hyperbolic paraboloid umbrellas. The two sections of the roof are each supported on a tubular steel column and each consists of four shells. Of these eight shells, four are 19 ft 8 in by 13 ft 5 in and the other four 9 ft 10 in by 13 ft 5 in on plan. The shells were entirely prefabricated in the shop and are of 6 in by 6 in laminated edge beams and three layer thick shell membrane. As the structure is not symmetrical, a tie-rod between the columns was necessary and overhead struts are provided for lateral stability.

The third foreign example (though it was designed in this country) is the roof over the new Examination Hall for the University of Khartoum, now under construction. This consists again of eight hyperbolic paraboloid shells, the four larger ones over the main part of the structure and two over each annexe. Each shell forms an irregular quadrilateral with two adjacent angles of 90 deg. The four main shells thus form an irregular hexagon on plan, each of the smaller paired shells an irregular pentagon. The total area covered is approximately 10,000 sq ft excluding a 4-ft cantilever to all sides. The shell membrane is of three layers of $\frac{3}{4}$-in t and g mahogany boarding on reinforced concrete edge beams; the whole structure being nailed and screwed, no skilled labour being available for laminating.

In view of the very rapid recent development of timber shells in this country and the great "demand" for this type of structure, it is interesting to speculate why the earlier attempts did not succeed in creating a similar interest.

The shells constructed in Russia before the last war relied entirely on nails and bolts for connecting and fastening pieces of timber; load-bearing connections of this form are uneconomical and lead to the use of more material than is structurally necessary. The resulting shell structures contained, therefore, a considerable quantity of material and labour, which were at the time in plentiful supply in the USSR. Under different economic conditions, such as existed in the more industrialised countries of Central and Western Europe, these structures would have been exceedingly expensive.

With the development of glued laminated construction it was possible to reduce the quantity of material, but as its manufacture requires skill and controlled conditions, it proves costly unless mass-produced. It is probable that the high cost of laminating and the high proportion of laminated timber used in the Swiss system referred to earlier made it uneconomical.

In the shell roofs constructed in this country, care has been taken to ensure that laminated timber was used only where sufficient material could be saved to justify the extra cost. Elsewhere boarding was used, either nailed or glued and nailed, this being the cheapest form of construction. By this means it was found possible to keep the cost of the structure to a minimum and to make timber shells an economic proposition.

Since concrete is the most widely used material for shell construction, it is reasonable to compare its use with that of timber. There are five aspects: that of relative strength and ease of construction, durability, thermal insulation, fire hazard and cost. We will consider each of these in turn.

Strength and ease of construction

From the constructional point of view the main advantages of timber over reinforced concrete are

(a) timber is very light in weight, considering its strength;
(b) timber does not require any shuttering and needs less scaffolding;
(c) timber does not need to be supported after completion of construction, concrete may require up to three or four weeks' curing;
(d) timber being light in weight requires a much lighter supporting structure.

Thus it can be seen that the saving in time and material can be quite considerable with a timber shell.

It is not generally realised that the strength properties of timber are comparable with those of concrete and that the working stresses of both these materials are virtually the same. The weight of timber, however, is about 30 lb per cu ft compared with 150 lb per cu ft for concrete. This means that a timber structure will weigh only one fifth of a concrete structure of equivalent strength. This low weight of timber leads to another advantage, namely, the self-weight of a large span structure such as a shell roof constitutes a considerable part of the design load and thus the lightness of the material reduces the loads to be carried on the supporting members to a proportional extent, making

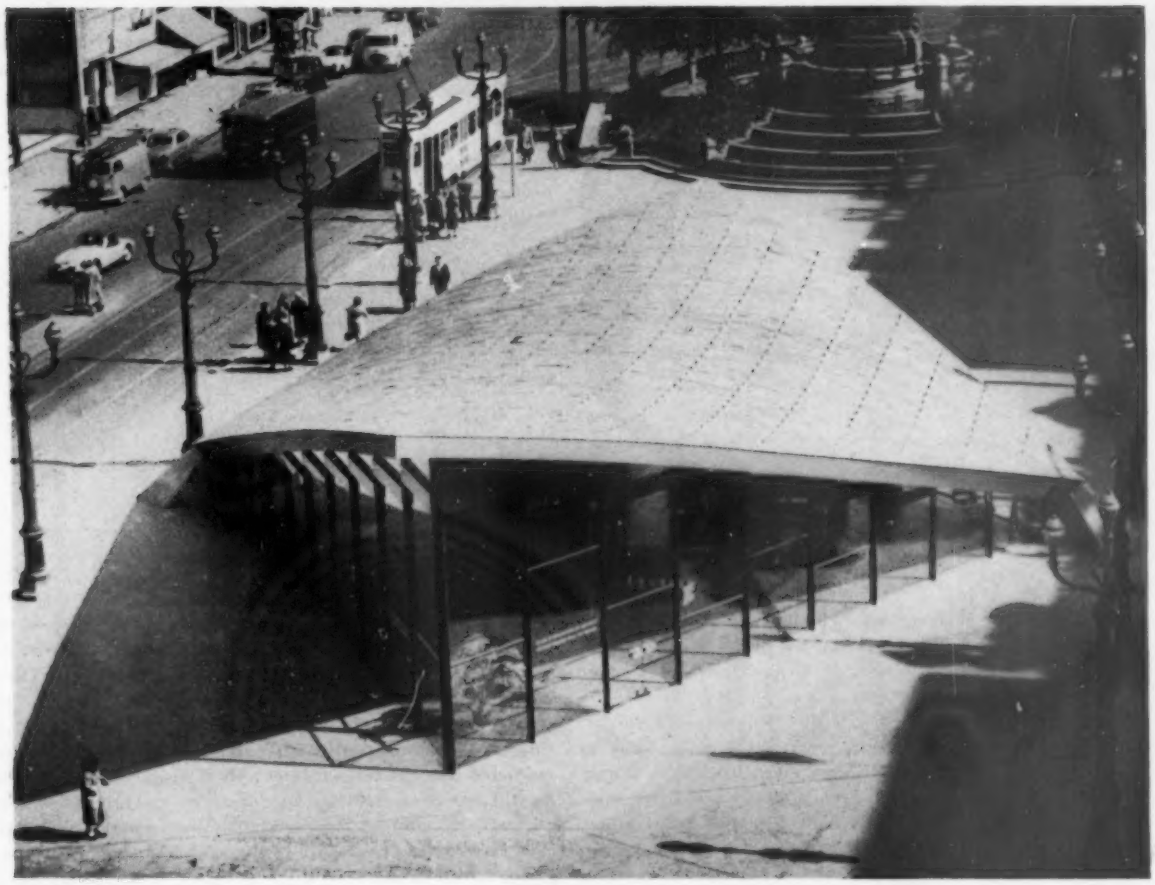


Fig 3 Hyperbolic paraboloid roof over Information Office, Brussels

the complete structure much more economical. This in turn reflects also on the foundations of the building which can, therefore, be of lighter construction and consequently cheaper.

The principal disadvantage of timber in shell construction is the fact that the material is produced in boards and, unlike reinforced concrete, cannot be moulded into any shape; thus, unless extra expense is incurred, the radius of curvature must be sufficiently large compared with the board thickness to enable the surface to be formed without overstressing the timber and the surface must be sufficiently flat in one direction to enable the boards to be laid along one another without large gaps appearing between them.

In practice both these requirements are satisfied provided the shell is shallow, that is, that the height of the shell is small compared with the span. Reasonable figures for a timber shell are:

ratio of curvature to thickness of boards more than 500:1, and ratio of height to span less than 1:4.

The lightness in weight of a timber shell is of particular importance with reference to prefabrication. The additional weight of a concrete shell when preformed limits the size of the precast sections for easy transport and handling; but with timber it is not at all difficult to fabricate the complete shell on the ground or even in the shop. In the

TABLE 1

Required thickness of timber shell (inches)	*U value*	*Internal temperature (deg F)*
2½	0·3	70
2	0·34	65
1½	0·4	60
1¼	0·48	55
1	0·6	50
¾	0·8	45

Left, Table 1 Relation of timber shell thickness to internal temperature calculated according to the methods laid down in the Thermal Insulation (Industrial Buildings) Act

Below, Table 2 U values for different shell thicknesses and roof coverings.

TABLE 2

Construction	*Covering*	*Insulation*	*U value*
2 layers ¾in t and g boarding	2 layers bitumen roofing felt	None	0·36
2 layers ¾in t and g boarding	2 layers bitumen roofing felt	½in insulation board	0·25
2 layers ¾in t and g boarding	2 layers bitumen roofing felt	¾in insulation board	0·21
3 layers ¾in t and g boarding	2 layers bitumen roofing felt	None	0·28
3 layers ¾in t and g boarding	2 layers bitumen roofing felt	½in insulation board	0·20
3 layers ¾in t and g boarding	2 layers bitumen roofing felt	¾in insulation board	0·18

first instance the shell can easily be hoisted in position and, in the second, the limiting factor would be the horizontal rather than the vertical moving of the shell.

Durability and maintenance

Provided a timber structure is protected against decay in the first instance and is then looked after, it will last almost indefinitely. In practice, those parts of a timber structure which are either exposed to the weather or come into contact with concrete or brickwork should be pressure impregnated. If this is done (it costs 10 per cent of the cost of the raw material treated) and provided the roof coverings are kept intact, the only other maintenance charge is for the renewal of internal finishes.

Thermal insulation

The thermal conductivity of concrete varies between 7.0 and 11.0, but that of softwood is 0.8. This gives timber a very great advantage and it is interesting to notice, for instance, that a 2 in timber shell covered with felt, giving a U value of 0.3, is usually sufficient to meet the requirements of the Thermal Insulation (Industrial Buildings) Act. Details of the insulation properties of different thicknesses of shell are given in Tables 1 and 2 above.

Fire hazard

Reinforced concrete is incombustible, timber is not. But timber shells will only be used for roofs. The only regulations requiring a specific degree of fire protection in roofs are those contained in the Thermal Insulation (Industrial Buildings) Act, already mentioned. These regulations, however, only apply to *insulation* when used in the roof and, as we have seen, a timber shell can normally provide sufficient insulation in the structure without the need to add insulants. Nevertheless, on the assumption that the Act does apply, the under surface of the timber can be treated with a fire retardant paint to give a spread of flame classification of Class 1 as defined in BS 476.

By-law requirements for roofs relate to the *roof covering* and require that this should be incombustible. All metals meet this requirement (copper, lead, zinc, aluminium) and so does asbestos based roofing felt to BS 747. Other coverings which do as much are mastic asphalt and organic based roofing felt laid on or overlaid with ½ in of incombustible material.

Apart from the surface resistance there is the question of the fire resistance of the structure as a whole. Little is as yet known of the behaviour of timber shells under fire and how best to ensure against an early collapse of the structure itself. From known facts of the behaviour of timber, as distinct from timber shells, under fire, it can be predicted that the resistance of a shell incorporating a metal tie will depend on the resistance of the tie and it is, therefore, advisable to protect the metal members against fire and thus increase the resistance of the complete shell structure. Hence it can be assumed that the extent to which a timber shell resists collapse under fire will also depend on the type of shell and its particular method of design.

Cost

Timber shell roofs are still a new type of construction and although quite a number have been built in the last few years, it is very difficult to give any definite indication of the cost. It is, however, noticeable from the wide range of prices quoted on several jobs that the contractors visualise a more complicated erection technique than is actually required and estimates are in many cases quite unrealistic. Nevertheless it has been definitely established that a timber shell would in every case be cheaper than a reinforced concrete shell of comparable size. In many instances the saving has been quite considerable.

It is interesting to note that some of the best work and for the most reasonable prices has been carried out by firms who are not specialists in timber engineering; this and the example of a barrel vault built by school boys illustrate the real simplicity of timber shell roof construction. It must, however, be emphasised that detailed instructions and thorough supervision at all stages must always be given, especially in cases where the contractor has had no previous experience.

An analysis of the cost data available shows that it is reasonable to expect to have a timber shell roof erected for approximately 11s to 15s per ft super, exclusive of finishes. This is for a single unit and, where repetition is envisaged, the price will be reduced in relation to the amount of repetitive use of jig, scaffolding, etc. Thus, where a large number of identical units are required, the figure quoted above may be reduced by as much as 30 per cent, which is very relevant to industrial buildings where economy is of primary importance.

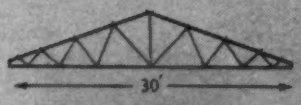
Drum series. A range of 25 pendant, wall and ceiling units, from 5" to 15" in diameter, available in 6 colours.
Its salient feature is the translucent opal precision moulded louvre.
Designed by Paul Boissevain.

MA LIGHTING

Merchant Adventurers Limited

Feltham, Middlesex. Telephone FEL 3686
Full information is given in publication D 4

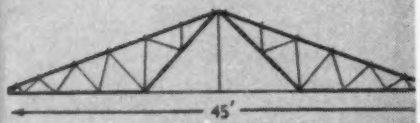
ORDER BY CATALOGUE NUMBER
FROM A RANGE OF EIGHT TRUSSES
WITH SPANS FROM 30'-80'

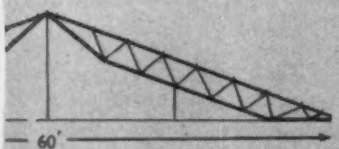


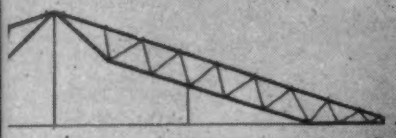
NOW – *Flexible*

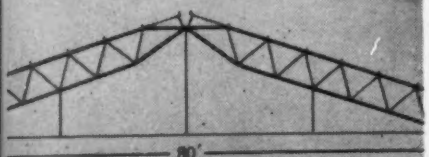
PITCHED ROOF BUILDING CONSTRUCTION WITH

STANDARD COMPONENTS









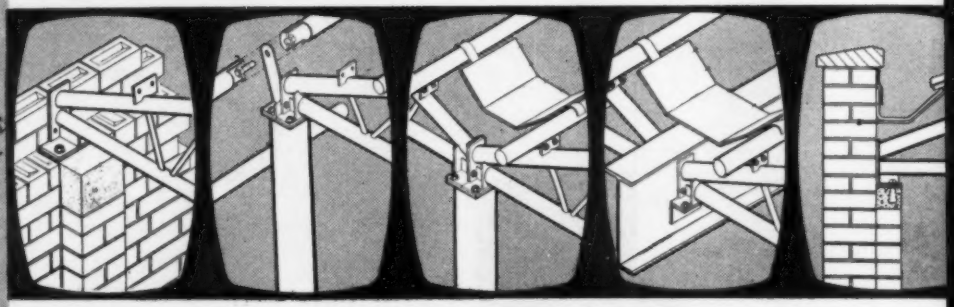
Tubewrights components have not only the advantages of standardisation—reduced cost and ready availability—but also permit complete flexibility in the design of pitched roof buildings. The components, the range of which comprises trusses up to 80′ in span, columns, purlins, sheeting rails and the Umbrella Building Mk II, require no modification in order to accommodate architectural features.

FASTER DELIVERY, LOWER COST!

Unique line-production methods introduced by Tubewrights ensure that the components are available on short delivery at substantially lower cost. Tubewrights components, which conform to the latest British Standards, incorporate all the additional advantages of tubular engineering, including lightness, ease of erection and reduced maintenance.

DESIGNED TO ACCOMMODATE ARCHITECTURAL FEATURES

Truss landing on brick pier | Truss landing on eaves column | Truss landing on valley columns with valley gutter | Truss landing on valley girder with valley gutter | Truss landing on boundary wall with gutter



For full details of Standard Components write to Tubewrights. For information on complete buildings, write to any of the following:

Derby B. D. Steel Structures Ltd., Bateman Street.

Southampton Dibben Structural Engineers Ltd., Lower William Street, Northam.

Essex Finch Engineering Ltd., Belvedere Works, Barkingside.

Newcastle Northern Tubular Buildings Ltd., 45 Close, Newcastle-upon-Tyne 1.

Birmingham Sherbourne Engineering Ltd., 1 Sherbourne Road, Acocks Green.

Bristol Tube Construction (Bristol) Ltd., 33-35 Victoria Street, Bristol 1.

CREATIVE TUBULAR ENGINEERING BY

TUBEWRIGHTS

WHO BEGAN IT ALL!

Tubewrights Limited, Kirkby Industrial Estate, Liverpool. Telephone: Simonswood 2882.
25 Buckingham Gate, London, S.W.1. Telephone: VICtoria 9941.
A subsidiary of Stewarts and Lloyds Ltd.

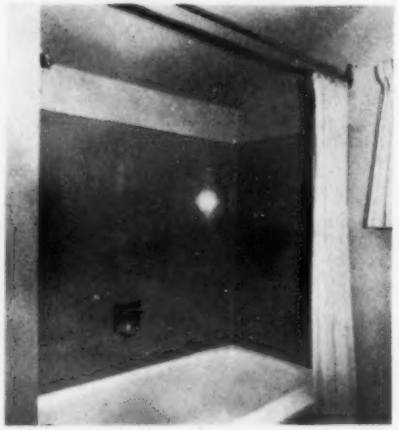
SfB (Ri4)

UDC 691·116

Decorative laminates

Arborite, a melamine faced decorative laminate produced in Canada, is now being marketed in this country in a wide range of sizes and thicknesses, and in a total of some 200 colours and patterns. The manufacturers suggest that 1/16 in thickness is the most suitable for horizontal surfaces, but a special thin grade is produced for vertical veneer work. There is also a bending grade which will take an outside radius as low as 3 in without heat, and a post-forming version which can be bent down to an internal radius of ¾ in. Standard sheets at 4 ft wide and 8 ft or 10 ft long, but there is a full range from 3 by 2 up to a maximum of 12 ft by 5 ft which the makers believe to be the largest in the world. They may well be right. The photograph on the right shows a bath recess lining carried out with a sheet of this size in a post forming grade. Available in the same patterns are strips to cover visible edges and extruded aluminium corner and dividing sections covered with a thin layer of Arborite.

The Arborite Co (UK) Ltd, Bilton House, Uxbridge Road, London, W5.



Arborite-lined bath recess

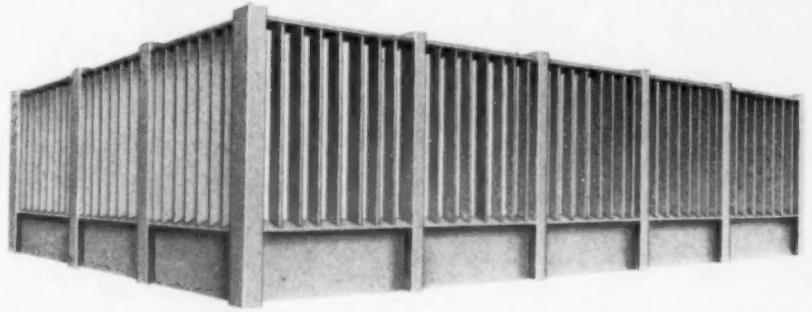
SfB (15)

UDC 69·028·8

Concrete fencing

Open concrete fencing in panels 4 ft wide is now being made by Sectional Concrete Buildings Ltd. The 4 by 4 in posts are set 18 in into the ground to give maximum stability, and are slotted to take the panels, so that no bolting is needed. Standard height is 65 in and the price is £4 12s for the first section and £3 17s for all further units, the price including delivery.

Sectional Concrete Buildings Ltd, Station Works, Ferry Compton, Leamington Spa, Warwickshire.



Fencing by sectional concrete

SfB (52) In6

UDC 696·121

Plastics rainwater goods

In the AJ of August 23 I suggested there should be a minimum standard for plastics rainwater goods, and that it would be a very bad thing if they were to be made too light and gave trouble in use. Marley have now written, more or less agreeing with me, and quoting the results of some tests which they carried out on their 0.040-in-thick gutter, to see how it might stand up to 18 in of compacted snow. A 12-ft length of gutter was supported on brackets at approximately 3-ft centres, and loaded with dry sand to give a total of 18 lb per foot run. At the end of 14 days the deflection on the 3-ft span was ¼ in, or a little more than three times the deflection of the heavyweight 0.090-in-thick gutter. On removal of the load both gutters returned to within $\frac{1}{32}$ in of the original line. The tests were carried out at a room temperature which varied between 65 and 82 deg F, whereas with snow at freezing point the gutters would be stiffer. Gutter joints were made with an expanded neoprene gasket, and were watertight after the experiment. This seems to me a fairly tough test. How many times in a decade this country gets 18 in of snow I do not pretend to know, but the figures suggest that ordinary rainwater loads are not going to give much of a deflection.

The Marley Tile Co Ltd, Riverhead, Sevenoaks, Kent.

Products File by Brian Grant

As readers can see, The Industry has been replaced by Products File. Each item occupies a quarter page (ie A6 size) and is given an SfB number so that readers may cut the page up and file each under its right number if they so wish. Alternatively, they may tear out the whole page and file all Products File pages together. In either event they will be relieved to know that Products File pages will never back on to editorial matter. Readers wanting more information from manufacturers may turn to the back page where they will find Products File items included in the lists of advertisers. The reader, therefore, has merely to tick the manufacturer's name, add his own name and address, detach the page and post it to the Journal, using the reply paid folder.

SfB (Rn6)

Glass fibre panelling

A firm near Newhaven is now producing laminated glass fibre and polyester resin panels in a range of colours and with a reeded finish, either concave or convex, with the pattern on one or both sides of the sheet. They have recently been used for balcony fronts in a block of flats in Hove, where the double sided pattern cost about 7s 6d a square foot. Single sided is approximately half this, or 4s 6d bonded to a hardboard backing. The material is light in weight and should resist the weather well.

Glass Fibre Developments Ltd, 79 South Coast Rd, Peacehaven, Newhaven, Sussex.

Glass fibre panels on balconies

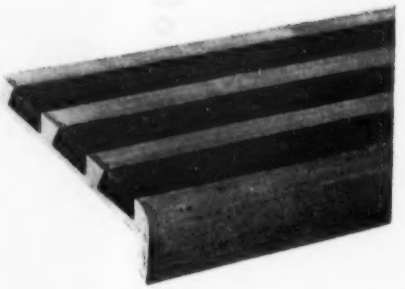
SfB (44) Hd4

UDC 69·026·35

Non-slip stair treads

The photograph on the right shows a part section through the IFT non-slip stair tread. It is made up from an aluminium extrusion with green inserts which are quite rigid and thus unlikely to work out in use. Water and oil have no effect on the non-slip filler, so that the treads are suitable for use in factories. Dimensions are 3½ in from front to back, with a nosing depth of ⅞ in. Price, drilled for fixing, is 11s 6d per foot run.

Industrial Floors & Treatments Ltd, 11 Upper Park Road, Bromley, Kent.



SfB (20) Hd6

UDC 693·1

Cramps for masonry

A recent publication from the Delta Metal Company sets out the advantages of Delta Bronze No 4 as a material for cramps and dowels in stonework. Most architects who have had experience with wrought iron cramps should know them already, but it is always interesting to see photographs of recently executed work, as they give a very clear idea of the sort of thing that can be done. The material has a tensile strength about the same as mild steel, and will not stain stonework, while at the same time it is relatively easy to forge on site, though cramps are normally made to drawing. For fixing wall cladding to a concrete frame the company produces a dovetail section slot which is fixed in position before pouring and left in when the shuttering is struck, so that anchors of various types can be used to hold such material as brick, stone or terracotta block. There are also extruded unequal channels for supporting the horizontal runs of slab facings.

The Delta Metal Co Ltd, Tunnel Avenue, London SE10.

SfB (63)

UDC 628·973

Shop lighting

The GEC has recently introduced a fluorescent lighting fitting intended for shops. It contains four 80 watt tubes and has a Perspex diffuser with black ends. The fitting is 62 in long and 21 in wide, and is designed for pendant mounting, though it can be fixed within 4 in of the ceiling, the minimum distance needed for taking off the diffuser.

The General Electric Co Ltd, Magnet House, Kingsway, London WC2.

GEC light fitting

AJ SfB (92)

Building Study, 2nd series UDC 725·23 Offices

Office Block at Motherwell

From the north-west, the building by a simple statement both of form and colour makes a considerable impact on the gloom and poverty of the local architectural scene. The ground floor is occasionally recessed to varying degrees with entrances and exits fitted in wherever needed between the widely spaced columns supporting the upper floors. The main impact derives from the intensely rhythmical unified treatment of these upper three floors

architects KEPPIE, HENDERSON AND PARTNERS

structural consultant PROFESSOR WILLIAM MARSHALL BSc, PhD. Regius Professor of Civil Engineering, Glasgow University

This small block of 43,600 sq ft of usable accommodation typifies the general problem of providing the maximum of office accommodation in as compact a form as possible, given the requirements of a high degree of adaptability and good natural daylight. In this particular instance the reduction in maintenance costs was also a primary factor in the design of a building which is situated in perhaps the most corrosive atmosphere in the whole country

APPRAISAL

The office building is a type of accommodation which readily lends itself to extensive repetition of units of space and structural elements; thus standardisation becomes a primary objective. If standardisation is then made part of a system of modular co-ordination governing space, structure and services, then in theory, at least, a high degree of flexibility in the use of the total space becomes possible. Considering the appalling growth of office blocks in the bigger cities, it is surprising to find how little has been achieved in this primary objective. Is this partly because so much ingenuity and resources have been applied to the more meretricious features of prestige advertising, and to cramming as much as possible onto the site?

With modular planning as a general objective the basic characteristics of the planning of the Motherwell office block originated from the following particular objectives:

(*a*) A good standard of natural daylight to be achieved; this limited the overall depth of the building to about 50 ft.

(*b*) A structure giving completely free floor spans, ie with supporting columns on the periphery.

(*c*) The spatial divisions of the usable floor area to be by means of demountable partitions for which the maximum freedom of arrangement was required.

(*d*) The building to be capable of future extension.

(*e*) The building to be designed on a square grid, the basic dimension of which was left to the architect's choice; it was to be applied both horizontally and vertically, with subdivisions of the basic module applied to all elements of the building.

The client is a large engineering firm who required accommodation for an estimating and design department, for an accounts and wages department, and for a directors' suite. The first department is placed on the ground floor, and the second occupies 1st, 2nd and 3rd floors; the latter floor being almost entirely drawing office space. The directors suite occupies some 2,800 sq ft in the penthouse. In addition there is a basement for boilerhouse and storage.

The four storey rectangular building is served by a lift and main stair at the east end. This core connects to a central corridor at each floor level, except the penthouse; which is reached by a separate lift and the fire-escape stair at the other end of the building. It is difficult to see why these two lifts should be so separated considering the otherwise economic grouping of the main planning units. For the escape stair there is also a separate entrance (which is not supervised) leading to the car park.

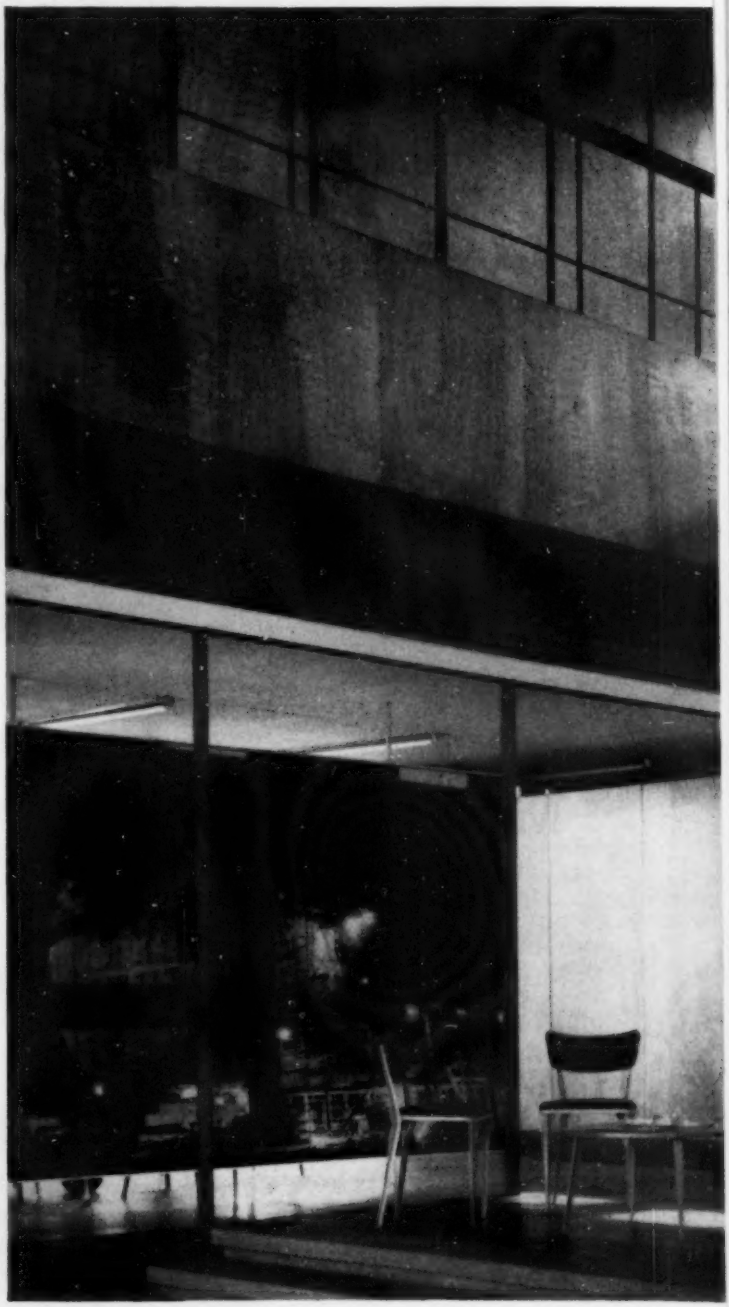
The main entrance runs through two floors and thus takes quite a slice of floor space from the first floor, where a gallery is formed around its periphery. Its position in the block will allow the building to grow lengthwise in an easterly direction. The lavatories are closely grouped around the main stair and lift shaft thus giving the maximum freedom in arranging the remainder of the floor space.

The characteristic unit dimension of the structure is 5 ft 4 in, which is on the centres of the deep beams across the building, and is the spacing of the supporting mullions. The dimension was chosen as being economical for this kind of structure, and because it was considered suitable as a unit width in various sizes of offices. It was also thought to be well related to economic sizes for doors, pivoted windows, fluorescent fittings and partition units.

The main beams span 53 ft 4 in. Across the width of the building the partitions can be fixed at the mullion centres (5 ft 4 in) and along the length of the building they can be fixed at any multiple of $10\frac{3}{4}$ in. To give this degree of choice the ceiling is designed virtually as a grid 5 ft 4 in by $10\frac{3}{4}$ in which is thus in effect the planning grid. The architects claim that no matter where the partitions are fixed on this grid, or what room size they form, each room will be adequately lit, without modification of the lighting fittings, and will be adequately heated without modification of the heating system.

The vertical dimensions are based on multiples of 2 ft 8 in, the ceiling heights being a constant of 10 ft 8 in and the floor depths being standardised at 2 ft 8 in.

These "preferred dimensions" hardly add up to a modular system, and the architects are not claiming that they do, but they do give the space cohesion. The 5-ft 4-in dimension does not really exploit the possibilities of adaptable and economic office



planning (10 ft 8 in as the minimum width of a single person office is hardly economical) but then these possibilities are already limited in this project by the stated requirement for good natural daylight throughout.

As previously mentioned the structure was required to give a floor area free from internal columns, ie to be in one span. The design is, therefore, based on deep beams at 2 ft 8 in centres supported on structural mullions on the long facades of the building at 5 ft 4 in centres. Initially the structure was designed in steel, but due to an acute shortage when building was due to start, it was changed to reinforced concrete, using 4-in-thick in situ beams 2 ft 4½ in deep at 2 ft 8 in centres. This floor depth accommodates all the services, including provision for mechanical ventilation in the future (holes have been cast in the floor beams for this purpose).

The busy entrance scene where by a flight of six steps just inside the front door the ground floor level is reached. This two-storey entrance and hall has a balcony running around at first floor level. The main stair is constructed of steelwork with hardwood box treads and landings. The framing is supported at floor levels from the rc lift shaft and at landing levels from four 1½-in steel rods suspended from the roof

Below the first floor level the rc frame has peripheral columns 21 ft 4 in centres on the two long sides of the building. Above first floor level the rc mullions are 7-in square overall at 5 ft 4 in centres; these structural mullions are faced with 8 in × 3½ in white terrazzo fins bolted on in short lengths.

The floors are of 3-in-thick in situ concrete. It is worth noting that no floor screeds were used, the concrete surface being ground and polished with a terrazzo polishing machine just before the actual floor finish was laid. The main roof is of similar construction to the floors, except the slab is laid to falls.

The artificial lighting is generally by means of 5-ft batten type fluorescent fittings which run lengthwise of the building. They give just sufficient clearance for the single thickness partitions (but do not clear the double thickness partitions). The batten fitting itself is recessed, and only the tube and its end sockets are visible. The lights can be placed anywhere on the planning grid.

The heating system is by means of low pressure hot water serving convectors housed beneath the window sills. All windows above ground floor are double glazed.

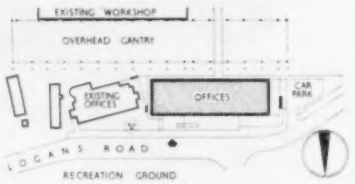
A new departure in the building from accepted plumbing practice is the use of flush valves on all sanitary fittings. The main storage is in a free standing spherical steel tank supported on tubular steel legs.

With the exception of the penthouse, the internal finishes are restrained, and add to the building's architectural qualities. Ceilings generally are of 2-in × ¾-in red pine slats fixed to a suspended timber framework and they are overlaid with a 1-in fibre-glass quilt. The slats are left in their natural colour and thus give the ceiling a very low reflection factor.

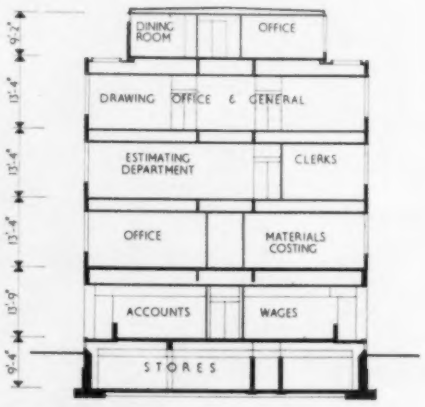
The predominant wall surfaces are, of course, the partitions with their ebonised hardwood posts and varnished gaboon-faced plywood for the solid infilling. No plaster has been used in the building, the concrete and brick surfaces being left fair faced.

With the exception of a very few small items (of the galvanised windows to the ground floor) there is no paintwork externally. Materials have been chosen to reduce maintenance work almost to a window cleaning operation, and at the same time to retain some of their original sharpness in a grimy atmosphere; hence the emphasis on a predominantly black and white effect. Thus below the hardwood pivot hung window (which should preferably be oiled fairly frequently) there are white vitreous enamel steel sheet panels. Covering the depths of the floor and roof construction are bands of black precast concrete slabs.

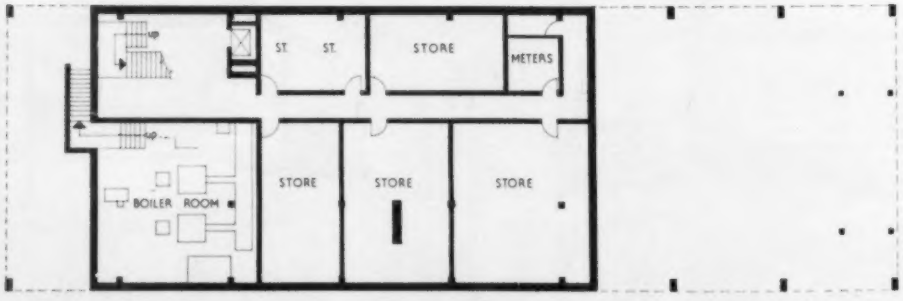
These offices have benefited from a carefully considered programme of achieving good working conditions, internal flexibility and low maintenance costs. There are, of course, bound to be reservations about the use of flexible, demountable partitions, since a satisfactory standard of sound insulation is almost impossible to achieve by this method. Some recognition has been given to this fact by the architects, since they have doubled up round some of the prestige areas where quiet is required, as well as to improve the insulation from the noisiest areas. But one cannot help wondering how much longer the client is going to get flexibility at the price of good sound insulation.



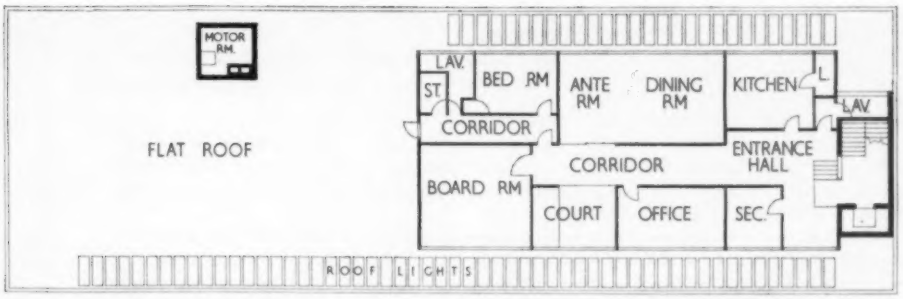
Site plan [Scale: $\frac{1}{1250}$" = 1' 0"]



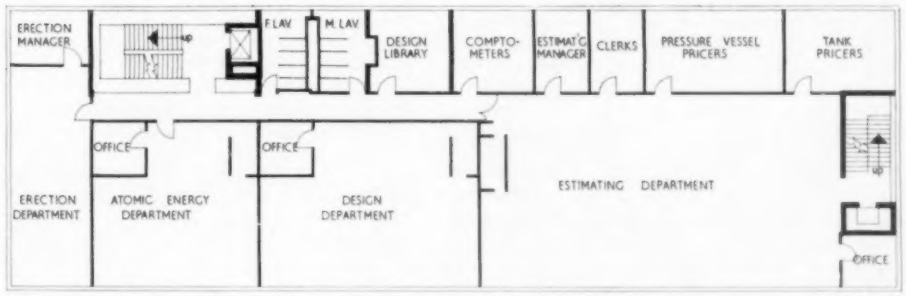
Section [Scale: $\frac{1}{16}$" = 1' 0"]



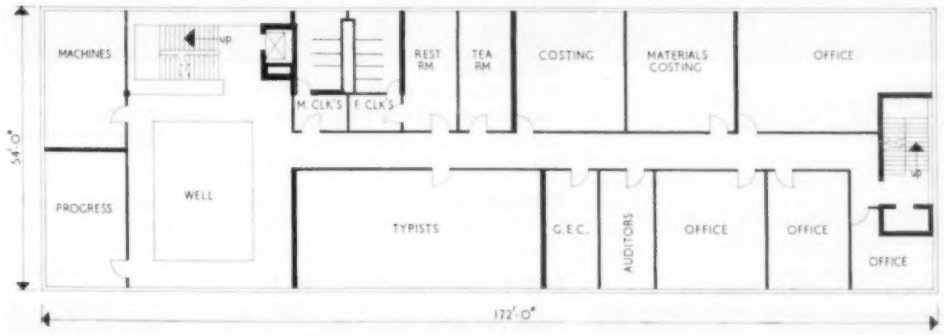
Basement plan



Plan of penthouse [Scale: $\frac{1}{16}$" = 1' 0"]



Second floor plan



First floor plan

Ground floor plan

CLIENT'S REQUIREMENTS

The client's initial requirements were for a building of about 40,000 sq ft on four floors with a storage basement and a directors' suite in a penthouse. The ground floor to be used for main entrance hall and general offices and once designed, the requirements of this ground floor would remain static. On the three upper floors complete flexibility was required for small clerical offices and large drawing offices. The requirements on these floors might change considerably from time to time (this has since proved to be the case) so that any columns etc which were not integrated with a standard partition grid would cause embarrassment when alterations took place. The client also required a building which would have the minimum amount of maintenance, both externally and internally and retain a clean and fresh appearance for a considerable number of years.

SITE

A roughly level strip of ground approximately 80 ft × 180 ft. The south side is bounded by the steelworks main stock yard and crane gantry. To the east, the main north-south railway line, and on the north side, Logans Road. Also on the east side was the existing office block which had to be kept in operation until the completion of the new building.

PLANNING AIMS

To produce a building which would satisfy completely from the clients' point of view, their conditions of efficiency, flexibility, good daylighting, especially to each of the three upper floors. The noise from the railway had also to be taken into account; for this reason all windows were double glazed. The area of general offices was small compared with the total area of the building and the three upper floors required maximum flexibility. This dictated the massing of the building where the ground floor is set back and the three upper floors all treated the same.

SUMMARY

Ground floor area: 7,168 sq ft.
Total floor area (excluding penthouse): 40,686 sq ft.
Type of contract: RIBA, no quantities, lump sum.
Tender date: September 1957
Work began: January 1958
Work finished: July 1959
Tender price of foundation, superstructure, installation and finishes, including drainage to collecting manhole: £181,459 0s 0d.
Tender price of external works and ancillary buildings, including drainage beyond collecting manhole (including penthouse): £24,128 0s 0d.
Total: £205,587 0s 0d.

COST ANALYSIS

Based on final account. (AJ revised elemental breakdown in use from November 10 1960.)

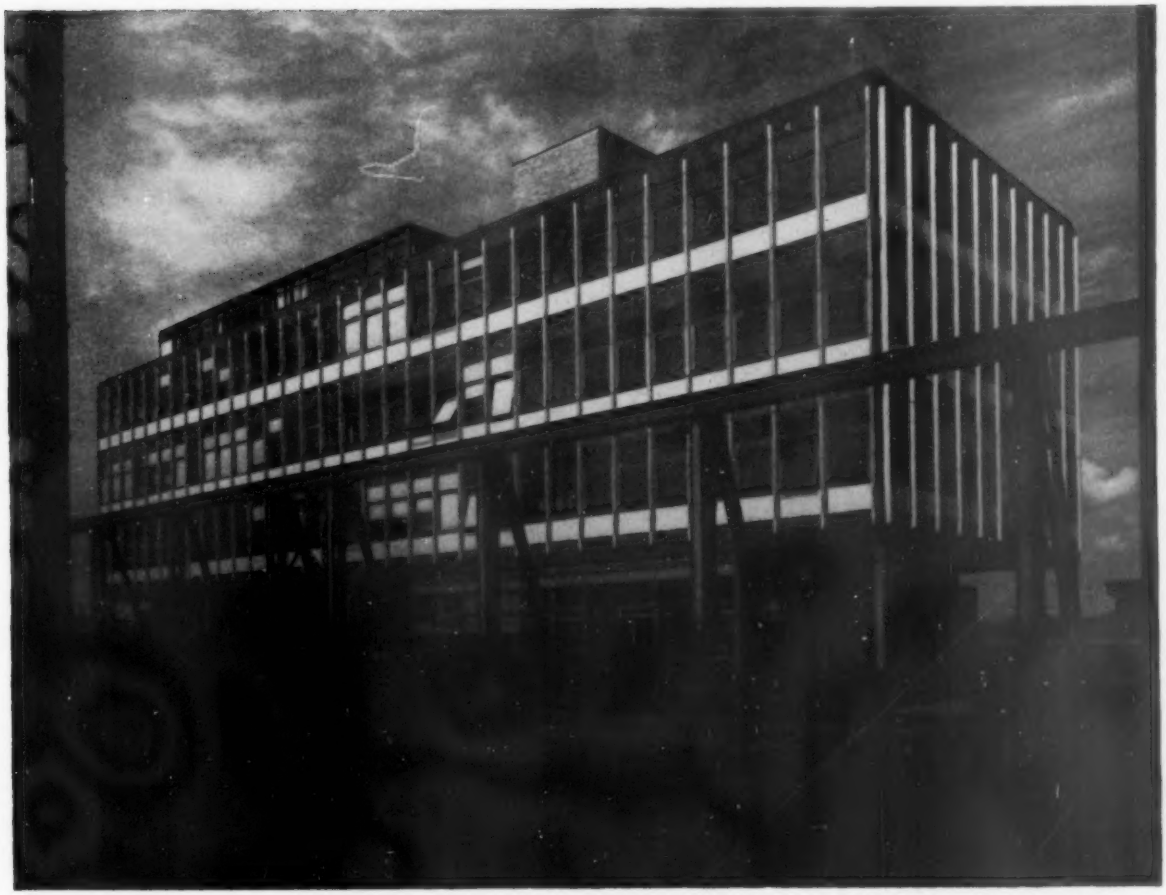
	Cost per sq ft s	d
Preliminaries and insurances	5	1¼
Work below lowest floor finish	6	11¼
Reinforced concrete pad foundations and basement floor slabs. Brick retaining walls, asphalt tanking.		

STRUCTURAL ELEMENTS

	s	d
Frame, upper floor and roof	28	7½
6,000 lb per sq in in situ reinforced concrete frame and slabs. Main span 53 ft 4 in with columns at 21 ft 4 in on ground floor, and structural mullions at 5 ft 4 in on upper floors. Upper floor and roof beams at 2 ft 8 in centres, carrying 3-in thick slabs, finished for floors with terrazzo polishing machine to avoid screeds. Roof slab laid to falls. Roof finish 3-layers of felt and chippings; 1,010 sq yds, 14s 4d per sq yd.		
Rooflights		2½
Aluminium patent glazing single-pitched lights with in situ concrete curbs; 153 sq yd, 40s 10½d per sq yd.		
Staircases	2	6
One main stair, 5 ft 0 in wide, total rise 57 ft 0 in. Steel frame with hardwood treads and risers, treads finished in ribbed rubber. Hardwood handrail on steel balustrade. One escape stair, 4 ft 2 in wide, total rise 57 ft 0 in. Reinforced concrete with precast terrazzo treads, non-slip nosings and rubber inserts. Steel balustrade and hardwood handrail.		
External walls and windows	13	4
Ground floor; galvanised steel opening lights and cellular plastic panels in aluminium sections; 3,660 sq ft, 30s 3d per sq ft. Upper floors; double glazed timber window units in Afromosia, set in main frames of Iroko. Opening lights fitted with adjustable paper blinds between inner and outer sashes. Panels below sills vitreous enamelled steel, backed with insulation and asbestos cement sheeting; 12,190 sq ft, 29s 9d per sq ft.		
External doors		2½
5 main entrance doors, elm frames glazed; 100 sq ft, 47s 0d per sq ft. 1 framed timber door with varnished planks and 2-in wide strips of wired glass; 40 sq ft, 19s 10d per sq ft.		
Partitions	7	5½
2-in square ebonised hardwood posts at 2 ft 8 in centres carrying 2-in thick compressed chipboard, faced both sides with selected Gaboon-faced plywood, or glass beaded in; 2,930 sq yd, 132s 0d. per sq yd. 4½-in brickwork; 323 sq yds, 50s 0d per sq yd. 9-in brickwork; 644 sq yds, 67s 6d per sq yd.		
Internal doors	1	10
80 single and 11 double. Gaboon-faced plywood, semi-solid core. Doors in brick partitions in softwood frames with 6-in glazed light on one side; 2,233 sq ft, 14s 6d per sq ft.		
Ironmongery		1½
Cast aluminium lever handles rebated mortice locks, or mortice latches.		
Total of structural elements: 54s 3d		

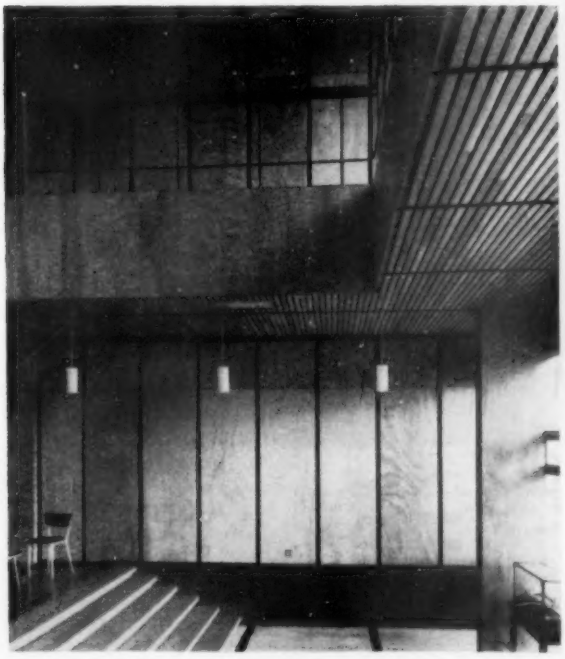
FINISHES AND FITTINGS

	s	d
Wall finishes (Fairface brickwork and plywood facing included elsewhere)		
Floor finishes	2	8½
Linoleum in offices laid direct on smoothed structural concrete slabs; 2,912 sq yd, 17s 6d per sq yd. Teak strip flooring in entrance hall; 62 sq yds, 62s 6d per sq yd. Blue-grey ceramic tiles in wcs; 109 sq yd, 76s 8d per sq yd.		
Ceiling finishes	3	7½
2 in × ¾ in. red pine slats on softwood framing (with glass fibre quilt above) which also form top fixing for demountable partitions; 4,004 sq yd, 36s 9d per sq yd.		
Decorations		10¾
Gloss paint on doors and galvanised steel windows, clear varnish on hardwood, ceilings emulsion painted.		
Fittings		5½
Commissionaire's desk, shelving and cupboards, shelving in strong room kitchen fittings.		
Total of finishes and fittings: 7s 7¾d		

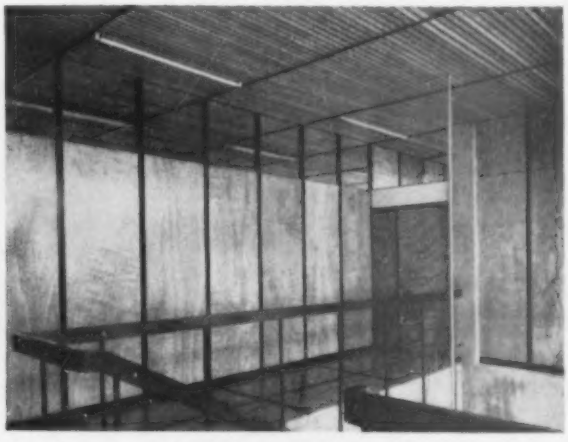


Above, the noisy southerly side of the building, away from the public road. Solar heat control is by means of reflectory blinds between the two panes of glass

Below, the entrance hall looking at its north-west corner, giving an idea of its potential quality; if this simple treatment had taken a firm grip on the whole design of this space a more unified effect could have been achieved



Below, a typical view of the internal demountable partitions with their 2-in thick chipboard panels supported between 2 in × 2 in ebonised hardwood posts at 2 ft 8 in centres. The partitions can be solid floor to ceiling or glazed floor to ceiling; alternatively solid panels can be used up to 2 ft 8 in or 8 ft 0 in with glazing above. This photo shows the latter arrangement and also the slatted ceiling breaking joint every 5 ft 4 in where the mullion centres occur and giving a fixing for a partition on these lines. For certain situations these single thickness partitions did not give adequate sound insulation eg conference rooms, directors' rooms, and rooms adjacent to those in which typewriters and accountancy machines are in use. Around these spaces the partitions are doubled



SERVICES

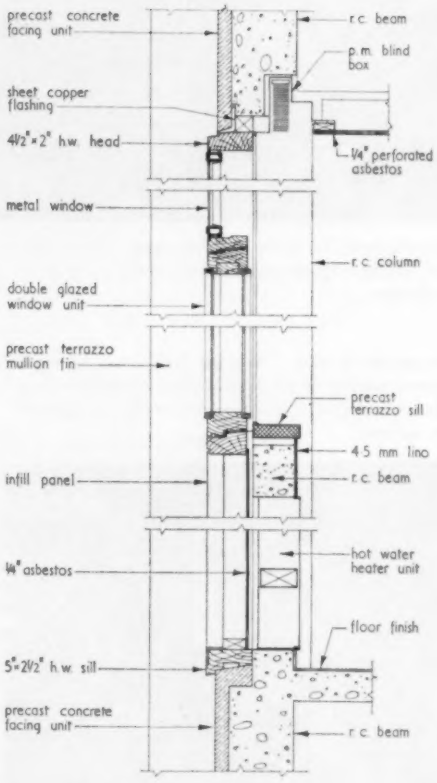
		s	d
Sanitary fittings, waste, soil, overflow pipes, and cold water services		1	10½
Sanitary fittings in vitreous china	*No of each type*		
Lavatory basins	34		
Sinks	3		
Wcs	32		
Urinals	8		
Stainless steel sinks	2		
Supply and waste in copper generally, but cast iron main supply from 17,500-gallon water storage tank in steel, specially designed free-standing flatted sphere manufactured by client.			
No of cold water draw-off points: 89.			
Includes builder's work.			
Heating and hot water services		5	8
2 oil-fired boilers.			
Convector heaters under window sills, calorifiers for domestic hot water.			
No of draw-off points: 39.			
Includes builder's work.			
Electrical services		4	8¾
Meters and switchgear	7½d		
Lighting installation, 429 outlets	1s 0¾d		
Light fittings and lamps, 315			
Fluorescent lamps, 110 tungsten fittings, generally providing 23 lumens per sq ft	1s 10½d		
185 15-amp power outlets	1s 2d		
Total load, 750 kW.			
Special services		2	8
One 10-passenger lift with manually operated doors; one 6-passenger lift with automatically closing doors, both 150 ft per minute.			
Includes builder's work.			
Drainage			4¼
Salt-glazed ware, encased in concrete under buildings.			
Total of services: 15s 3¼d			
External works			
Penthouse priced separately as a lump sum, built up of hardwood posts, plywood box beams, chipboard roof deck with felt finish, aluminium vertical sliding windows in hardwood frames, and prefabricated internal timber partitions. Floor area 2,960 sq ft at 148s 0d per sq ft.			
Walls, fencing, gates, tarmac car park, external paving of granolithic finish concrete slab.			
Total cost per sq ft of floor area:			
£181,459 (net cost excluding penthouse and external works)			
40,686 sq ft (measured inside external walls)	=	89	3

COST COMMENT

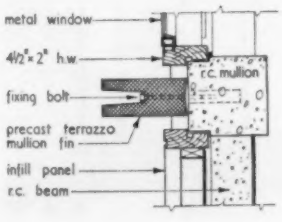
At first sight, this analysis may not seem quite up to the usual AJ standard, since several of the elements are grouped together. In fact there were considerable difficulties in the preparation of the analysis since the tender was a lump sum, based on drawings and in the absence of a bill of quantities. It has nevertheless been possible to prepare an analysis from the final account, which apart from the slight oddity of the separation out of the penthouse—it having been priced separately as a lump sum—provides information of considerable value.

Some of the major design decisions taken by the architects are well illustrated, and should be borne in mind in studying the analysis. The objective of a low maintenance building, for instance, is reflected in the high total for the structural elements of over fifty-four shillings per square foot, which is more than the structurally much more ambitious office tower block at Neasden (AJ 27.9.61). But this high figure is balanced by such items as less than a shilling per square foot for decorations and the complete absence of wall finishes, so the total of finishes and fittings is under eight shillings.

The decision to double-glaze the offices, in recognition of the high noise level on the site, is reflected in the average unit cost of external windows and walls of just under thirty shillings per square foot, which is nearly as high as Neasden, which had considerable areas of travertine. But the ratio of external windows and walls to floor area for this building is 0·39, less than half that for Neasden. There is also particular interest in the unit cost of the demountable partitioning system in this building, in comparison with other recently published offices, since this tends to be a form of construction peculiar to the building



Plan and section of external walling **[Scale: ½" = 1' 0"]**



Opposite, the enquiry counter with the doors leading to the ground floor corridor on its right. The corridor to the first floor is not closed off but opens directly off the balcony overlooking the entrance hall. Any effect this space might have had is largely lost by its complexity and the way the surfaces and functions of the surrounding surfaces are handled

type. The differences can be set out in tabular form:

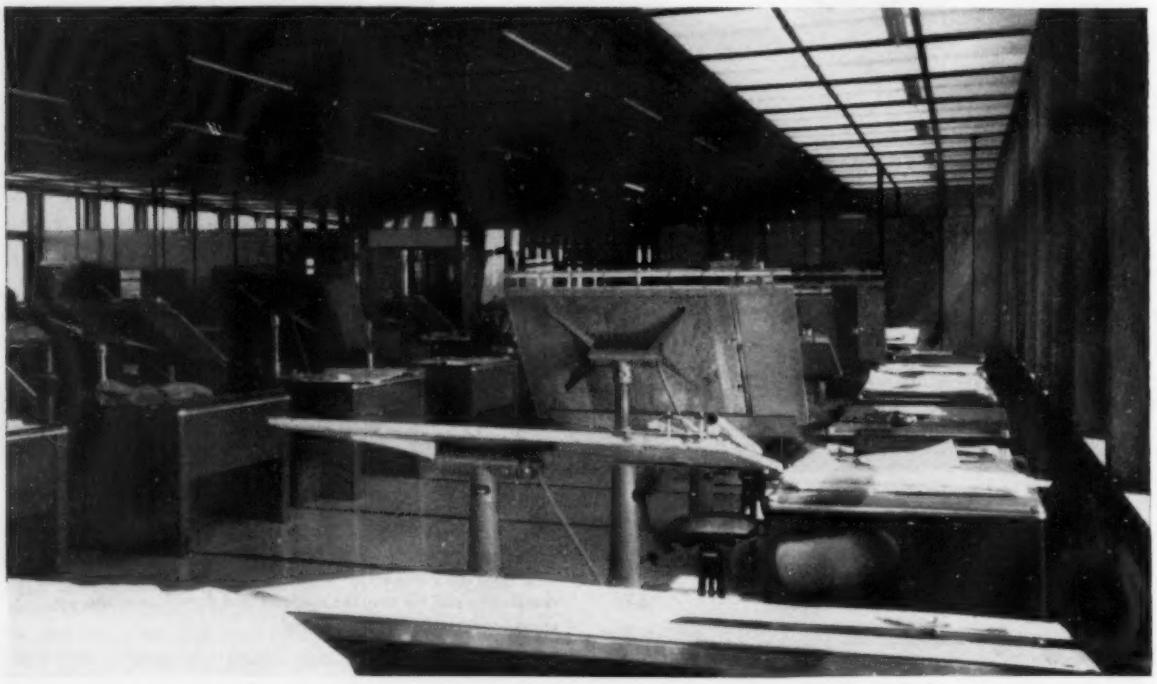
Building	*Type of partitioning*	*Unit cost per sq yd*
Bournemouth (AJ 13.10.60)	Plastic panels and glazing on aluminium framing	144s 0d
Coventry (AJ 13.4.61)	Movable studio partitioning, 1½-in skeleton framed softwood leaves covered both sides with cellulose fibreboard, glazed fanlights over	98s 0d
Neasden (AJ 27.9.61)	Plastic laminated structural and cavitied panels	171s 0d
Motherwell	Ebonised hardwood posts carrying chipboard, faced both sides with selected Gaboon-faced plywood, or infilled with glass	132s 0d

CONTRACTORS

Main: Melville, Dundas & Whitson Ltd. *Sub-contractors—Heating:* Carrier-Ross Engineering Co Ltd. *Electrical:* James Kilpatrick & Son Ltd. *Plumbing:* R. W. Muir Ltd. *Joinery and Partitions:* John Cochrane & Co Ltd. *Terrazzo and precast facing units:* Toffolo Jackson & Co Ltd. *Steel reinforcement:* GEN Reinforcements Ltd. *Linoleum, rubber flooring:* Korkoid Decorative Floors Ltd. *Lifts:* Pickerings Ltd. *Aluminium curtain wall units:* Holoplast Ltd. *Timber curtain wall units:* Cawood Wharton & Co. Ltd. *Metal railings:* Kingston Brass Co, Wm. Bain Ltd. *Roofing:* Wm. Briggs & Sons. *Precast facing units:* George W. Bruce. *Patent glazing:* W. H. Heywood & Co. *Painters:* George W. Sellars & Sons. *Water tank:* Motherwell Bridge & Engineering Co Ltd.

Right, projecting white terrazzo fins not only emphasise the rhythm but give a much needed modulation to the surface and sharpen the movement of light across the facades. These methods may not satisfy one's sense of structure, but in the way they lie on the surface of the black coloured concrete slabs to the roof and floor depths they are not pretending to have any structural significance. They could, however, benefit by a little more precision in execution and fixing—their joints are too prominent. It is odd that the edge beam of the first floor is not completely covered by the black precast facing slabs; constructionally it may, but visually it does not make sense

Below, the drawing office on the top floor is provided with supplementary top light along the north and south sides by means of roof lights approximately 8 ft wide. This creates a sharp contrast with the slatted pine ceiling whose low reflectivity becomes very noticeable. The solar heat gain on the southern side can also be something of a problem



AJ SfB (13)

Retaining structures

Kenneth Surridge is a senior civil engineer with the firm of A.J. and J.D. Harris

(13) *Retaining structures*

Retaining structures, the subject of this Element File, has been interpreted as including all structures which maintain a difference in level on either side of soil, liquid or stored material, including those which transmit loads (ie basements) due to a superstructure and act, therefore, as a foundation.

This file contains a design guide, an article on waterproof basements and tanks and three Information Sheets.

The design guide, prepared by Kenneth Surridge, is printed in three columns: the first lists the items in a design procedure, the second lists considerations to be borne in mind in respect of each item and the third gives references and notes.

The three Information Sheets describe the major varieties of retaining wall: gravity and reinforced concrete, sheet piles and basements, crib walls and in situ concrete piles.

AJ SfB (13)
Elemental Design Guide UDC 69·022·2 Retaining structures

(13) Retaining structures

Bibliographic references in the third column are graded as follows:—
* General reference of value to every architect and which he may wish to possess.
** Specialised reference normally used by consultant or architects with special knowledge of particular aspects of building.
*** Highly specialised references and research papers which would not be of value to the architect unless working with a consultant.
Figures in square brackets are sfb references of the publications mentioned. References in **bold type** are to AJ Element Files.

Data required

1 **Obtain preliminary site information**	LAND SURVEY layout levels adjacent properties (position and condition) services	**Elemental Design Guide** **SfB (11) Ground: General** Land Survey paras. 1-5
2 **Prepare preliminary layout**	Approximate lines and levels of proposed retaining walls and basements	
3 **Check that land survey gives all necessary information**	Positions and levels of old foundations Positions of adjacent buildings Type, position and levels of foundations Loading: particularly important if adjacent buildings are situated (*a*) *within distance from a retaining wall less than 5 times height of wall* (*b*) *at or near top of slope, the bottom of which is retained by wall* Obtain preliminary soil information from OWNER LOCAL AUTHORITY LOCAL BUILDERS TRIAL HOLES	*Check agreement of this information from various sources* *Positions and condition of sewers. Are they likely to leak water into backfill, especially in periods of heavy rain?* *Sources of surface water discharging into backfill—interception required* *Outfall for drainage from base of wall*
4 **Prepare outline elevations and cross sections**	Sketch elevations and cross sections through proposed walls, showing relationships to adjacent buildings, roads, sewers, services, etc	*Note that sufficient space will be required for construction, but that space available may control method of construction* *Check whether underpinning of adjacent structures may be necessary*
5 **Obtain experienced advice**	Assess complexity of scheme ADJACENT BUILDINGS CONSTRUCTION SPACE SOIL CONDITIONS GROUND WATER HEIGHT LOADING (INCLUDING SURCHARGE) VIBRATIONS Obtain experienced opinion on general practicability of scheme Consider the appointment of an engineering adviser	*If space is limited, or underpinning is necessary, subsequent design work may show that these preliminary sections may not be practicable; this may affect superstructure and whole scheme* Institution of Civil Engineers, Great George Street, London sw1 Institution of Structural Engineers, 11 Upper Belgrave Street, London sw1

		Association of Consulting Engineers, Abbey House, Victoria Street, London sw1 Federation of Civil Engineering Contractors, Romney House, Tufton Street, London sw1
6 **Advise adjacent owners**	Adjacent buildings may be affected by: UNDERPINNING EXCAVATION PILING CONSTRUCTION METHODS	London County Council London Building (Constructional) By-laws Party wall law **EDG SfB (11) Ground: General** para. 4
7 **Consider soil mechanics site explorations**	Advisable if: movement of wall will affect other structures May be required by civil engineer if: soil is soft or wet basement is deep basement walls support superstructure retaining wall higher than 12 ft May not be required if information is available from: nearby sites excavation on site trial holes (*Check that this information is consistent*)	**EDG SfB (11) Ground: General** NICHOLLS, R. A. Soil investigation for the smaller project. Arch. J. 1961, 134 (Oct. 4). [(**11**)]
8 **Initiate soil investigation**	Draw engineer's and/or specialist firm's attention to retaining walls or basements, requesting that appropriate boreholes and tests be made	**EDG SfB (11) Ground: General** para. 11
INFORMATION REQUIRED FOR DESIGN		**EDG SfB (11) Ground: General** paras. 21, 22 Institution of Structural Engineers, Civil engineering code of practice, No. 2: Earth-retaining structures. London, 1951, ISE Appendix C gives a very comprehensive list of information to be collected. [(13)]
9 **Soil**	Information required: BOREHOLE RECORDS SOIL TYPES foundations underlying strata backfill (*from classification tests*) STRENGTH CHARACTERISTICS shear cohesion CONSOLIDATION DATA (*for settlement analysis*) WATER TABLE WATER MOVEMENT WATER ANALYSIS (*for corrosion effects*)	*Backfill—The material behind a wall, whether undisturbed ground or fill, that contributes to pressure against a wall*
10 **Loading** RETAINING WALLS	Surcharge loads on backfill *roads* *structures* *construction loads* On wall *structures* *fencing* *steps* *construction loads*	
BASEMENT WALLS	Surcharge loads on backfill *roads* *structures* *construction loads* On wall *loadbearing walls* *columns* *floors* *beams* *slabs* *other structures* *finishes* *construction loads*	

LIQUID-RETAINING WALLS	Liquid *type* *density* Pressure	
11 **Assess appearance**	Relative to : LOCATION FUNCTION OF BUILDING PRESTIGE INITIAL COST MAINTENANCE REFLECTIVITY	
12 **Moisture resistance**	Establish desirable moisture resistance of walls relative to: FUNCTION LOCATION PRESSURE FINISHES INITIAL COST MAINTENANCE	SURRIDGE, K. Basement, walls and tanks. Arch J. 1961, 134 (Oct. 4) [(**13**)]

Basic design decisions

TYPE OF WALL: Retaining walls	The decisions taken at this stage have architectural implications but should be taken on the advice of an engineer if appointed	For a range of definitions see **Civil Engineering CP No. 2, appendix A [(**13**)]
13 **Gravity walls**	Now generally considered suitable only for heights up to approximately 6 ft, but may warrant consideration for greater height	**Refer to Civil Engineering CP No 2, Section 2.1, for further information on types and applicability of gravity walls [(**13**)] ***HUNTINGTON, W C. Earth pressures and retaining walls, pages 5, 6. New York, 1957 John Wiley and Sons Inc. London, 1957, Chapman and Hall. [(**13**)]
	Materials for construction are: MASS CONCRETE—Low strength required; simple in construction	AJ Information Sheet No 1007 Retaining walls 1: Gravity and reinforced concrete walls [(**13**)]
	BRICK—Low strength required; good frost resistance if exposed MASONRY—Low strength required. Unless cheap source is available, cheaper to use concrete backing DRY RUBBLE STONEWORK—Used extensively for low walls in some parts of this country, but depends largely upon skill of craftsman (*Not generally suitable for upholding structure*) COMBINATION OF MATERIALS—Brick or masonry facing to mass concrete, which may act as permanent shuttering, may be most economical	
14 **Reinforced concrete walls (including prestressed)**	Generally similar to gravity wall, but usually part of weight resisting overturning, is supplied by soil resting on base slab Types of wall are: CANTILEVER—Most suitable for heights up to 25 ft, above which thickness of vertical wall tends to increase uneconomically	**Civil Engineering CP No 2 sections 3.11 and 3.12 [(**13**)] ***HUNTINGTON, pages 6–9 [(**13**)] AJ Information Sheet No 1007 [(**13**)]
	COUNTERFORT—More economical than cantilever walls for heights above 20–25 ft, but more complicated in construction	AJ Information Sheet No 1007 [(**13**)]
	BUTTRESSED—Not often used, as weight of soil is not used to stabilise and buttresses usually inconvenient	AJ Information Sheet No 1007 [(**13**)]
	PRECAST CONCRETE UNITS—Normally cantilever wall type for heights up to approximately 10 ft. Useful for storage bins as layout can be easily rearranged	
15 **Crib walls**	Suitable principally for retaining tipped earth. Where slope exists considerable excavation is required. Not satisfactory for supporting buildings TIMBER—not recommended for permanent work	**Civil Engineering CP No 2 Section 5.1 page 102 [(**13**)]
	REINFORCED CONCRETE	AJ Information Sheet No 1009 Retaining walls 3: Crib walls and in-situ concrete sheet piles [(**13**)]

16 **Sheet pile walls**	Two types:	Civil Engineering CP No 2 section 4.1 [(**13**)] AJ Information Sheet No 1008 Retaining walls 2: sheet pile walls and basement walls [(**13**)]
	CANTILEVER—suitable for moderate heights only ANCHORED—with a single line of ties, suitable for heights up to 35 ft	
	Materials of construction are	AJ Information Sheet No 1008 [(**13**)]
	STEEL—used extensively for temporary works. Corrosion and appearance are main obstacles to use for permanent work	*Rolled sections with interlocking joints; a large range of types and sections is available*
	REINFORCED CONCRETE—generally with V joints, or similar, to interlock, liable to damage while driving	AJ Information Sheet No 1008 [(**13**)]
	TIMBER—Principally for temporary works	
17 **Other systems**	CAST IN-SITU CONCRETE SHEET PILES Narrow trench is dug, and filled with dense liquid to prevent collapse of sides; this material is then displaced by concrete which may be reinforced. Excavation can then proceed on one side	AJ Information Sheet No 1009 [(**13**)] *Special applications in confined spaces: licensees should be consulted at early stage* ICOS Great Britain Ltd, 46 Victoria Street, London SW1 Soil Mechanics—Soletanche Ltd, 36 Victoria Street, London SW1
Basement walls		*If suspended floors within basement are constructed before backfill is placed, stresses in wall will be reduced and lighter construction possible*
18 **Type of wall**	GRAVITY WALLS	**SfB (23) Floors, Ground: General**
	mass concrete brick masonry combination of materials	AJ Information Sheet No 1008 [(**13**)]
	REINFORCED CONCRETE cantilever type counterfort type buttressed type—not usual precast concrete—not generally used owing to difficulties in waterproofing	AJ Information Sheet No 1008 [(**13**)]
	SHEET PILING	*Not generally used as basement walls, but often used for supporting deep excavation and faced with rc wall*
	OTHER SYSTEMS, cast in-situ concrete sheet piles	Consult licensees
19 **Loading**	Superimposed loads : ON WALL WITHIN BASEMENT OUTSIDE BASEMENT SEPARATE FOUNDATIONS	
20 **Waterproofing**		Basement, walls and tanks. Arch J (Oct 11) 1961. [(**13**)]
TYPE	Consider : INTEGRAL—waterproof concrete construction, with or without thin membrane	
	MEMBRANE— asphalt bituminous felt plastic sheeting special paints	
	RENDERING (*cement*)	(*vapour control only*)
POSITION	Consider position in terms of: CONSTRUCTION WATER PRESSURE FINISHES RISING DAMP, into superstructure STRUCTURAL MOVEMENTS	*Water bars*
DEGREE	COMPLETENESS, linking with other membranes Consider acceptable moisture penetration in relation to: USE OF BASEMENT FINISHES FUNGOID GROWTH COST OF PUMPING	MOHLG Model By-laws series 4, Buildings. [aa6]

LIQUID-RETAINING STRUCTURES

British Standards Institution CP No 2007: 1960 Design and construction of reinforced and prestressed concrete structures for the storage of water and other aqueous liquids [91]

21 Contents

Consider liquid contents in relation to:

DENSITY—for loads and pressure
CORROSIVE EFFECTS
PENETRATIVE EFFECTS
TEMPERATURE
FLOW
EVAPORATIONS (need for cover)
CONTAMINATION OF CONTENTS

SfB (26) Roofs, Structural, Flat: General and **(27) Roofs, Structural, Pitched: General**

22 Type structure and material

Consider suitability of types and materials:

GRAVITY WALLS
- mass concrete
- brick
- masonry
- combination of materials

REINFORCED CONCRETE
- cantilever type
- counterfort type
- buttressed type—not usual
- precast concrete—not generally used owing to difficulties in waterproofing

SHEET PILING
- for river, canal and dock walls

SUSPENDED
- reinforced concrete
- prestressed concrete
- sectional sheet steel
- cast iron
- fibre glass
- aluminium
- timber (*with or without lining*)

23 Loading

Determine loads due to:

CONTENTS
SELFWEIGHT
SUPERIMPOSED LOADS
REVERSALS OF STRESS (due to filling and emptying)

24 Liquid retention

CONSIDER METHOD
- integral
- membrane
- rendering

CONSIDER JOINTS

25 Labour and materials

Consider experience and equipment of possible contractors, availability of specialist labour and desired materials

26 Finishes

Consider

TYPE
APPEARANCE
WATERTIGHTNESS
EFFECT OF MOISTURE
REFLECTIVITY

In relation to:

BRICK
- facings or commons

MASONRY
CONCRETE
- wrought or unwrought formwork
- brick or masonry veneer
- special finishes, etching
- bush hammering

STEEL

Detail design

Much of this stage is within the province of the engineer and is completely so in the case of large works

27 Collate soils investigation report

Borehole and trial hole records — **SfB (11) Ground: General,** paras 8-23
Soil classification
Ground water levels
Shear strength
Cohesion
Chemical attack
Ground movements — paras 27-33

28 Prepare design data

Active pressure of soil
Passive resistance
Bearing capacity
Settlement calculations (especially for basement loadbearing walls)

29 Loads on wall

Earth pressure
Surcharge
Vertical loads—*intensity*
position

30 Is slip circle failure possible?

Possible circumstances:

Retaining wall (free standing) founded on deep clay strata

Civil Engineering CP No 2, section 1.3 [(13)]
***HENRY, F. D. C., The design and construction of engineering foundations. Section 2.5, page 100. London, E. & F. H. Spon. (Out of print: to be reprinted, 1962) [(**13**)]

Clay backfill

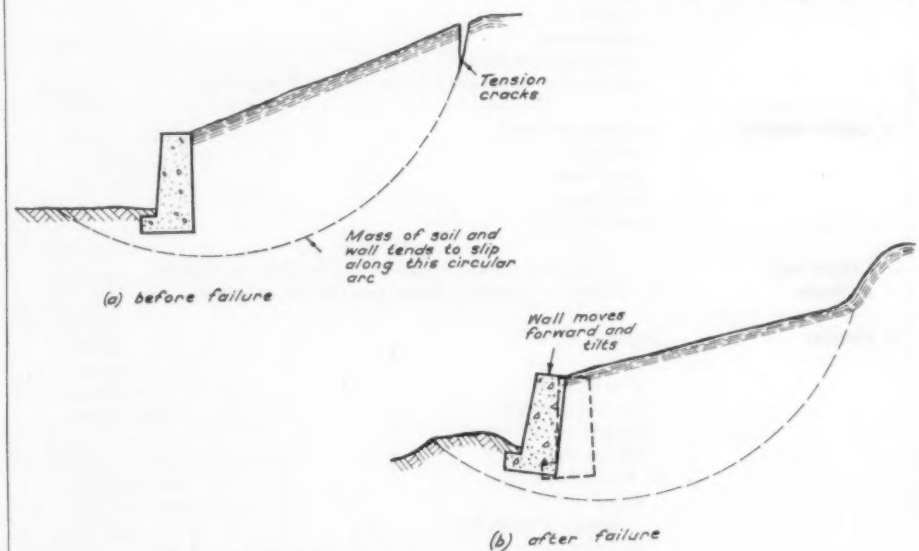
TERZAGHI, K., and R. B. PECK, Soil mechanics in engineering practice. New York, 1948, John Wiley & Son, Inc [ca]

Steep sloping surcharge
Surcharge loads

HUNTINGTON: article 26, page 246 [(13)]
Unlikely with cohesionless soils if adequate factor of safety is obtained against both tilting and sliding; surcharge loads increase danger of failure

Obtain advice of experienced engineer who will determine if full slip circle analysis is required

Slip circle



Should analysis show that such a failure is possible, the whole arrangement may have to be re-examined

31 Select first trial cross section

GRAVITY WALLS
CANTILEVER WALLS
COUNTERFORT WALLS

AJ Information Sheet No 1007 [(**13**)]
***HUNTINGTON gives trial dimensions for
solid gravity walls, page 435
semigravity walls, page 445
cantilever walls, page 455

32 **Design first trial cross section**	Vertical loads and moments about toe *active pressure* *other loads* Total vertical forces Total horizontal forces Total overturning moments Reaction cuts base Base friction Passive pressure Sliding—factor of safety Overturning—factor of safety Bearing pressures	**REYNOLDS, C. E., Reinforced concrete designer's handbook, chapter VII, page 83, for reinforced concrete walls. London, 1957, Concrete Publications Ltd. [ab4] ***HUNTINGTON, for gravity walls, page 434 for RC walls, page 454
33 **Modify trial section if necessary**	If factors of safety against sliding and/or overturning are insufficient, or bearing pressures are too high, redesign on new trial section	
34 **Failure to satisfy conditions**	Redesign must be considered if modified trial section is unsatisfactory If bearing pressure too high, consider: *piling* *soil stabilisation—* *chemical consolidation* *grouting* *vibroflotation (for sands)* *removal of faulty strata (this involves compaction problems)* *drainage* If surcharge loads too high: *reduce load* *take load on independent foundation* *redistribute load (may be possible to carry load on wall to assist its stability)* If pressure from backfill too high: *alternative backfill* *drainage if water table high* *soil stabilisation*	
35 **Structural design**	GRAVITY WALL bending moments and shear forces in wall tension compressions and shear stresses in assumed sections REINFORCED CONCRETE bending moment and shear forces in wall, toe, heel and counterforts stresses CRIB WALLS bending moments and shear forces (handling stress may be the most important) SHEET PILE WALLS bending moment and shear forces tension in tie OTHER SYSTEMS detail structural design in consultation with specialist engineer or licensees BASEMENT WALLS Stresses may be reduced by suitable order of construction LIQUID-RETAINING WALLS Bending moments and shear forces Reversal of stresses, due to filling and emptying and external pressures Temperature stresses	*If backfill is delayed until suspended basement floors are constructed, walls may be supported and stresses reduced* **CP 2007: 1960
36 **Joints**	Determine probable position of joints for: GROUND MOVEMENTS CONSTRUCTION SHRINKAGE AND CONTRACTION THERMAL MOVEMENTS MOVEMENTS DUE TO LOADS Consider waterproof construction joints for concrete walls WATER BARS—rubber plastic copper (*Detailing of joints is most important*)	Civil Engineering CP No 2 Section 3.42 page 87 Basement walls and tanks Arch J. (Oct 4) 1961 [(**13**)] *Stress due to settlement and other ground movements may be large in relation to other stresses* CP 2007: 1960 Basement, walls and tanks Arch J. (Oct 4) 1961 [(**13**)]

37 Reinforcement		**REYNOLDS, p. 145
NORMAL	TYPE mild steel high tensile steel HT cold worked steel	
	POSITION SIZE LAP BOND LENGTH — all from calculation	*Consider availability of sizes* *Availability of lengths and use of offcuts should be considered*
	PROTECTION COVER	
PRESTRESSED	CABLES bar wire strand	Manufacturers' literature and licensees
	ANCHORAGES single multiple	
	DUCTS in-situ preformed	
	STRESSING	
	GROUTING OR PROTECTION	
38 Drainage		
INTERCEPTION OF SURFACE WATER	Consider: PAVING AND PITCHING CHANNELS GULLIES DRAINS	**SfB (12) Drainage: General**
BACKFILL	GRADED FILTER DRAIN—vertical inclined	**Civil Engineering CP No 2 section 1.83 and 1.84 page 55 [(13)] ***HUNTINGTON, page 12
	POROUS DRAIN near base of wall to outfall	Article 16, page 186 [13]
	WEEP HOLES	TERZAGHI & PECK, article 46, page 318-323 [Ca] *If water from weepholes is not drained away from toe, it may saturate soil under toe and weaken bearing value. Do not place weep holes too high*
39 Fixings	Determine position of fixings for: SERVICES FENCING AND BALUSTRADES STEPS AND LADDERS PLANT SUPPORTS FINISHES	
40 Services	Determine position and size of openings for: ACCESS DRAINS ELECTRICAL SEVICES WATER GAS TELEPHONE HEATING, VENTILATING SERVICES SUMPS	*Note: consideration should be given to watertightness and movement where services pass through basement walls and liquid-retaining structures*
41 Drawings and schedules		
GENERAL	General arrangement drawings by engineer in conjunction with architect Reinforcement drawings by engineer Bending schedules by engineer	
CHECK	Check engineer's drawings against architect's drawings *dimensions* *notes* *cross references* Amend and modify architect's and/or engineer's drawings to agree as necessary	
PREPARE DOCUMENTS FOR FINAL APPROVALS	Client Relevant authorities Consultants Specialist suppliers and contractors	

Specification

42 **Contents**		
	Access to site	
	Excavation	
	Temporary supports to existing structures	
	Underpinning	
	Concrete aggregates	*BS 882, 1201: 1954 Concrete aggregates from natural sources Df
	Cement	*BS 12: 1958 Portland cement (ordinary and rapid hardening) *BS 915: 1947 High alumina cement (No BS for sulphate-resistant cement or supersulphated cement)
	Reinforcement—MS or HT	*BS 785: 1938 Rolled steel bars and hard drawn steel wire for concrete reinforcement Ed 2 *BS 1144: 1943 Cold twisted steel bars for concrete reinforcement Ed 2 *BS 1221: 1945 Steel fabric for concrete reinforcement Ed 2
	Prestressing, cables, anchorages, ducts	**BS 2691, Part 1: 1955 Steel for prestressed concrete Ed 2
	Water for concrete	
	Bricks	*BS 657: 1950 Dimensions of common building bricks Fg *BS 1180: 1944 Concrete bricks and fixing bricks Fj *BS 1301: 1946 Clay engineering bricks Fg 2 *BS 187: 1955 Sandlime (calcium silicate) bricks Fj 1
	Masonry	*BS CP 121.201: 1951 Masonry. Walls ashlared with natural stone or with cast stone (21) Fe *BS CP 121.202: 1951 Masonry. Rubble walls (21) Fe
	Sheet steel piling	
	Proprietary systems	
	Water bars	
	Concrete mixes and mixing	
	Transporting, placing and compacting concrete	
	Shuttering to concrete	
	Special finishes	
	Joints in concrete	
	Brickwork and/or masonry mortar	
	Brickwork and/or masonry	
	Asphalt tanking	*BS 1097: 1958 Mastic asphalt for tanking and damp-proof courses (limestone aggregate) Ds 4 *BS 1418: 1958 Mastic asphalt for tanking and damp-proof courses (natural rock asphalt aggregate) Ds 4
	Waterproof concrete construction	
	Fixings	
	Filter drains	**BS 1194: 1955 Concrete porous pipes for under-drainage If 2 **BS 1196: 1944 Clayware field drain pipes Ig 3
	Weep holes	
	Drainage—porous	
	Backfilling	
43 **Procedure**	Specification notes by engineer submitted to architect and/or quantity surveyor	
	Specification and bill of quantities prepared	
	Copy to engineer for approval	
	Documents issued	

Contract stage

44 **Select and appoint specialist suppliers and sub-contractors**	Consider: Open competitive tender Selected list of tenderers Negotiated contract Sub-contract to main contractor
45 **Agree with general contractor, specialist suppliers and sub-contractors**	Erection procedure Programme Provision of samples Site storage Temporary protection Support of adjacent buildings Underpinning of adjacent buildings
46 **Supervise construction**	Check deliveries against samples Setting out Tolerances Formwork Reinforcement bending and fixing Concrete proportions and test cubes Brickwork and masonry Driving of sheet piling Backfilling and compaction Cleaning down
47 **Final check**	Movement, settlement and cracking of wall Drainage clear and functioning properly Superstructure correctly bearing on wall
48 **Note to client**	Need for correct functioning of drainage Design loads

AJ SfB (13)
Technical Study UDC 69·022·2 Retaining structures

Waterproof basements and tanks

K. J. Surridge begins his technical study by discussing the dispersal of water pressure below ground by drainage and continues with a consideration of the arrangement, construction and waterproofing of basement walls and tanks. He concludes with recommendations on the use of construction, contraction and expansion joints in retaining structures.

Most basements are required to be waterproof and most tanks with which an architect may be concerned are intended to hold water; this leads to many similarities in design and detailing.

When designing either basements or tanks it should be borne in mind that no structure is completely rigid. Whatever the material of construction, there will be movement such as settlement of foundations, or deflections under load, which may be small but sufficient to cause stresses and cracks. Such movement must be allowed for, by both the engineer in his structural design and the architect in his detailing, and the position and effects of cracks controlled.

The water table level in the surrounding soil will often be above the basement floor level; there will be pressure of ground water on the walls and, in a sand or gravel soil, on the underside of the floor. If the building is of light construction, the total upward pressure may exceed the weight of the building and basement, which may lead to flotation (Fig 1). In such cases either the pressure must be reduced by under-drainage or the basement must be held down, by the use of tension piles or the weight of the surrounding soil.

Water pressure has to be taken into account in the design of walls and floors and a reduction of this pressure by suitable drainage will often result in structural economies as well as less risk of leakage. A vertical or inclined graded filter drain should be provided at the back of the wall; the drain should be at least 18 inches wide and made with broken

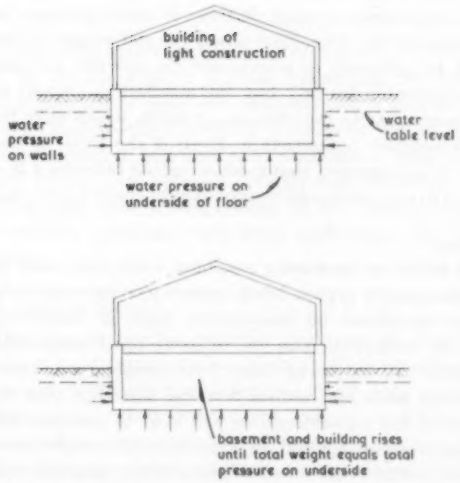


Fig 1 *Flotation*

stone, coarse gravel or hardcore, graded so that the finer material is in contact with the soil, to prevent the flow of water carrying down soil particles. At the bottom of the graded filter drain there should be a porous clayware or concrete drain connected to a suitable outfall.

On a very large scheme, warranting the expense of a full scale soil mechanics site investigation, the engineer may be able to carry out permeability tests to indicate the probable flow of water, and enable the size of the drain to be assessed. When this information is not available it may generally be assumed that a 6-inch or 9-inch diameter drain will be sufficient unless the ground is waterlogged or very porous. Provision for inspection of these drains, and for removal of silt, by rodding or flushing, is important.

Pressure on the underside of the floor may be dealt with similarly by providing a network of porous drains under a

layer of hardcore, gravel, broken stone or no-fines concrete under the floor slab (Fig 2).

If there is a stratum of impervious clay a few feet below the basement floor, it may be advantageous to extend the basement walls down to this clay to provide a cut-off and thus prevent water pressure building up on the underside of the floor (Fig 3). On large schemes interlocking sheet piling, or in-situ concrete walls, may be used for a similar purpose; either method will often assist construction by reducing influx of water into the excavation.

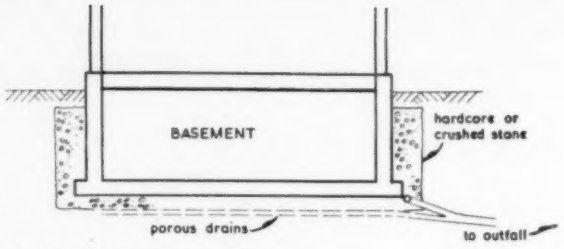


Fig 2 Drainage around basement

Arrangement

The weight of a building superstructure will normally be carried on the basement; external walls or columns rest on basement walls and help to resist the overturning forces from earth and water pressures; internally, loads will be carried on walls or columns resting on foundations either below or integral with the basement floor slab. If the ground loading under these foundations is higher than under the basement walls (as may often be the case), slight differential settlement will occur; construction joints need to be arranged and detailed to accommodate this. A possible alternative arrangement is to carry the external columns down on to independent bases placed either inside or outside the retaining walls (Fig 4). This is a useful method where piles are being used to carry the superstructure loads but the ground is suitable for carrying the basement wall loads.

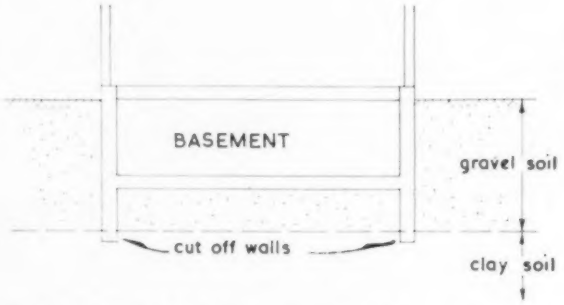


Fig 3 Cut off walls to prevent build-up of water pressure

Floors

Concrete is the most suitable material for the floor, whether the basement is to be tanked with asphalt or waterproof concrete construction is used. If there is water pressure on the underside of the floor, then either the self-weight of the slab must be sufficient to counteract the upward pressure (hardly practicable for any but the smallest pressures) or the slab must span to the columns or walls, which calls for reinforced concrete construction. Even if the latter is not necessary, it is suggested that mesh weighing between 4 lb a sq yd and 8 lb a sq yd should be provided to control cracking.

Construction

Basement walls are essentially retaining walls; they may be either of the gravity type in brick, masonry or mass concrete or of the cantilever or counterfort type in reinforced concrete. If backfilling can be delayed until suspended floors within the basement have been constructed, these will strut the walls and reduce bending moments (Fig 5); the weight of the superstructure will help to stabilise the wall against overturning and, in a gravity wall which has to be proportioned to avoid tensile stresses in the material, will produce a useful overall compressive stress. Thus a basement wall often may be made considerably thinner and lighter than a free-standing retaining wall of the same height.

Brickwork and masonry cannot be relied upon to be watertight, so asphalt tanking or cement rendering will normally be required. With mass concrete, provided that the concrete is well compacted, that walls are cast in short lengths of about 20 ft to minimise shrinkage cracks and that construction joints are generally formed and sealed in a way similar to the details given for reinforced concrete, then asphalt tanking may not be required.

Reinforced concrete is used generally for basement floors and walls, watertightness being achieved either by asphalt tanking or by the use of waterproof concrete; more about these methods will be said later.

Sheet steel piling is frequently used to uphold an excavation for a basement, especially when close to other buildings or roads; it may be withdrawn after the wall is constructed,

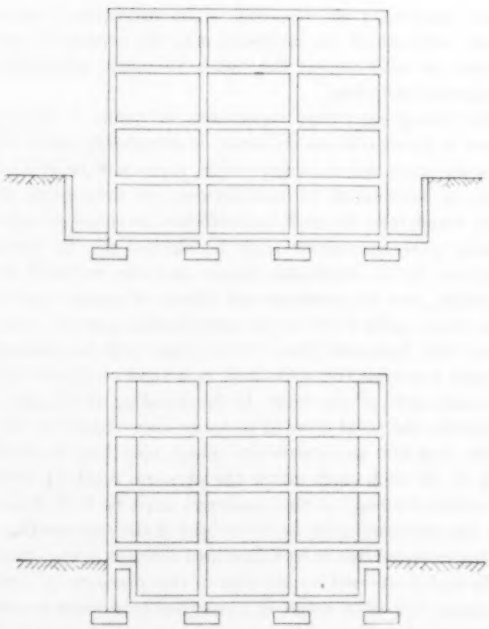


Fig 4 External columns carried down to independent bases inside or outside retaining walls

but more usually it forms permanent shuttering against which a concrete wall is cast. Other systems of construction, such as ICOS, have special applications in difficult situations; the licensees should be consulted to find out whether there is an advantage in using any particular system.

Tanks

Tanks constructed in conjunction with a building will usually be for the storage of water or oil, or used in connection with an industrial process, and will rarely become an integral part of the structure. Storage of water or oil in normal quantities is almost certainly most economically provided by independent metal tanks, delivered complete or in sections.

Occasionally a tank of large capacity or high elevation is required, either as part of a building or as a separate structure. Steel tanks are satisfactory in many cases, but reinforced concrete can offer both lower maintenance costs and better appearance. Prestressed concrete is especially useful for the construction of such tanks, particularly if they are circular in plan, as a permanent compression can be provided which reduces possibility of cracks and consequent leakage.

Indoor swimming pools are examples of large tanks closely integrated with the structure; reinforced concrete is used almost universally for these. The pool itself is usually constructed in the ground, with an adjacent basement to house plant, although occasionally the pool will be completely suspended. Such large tanks should be completely independent of the superstructure, so that differential movement may take place without risk of cracking.

Tanks constructed in the ground, such as swimming pools (either indoor or outdoor), offer the designer two problems: containing water without leakage when the tank is full and resisting pressure and uplift from ground water when it is empty. Drainage at the sides and under the floor will reduce this pressure, and if no outfall is available, the drain may discharge into the tank itself through a flap valve.

So far mention has been made only of tanks containing water. Concrete tanks have been used for storing oil, but there is little doubt that conventional steel tanks are more convenient and satisfactory for the capacities required for buildings. Other liquids may be stored in brick or concrete tanks, but investigation should be made into chemical reaction, and the possibility and effectiveness of special linings.

Asphalt and bituminous felt tanking

This method of waterproofing can be used for both tanks and basements and for all forms of construction—brickwork, masonry, mass concrete or reinforced concrete. Most books on building construction give typical details, the basic principle being to position the membrane so that the water pressure, either in the soil or in the tank, presses it against the floor or structural wall. This results in the membrane being outside the structure in the case of a basement, and inside the structure in a tank. It must be admitted, however, that many basements have been constructed with the asphalt on the inside face; in these cases the watertightness is probably provided mainly by the structural wall and floor, the membrane acting as damp-proofing. Both asphalt or bituminous felt require protection by thin non-structural walls; it may be convenient to build these first, apply the membrane, and then use them as permanent shuttering for concrete.

With these types of waterproofing the slight ductibility of asphalt or bitumen enables small movements of the structure to be accommodated without fracturing the membrane, especially if it is reinforced with hessian or similar material. Large movements caused by settlement will be less easily accommodated, and once the membrane is broken location and repair may be both difficult and expensive. It is an advantage that waterproofing is the responsibility of a specialist, although long-term guarantees are not now given.

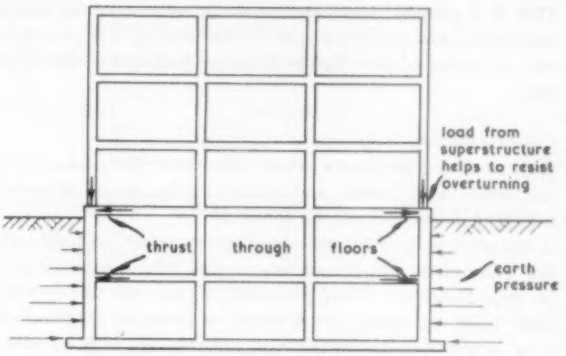


Fig 5 Retaining walls strutted by suspended floor

Cement rendering

This can be applied to brick, masonry or concrete walls and is an attractively economic method of waterproofing. Various additives are available, which help to produce a dense and waterproof cement mortar rendering. Several firms offer a complete specialist service with a guarantee. If settlement causes cracks in the rendering and destroys the waterproofing, the damage can be repaired. Special care must be taken around fixings, etc, to ensure that the membrane is maintained, and no path provided for water leakage.

Cavity construction

For basements, dry internal skins can be provided to both walls and floors. It must be assumed that leaks will occur therefore drainage channels must be inserted along bases of walls and in the floor. Sub-floors of precast concrete units raised on small legs will provide the required cavity, and internal skins of brick or blockwork should allow a generous cavity between them and the wet external wall. These separate floors and walls, being non-loadbearing, are less liable to crack and let moisture through. Care must be taken to restrict the passage of moisture by providing good damp-proof courses to the walls and standing the concrete floor units on similar material.

This is a possible method of dealing with existing damp basements, but where leakage is considerable it is probably only a matter of time before moisture penetrates the inner skin.

Concrete tanking

Engineers and architects often differ as to the meaning of the word waterproof, and consequently as to whether waterproof concrete can be achieved.

A well-designed and constructed concrete wall or tank will not leak water, and the surface remote from the water will be dry. However, water pressure on one side of the wall may build up inside the concrete a pressure resulting in very slight vapour movements towards the dry surface; this vapour normally evaporates from the surface of the concrete without being seen. If, however, there is a decorative finish applied direct to the concrete, the vapour may eventually affect it. A thin waterproof membrane of bituminous material applied by brush or spray to the dry side of the wall will normally be sufficient to prevent this vapour movement and avoid damage to the finish.

The permeability of well-compacted concrete is largely dependent upon the water/cement ratio, which should be low, but not so low as to make compaction difficult. Honeycombing and segregation caused by poor compaction are more serious causes of leakage than permeability of concrete. Careful design of both structure and concrete mix and supervision by an experienced engineer are essential if the best results are to be achieved. It is important that the specification should draw the contractor's attention to the requirements, and set out clearly his responsibilities; the contractor's full co-operation is required. While this will undoubtedly increase the cost of the reinforced concrete work, the extra sum will be more than covered by elimination of the asphalt membrane and its protection.

There are many waterproofing additives, most of which, improve workability of concrete, thus making possible a reduction in the water/cement ratio and improving compaction. It must be emphasised, however, that use of a waterproofing additive does not automatically guarantee an impervious structure, and will not prevent leakage through badly designed or carelessly made joints, or through cracks caused by shrinkage or deflection. The engineer should satisfy himself that use of an additive offers some advantage, and ensure that the amount added to the concrete is carefully controlled.

Cracking

Cracking may result from excessive tensile stress in the concrete due to drying shrinkage, applied load, settlement or temperature. The British Standards Code of Practice for Water Retaining Structures (CP No 2007) requires the designer to limit tensile stresses in concrete to avoid cracking, as well as to reduce concrete compressive and steel stresses. The same recommendations and limitations may well be applied to basement walls and floors, particularly where the ground is waterlogged.

Joints

These—the most important part of waterproof concrete construction—can be divided into three broad types: construction joints, contraction or shrinkage joints, expansion joints.

Construction joints are introduced to allow the concrete to be placed in convenient amounts and, as no provision is made for subsequent movement, reinforcement is carried right through (Fig 6). With this type of joint all cement laitence or scum must be removed before the pour continues, by washing after the initial set has taken place or by wire brushing; and it is important to ensure that no wood shavings, mould oil, or anything that would provide a passage for moisture, are left in the joint.

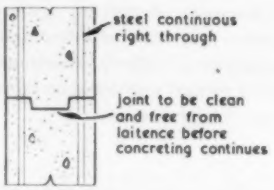


Fig 6 Construction join

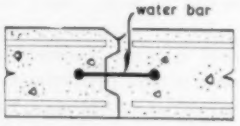
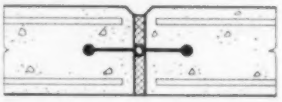


Fig 7 Contraction joint



also allows movement like this :-

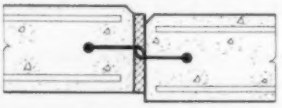


Fig 8 Expansion joint

The number of construction joints should be reduced to a minimum by arranging for concreting to be carried out continuously between expansion and contraction joints during the day. In walls, horizontal construction joints should be reduced in number by concreting in lifts of a height 12 to 15 times the wall thickness, provided that there is sufficient room between the reinforcement for insertion of vibrators. It is doubtful whether water bars are of much use in this type of joint, as no contraction occurs.

Contraction joints allow the setting shrinkage of the concrete to take place freely; they should be provided with a water bar to prevent leakage of water when the gap opens (Fig 7).

Expansion joints allow movement to take place freely, an initial gap of $\frac{3}{8}$ in to $\frac{1}{2}$ in being formed with a joint filter. Movement may be initial shrinkage, expansion caused by temperature rise, or a shear movement due to settlement such as might occur in a basement around a structural column (Fig 8).

Sliding joints are used mainly at the base of the wall of a cylindrical tank, to allow free expansion and contraction of the walls as the tank is filled and emptied.

Temporary open joints are combined construction and contraction joints. A gap, usually 1 ft 6 in to 2 ft wide, is left during concreting between adjoining sections of a wall or floor. After initial shrinkage of the concrete has taken place, the gap is filled with concrete, which must be carefully placed and compacted (Fig 9).

All joints should be positioned by the engineer and shown on the drawings. Usually joints will be spaced at not more than 25 ft in reinforced, and at not more than 20 ft in unreinforced, walls and floors.

Until a few years ago water bars were generally made of copper, but a decrease in its use has followed the introduction of rubber or pvc. Rubber or plastic water bars are often of dumb-bell shape, the theory of operation being that concrete shrinks and tensions the water bar, preventing leakage. Where large shear movements are likely, the type with a central tube is better able to accommodate the movement.

Rubber appears to be very satisfactory as a water bar, but joints in it have to be vulcanised; pvc can be joined with a hot iron, which is easily done on site and is much cheaper than vulcanising rubber; joints in copper should be brazed.

It is important to ensure the continuity of all water bars. Ample space must be provided for them; should one be set too near the surface of the concrete, there is danger of spalling leaving the water bar useless. Fixing and concreting should be carefully carried out and supervised, or the water bar may be displaced by the placing of the concrete or by the vibrator, or the concrete around it may receive insufficient vibration resulting in honeycombing, again making the water bar useless.

These matters are largely within the field of the engineer, who is called upon to design the reinforced concrete and provide all details of joints. The architect, however, needs to know of these joints in order to allow for possible movement in the finishes.

Remedial measures

It must be admitted that even if all precautions are taken, a reinforced concrete basement or tank may leak somewhere, possibly through incomplete compaction or a poorly made joint. What should be done? It may be possible to cut out a short section and concrete it again, as for a temporary open joint. If this method is not advisable, a firm specialising in waterproof renderings may be consulted.

Conclusion

This article has attempted to survey rapidly the field of waterproof construction for both basements and tanks. If the emphasis has been on waterproof concrete construction, it is because this material is frequently used for the structure of a basement, and to make it serve as waterproofing as well is economically attractive.

With all forms of construction, however, the advice given earlier is well worth repeating: as a loadbearing structure is likely to settle, possibility of movement should be recognised; joints should be provided around columns, in long lengths of wall and in large areas of floor so that the basement or tank can move indepently.

For conventional basements up to 10 ft or 12 ft deep, to be built by a contractor without facilities for concrete quality control, asphalt, bituminous felt or cement rendering tanking will probably be most satisfactory. Where a large basement is a civil engineering project, then undoubtedly concrete walls and floors can provide all the waterproofing required.

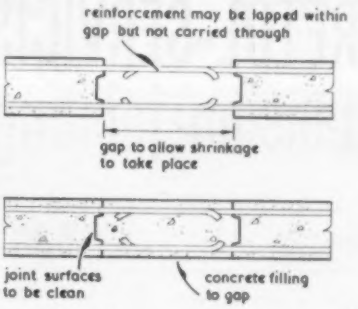


Fig 9 Temporary open joint

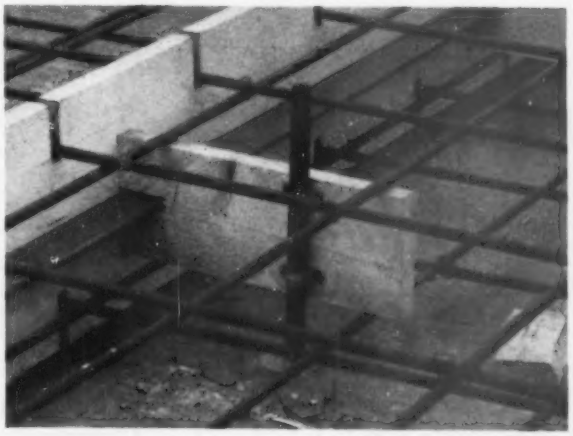


Fig 10 Waterstop inserted in formwork for construction joint ready for pouring concrete

Fig 11 A reservoir expansion joint showing continuity of a bulbed rubber water stop

TRETOL-SERVICISED LTD expansion jointing systems

SfB (13)K
(13)N5N6
(13)t4

Rubber Waterstop

Flexible, non-shearing waterstop for watertight joints in concrete. Natural elasticity, resistance to shear action and high tensile strength coupled with generous end bulb dimension and a toughness of web structure which ensures that the waterstop will not fold over and be rendered ineffective under the weight of poured concrete during construction. These attributes make Tretol-Servicised Waterstops the finest flexible waterstops available.

Flat Dumbell Section design for construction joints.

The special " Split type " is designed to eliminate the cost of slotting formwork.

The range available from stock is as follows:—

Type	Size	Web Thickness	End Bulb	Hollow Bulb
FLAT DUMBELL	6"	⅜"	¾"	—
	9"	⅜"	¾"	—
CENTRE BULB	6"	⅜"	⅞"	¾"
	9"	⅜"	1"	¾"
FLAT SPLIT DUMBELL	6"	⅜"	¾"	—
	9"	⅜"	¾"	—
SPLIT CENTRE BULB	9"	⅜"	1"	¾"

Junction Pieces

Vertical T

Flat T

Vertical L

Flat L

Four Way

PVC Waterstop

An effective substitute for rubber waterstop which is recommended for use in joints where a minor degree of hydrostatic pressure is likely to occur and where shear action is not expected. Circular section end bulbs ensure that deformation of the PVC at this point due to the natural contraction of the concrete, will not result in a leak.

Sizes

Flat Dumbell

4, 6 and 9 inches width

Centrebulb

5½, 7½ and 9½ inches width

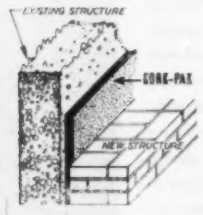
KORK-PAK

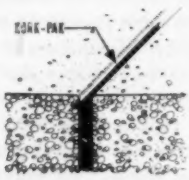
preformed joint filler

Kork-Pak is a resilient, premoulded, non-extruding joint filler. It is composed of cork and bitumen held in rigid form by outer layers of thick toughened asphalted paper.

It is both waterproof and rotproof, and is ideal for wet forms of construction. Kork-Pak is intended for use between contact surfaces: concrete to concrete: concrete to brick-work, etc., where compressible joint filler possessing substantial recovery is required.

Thicknesses
1, ½, ¼, and ⅛ inches
Board Sizes
10' 0" x 3' 0" or cut to size



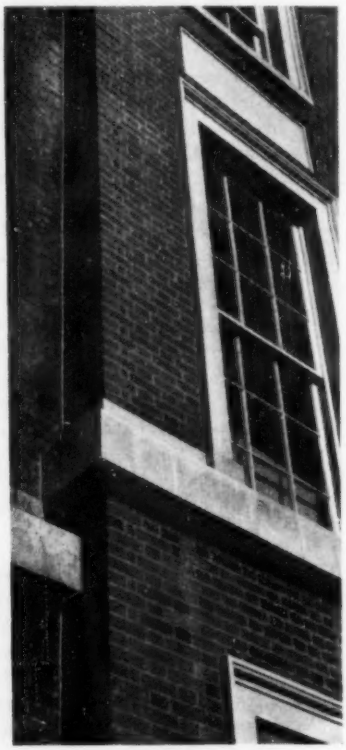


Vertiseal Sealing Compound

Vertiseal is designed as a high duty sealing compound for use in vertical joints where properties are required which are beyond the scope of normal building mastics.

Manufactured in Black, Stone-Grey or Brick-Red, it is ideal for many tasks ranging from waterproof construction below ground to curtain walling.

Vertiseal will provide a permanent seal which will retain its bond, resilience and toughness in spite of prolonged weathering—repeated expansion contraction and movement—complete immersion in fresh and salt water—attack by most solvents and chemicals—or change in temperature from below —20°F to 100°F.



Tretol Servicised Limited
2 Caxton St., Westminster, S.W.1
Tretol Ltd.,
Tretol House, The Hyde, N.W.9 COL 7223

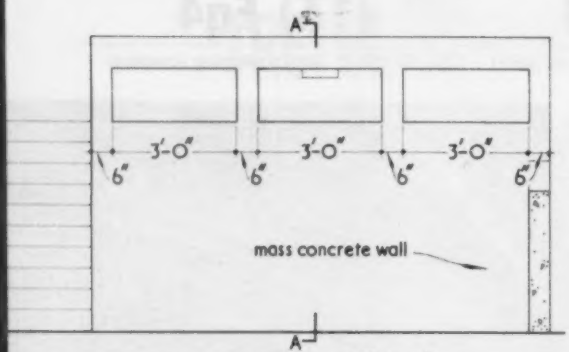
AJ SfB (13) Eq4

Working Detail UDC 69·022·2 Earth retaining structures

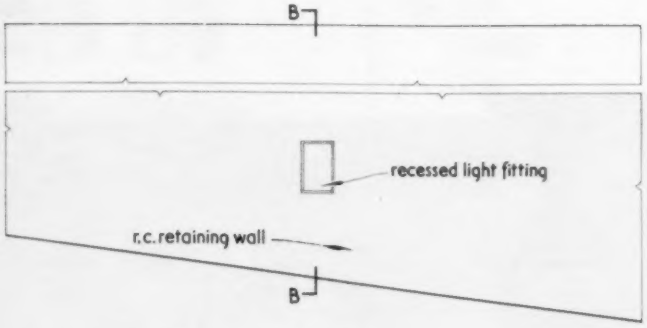
Retaining walls: Redevelopment scheme in Sheffield

J. L. Womersley, architect to Sheffield Corporation

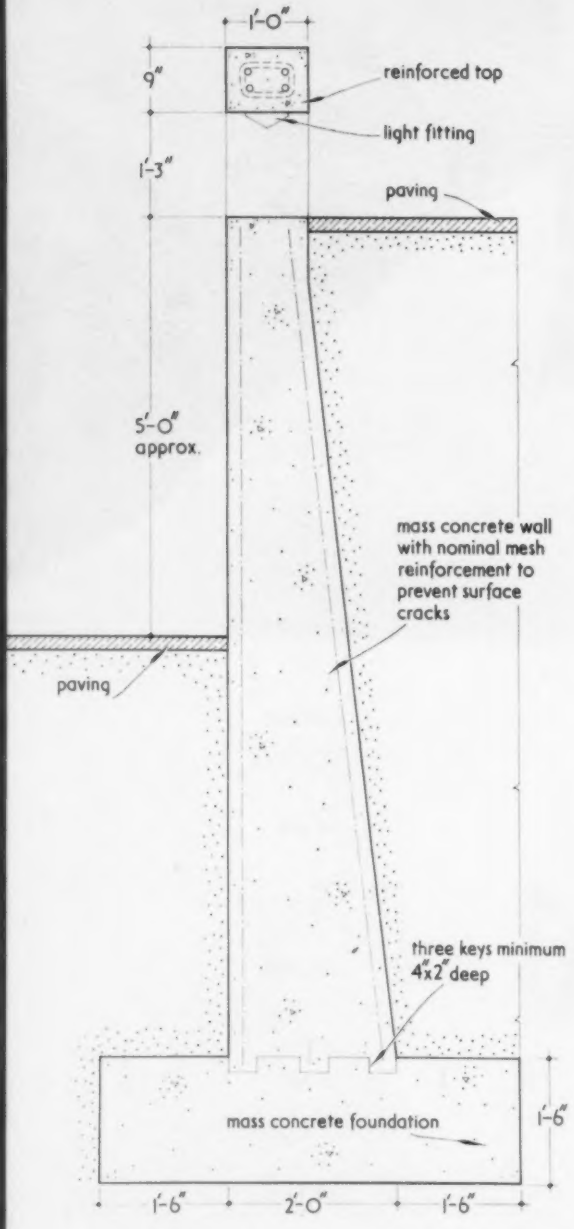
This detail illustrates two alternative structural types of retaining wall: on the left (with the slots at the top) is a mass concrete gravity wall; in the right foreground is a reinforced concrete cantilever wall.



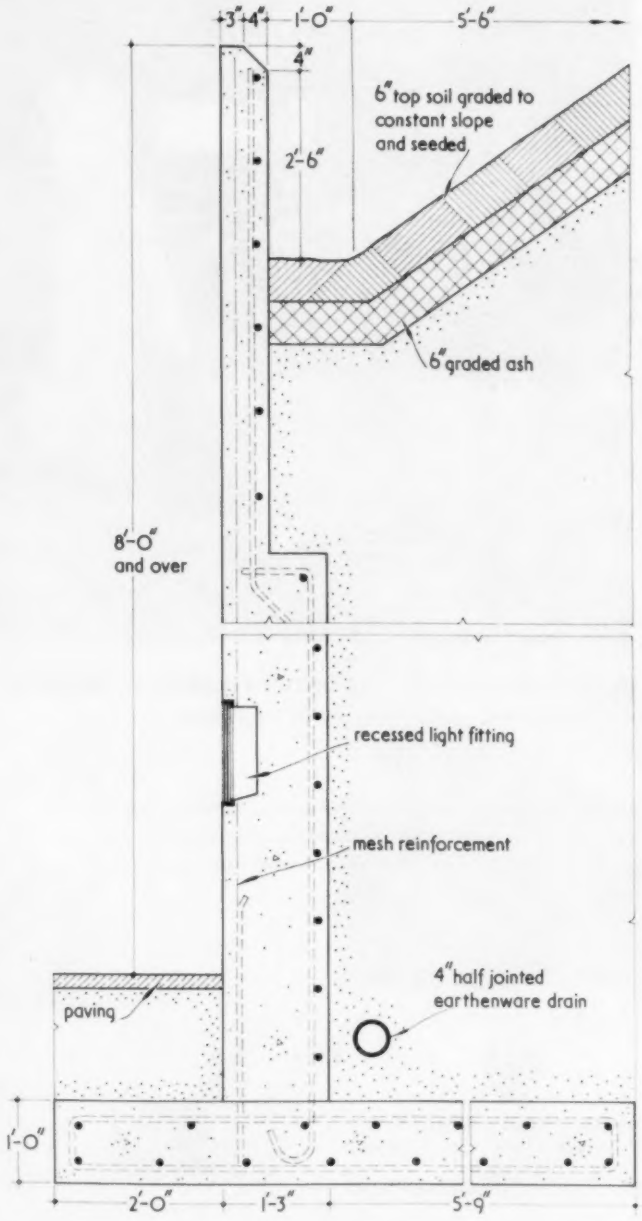
ELEVATION OF LOW WALL. scale ¼"=1'-0"



ELEVATION OF HIGH WALL. scale ¼"=1'-0"



SECTION A-A. scale ½"=1'-0"

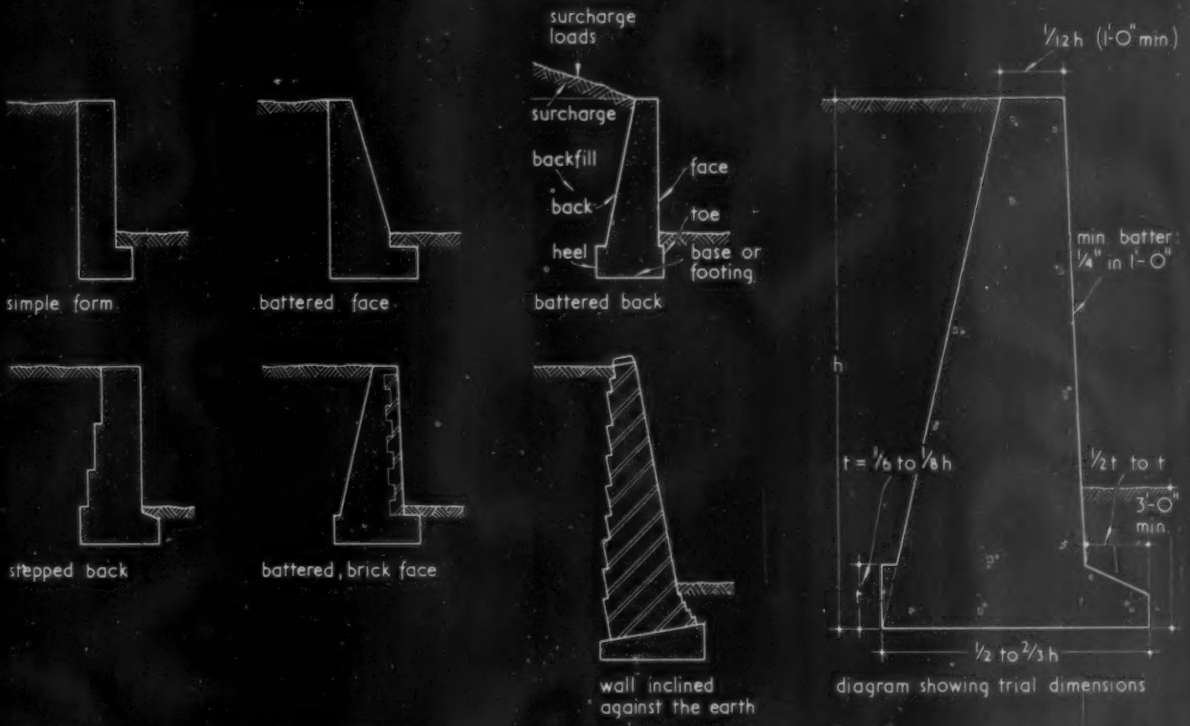


SECTION B-B. scale ½"=1'-0"

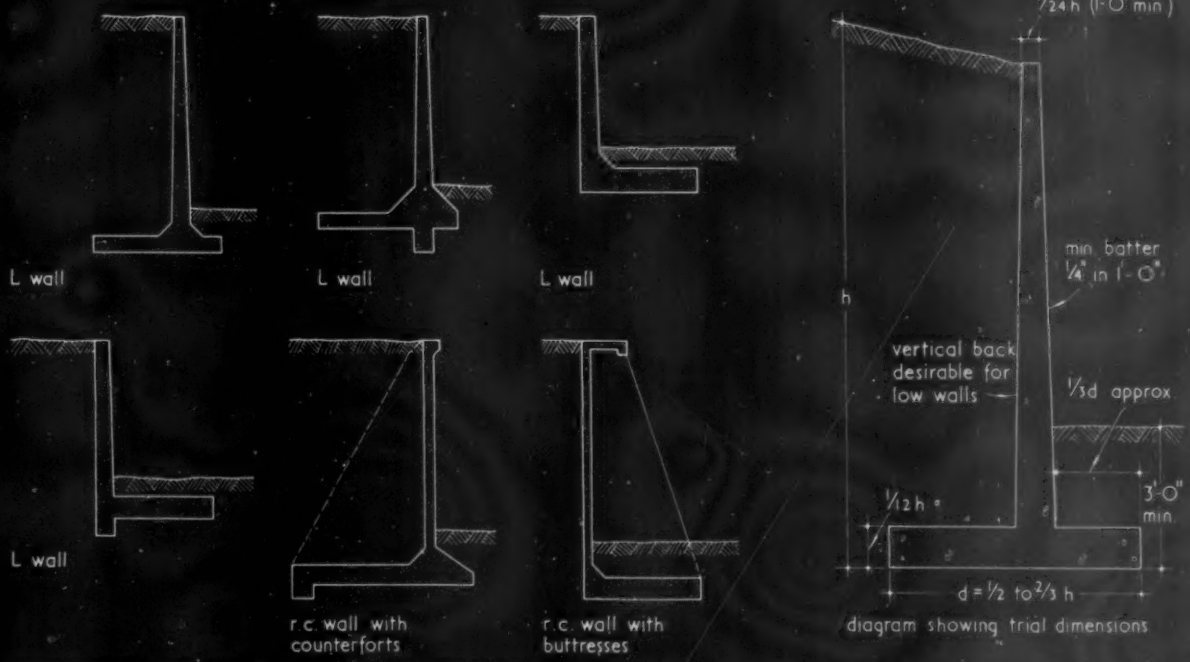
AJ SfB (13)

Information Sheet No 1007 UDC 69·022·2

Retaining Structures: General



GRAVITY WALLS : STRUCTURAL FORMS



REINFORCED-CONCRETE WALLS : STRUCTURAL FORMS

RETAINING WALLS 1 : GRAVITY AND REINFORCED-CONCRETE WALLS

RETAINING WALLS 1: GRAVITY AND REINFORCED CONCRETE WALLS

This Sheet is one of a series describing types and basic forms of construction of retaining wall. The drawings on the face illustrate typical structural forms for gravity and reinforced concrete walls and diagrams of trial dimensions for each.

Gravity Walls

This is a form in which the mass of the wall itself provides the weight which resists overturning. It is today considered suitable only for heights up to 6 ft. approx. but can, in special circumstances, be used for greater heights.

Materials: The following materials are normally used; concrete, brick and masonry can all be of low strength.

Mass concrete is simple to construct and can be faced with brick or masonry.

Brick should be frost-resistant in exposed positions.

Masonry is suitable but unless a cheap source is available it is less costly to use a concrete backing.

Dry rubble stonework is used for low walls in some parts of the country, but its success depends largely upon the skill of craftsmen: it is not suitable for upholding structures.

The notes on *Uses* and *Design and Construction* of gravity walls are based on Civil Engineering Code of Practice No. 2 (1951) *Earth Retaining Structures.*

Uses: Gravity retaining walls are preferable to reinforced concrete when skilled supervision and labour are not available, when water or soil in contact with the wall has a high sulphate content or where the wall may be subject to heavy or repeated impact or abrasion. They are generally more economical than reinforced concrete for heights up to 6 ft and simpler to construct and maintain.

Design and Construction: The aggregates, cement, water content and methods of mixing, depositing, curing and testing of mass concrete gravity walls should comply with BS Code of Practice C.P.111 *Structural Recommendations for Load-bearing Walls*; except that coarse aggregate may be allowed up to 2 in. gauge.

As a rule bricks with a high crushing resistance will not be essential for solid retaining wall construction since the design of the cross section will be based on the condition of no tension, or very small tension, across the joints and the compressive stress in the brickwork will not exceed a design value of about 2 to 2½ times the stress due to the weight of the brickwork of the wall above the level in question. Where the appearance of a wall is important the possibility of efflorescence resulting from the chemical composition of the bricks, mortar or the soil water should be taken into account. Normally efflorescence does not lead to deterioration of the brickwork.

Factors other than stability which affect the cross-section of a wall include the space in front of the wall, considerations of appearance and construction methods. Economy results when the wall is inclined or battered back against the backing to such an extent that the resultant compressive stress is uniform over any section, including the base and foundation of the wall. In mass concrete walls the battered form may allow casting directly against the face of the excavation, saving formwork. If an inclined or battered profile is not possible, economy of material will result from stepping or inclining either the front or the back of the wall. For a wall with a stepped back the virtual back of the wall is taken to be the vertical plane from the heel of the base to the surface of the earth backing. In brick or masonry walls with inclined courses, the inclination of the courses should not exceed 12 degrees.

Reinforced Concrete Walls

These are a special type of gravity wall in which part of the weight to resist overturning is provided by soil resting on a base slab. The wall may be one of the following.

Cantilever wall: This is most suitable for heights up to 25 ft.: above this the thickness of the vertical wall must be increased to an uneconomical extent.

Counterfort wall: This is more economical than a cantilever wall for heights above 25 ft. but is more complicated in construction.

Buttressed wall: This form of construction is not frequently used as it does not make use of the weight of soil to stabilise it. It is mainly used close to an existing building where constructing a large heel is impracticable.

Precast concrete units: These are often useful for the construction of temporary storage bins as rearrangement is simple.

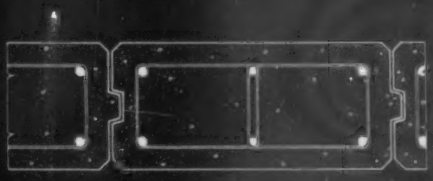
Structural Design

The two diagrams on the face of the Sheet, one for gravity walls and the other for reinforced concrete cantilever walls, set out trial dimensions. The principal dimensions for a counterfort wall are similar to those for a cantilever wall; the thickness of the wall, however, will normally be less. Normally the task of structural design will be in the hands of the consulting engineer, but the trial dimensions illustrated will enable the architect to make a preliminary assessment of sizes.

AJ SfB (13)

Information Sheet No 1008 UDC 69·022·2
Retaining structures: General

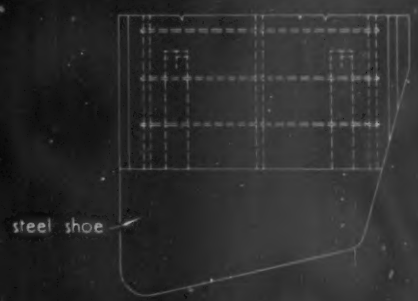
TYPES OF SHEET PILES



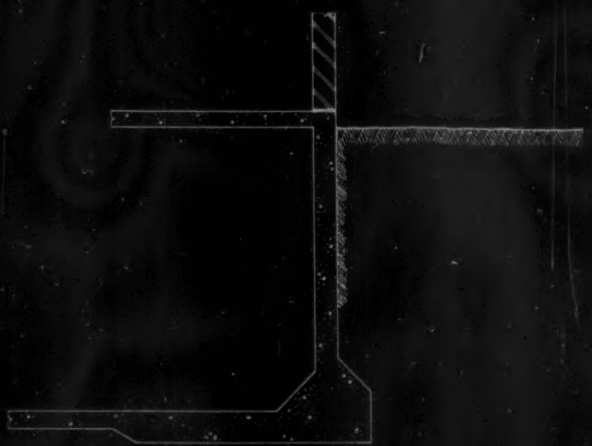
plan

Frodingham (The British Steel Piling Company Ltd.)

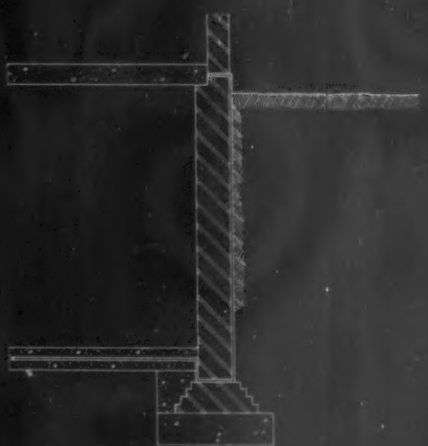
Larssen (South Durham Steel and Iron Company Ltd.)
STEEL SHEET PILES : TYPICAL PROFILES



elevation of toe
CONCRETE SHEET PILES



reinforced-concrete basement wall



brick basement wall

BASEMENT WALLS

RETAINING WALLS 2 : SHEET PILE AND BASEMENT WALLS

RETAINING WALLS 2: SHEET PILE WALLS AND BASEMENT WALLS

This Sheet is one of a series describing types and basic forms of construction of retaining wall. The following notes are based on Civil Engineering Code of Practice No. 2 (1951) *Earth Retaining Structures.*

Sheet Pile Walls

Sheet pile walls are of two main types:
(*a*) Cantilever—fixed in the ground by the resistance of the soil in front of and behind the lower part of the sheet piles.
(*b*) Anchored—supported by tie rods at the top of the sheet piles as well as the resistance of the soil. If the wall is very high two rows of tie rods may be necessary, the main ties being some distance down the wall and the secondary ties near the top.
The two types are illustrated on the face of this sheet. Anchored walls may be tied to anchorages of mass or reinforced concrete blocks, anchor walls, sheet piles driven singly, in groups or as continuous walls, raking bearing piles or other means.

Materials: Sheet pile walls may be constructed of timber, reinforced concrete or steel.
In the case of timber, the joints may be butted, but generally it is desirable with all types that joints be interlocking in some form. On the face of this Sheet a typical reinforced concrete pile is shown, together with two alternative proprietary rolled steel piles.

Uses: Cantilever sheet pile walls are only suitable for moderate heights. Anchored walls with a single line of ties are suitable for heights up to about 35 ft. For walls over 35 ft, or where the soil is of poor quality and unable to develop sufficient resistance for the anchorage the wall may be anchored to a reinforced concrete relieving platform on forward- and backward-bearing piles.
Timber sheet piles are normally only suitable for temporary works of moderate height. It is difficult to drive timber piles into compact soils such as sand and gravel without damage.
Reinforced concrete is usually more economical than steel when the height is moderate and ground conditions favourable. It is difficult to drive into compact soils and is much heavier than timber or steel thus requiring a larger hammer and heavier plant for driving.
Steel is reasonably watertight by virtue of its interlocking joints. It will penetrate into any subsoil except hard rock. It may be more costly than timber or reinforced concrete in permanent work but the plant for driving is relatively light and the driving cost is low.
Design and Construction: Timber sheet piles should be protected by the application of a suitable preservative.
Concrete piles should be in accordance with BS Code of Practice C.P. 114 : 1957 *Structural use of reinforced concrete in buildings*, as to the materials and methods of manufacture. When driven into any subsoil other than soft material, they should be provided with a shoe to protect the driving edge.
Sheet piles should comply in quality of steel with BS 15, 548 or 968. Workmanship should comply with BS 153, Part 2. The quality of wrought iron should comply with BS 51.

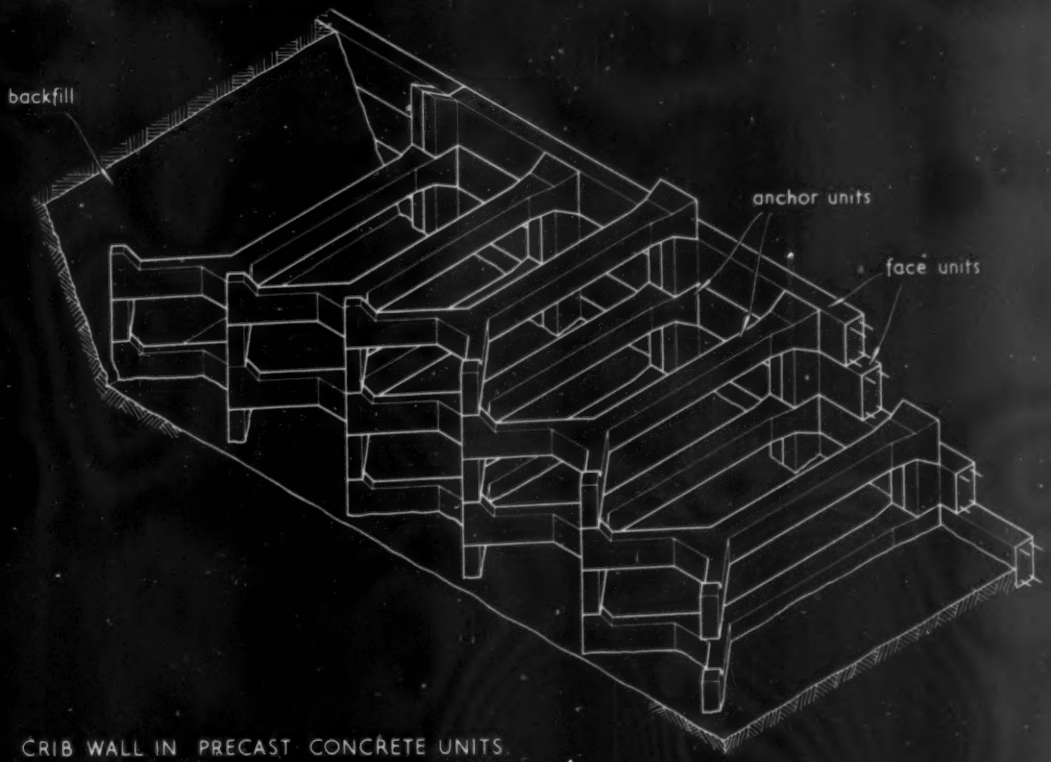
Basement Walls

On the face of this Sheet are two drawings illustrating basement walls in their capacity as earth-retaining structures. These are respectively reinforced concrete and brick.

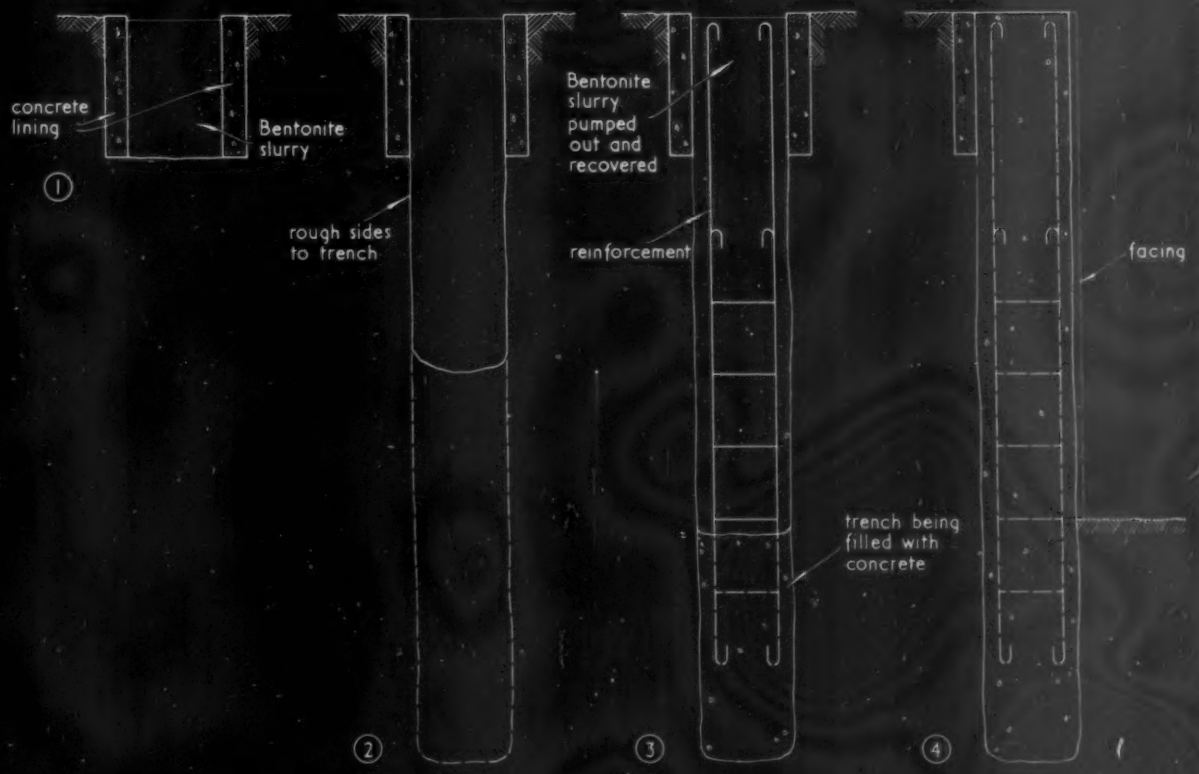
AJ SfB (13)

Information Sheet No 1009 UDC 69·022·2

Retaining structures: General



CRIB WALL IN PRECAST CONCRETE UNITS



IN-SITU CONCRETE PILE WALL

RETAINING WALLS 3 : CRIB WALLS AND IN-SITU PILES

RETAINING WALLS 3: CRIB WALLS AND IN-SITU CONCRETE SHEET PILES

This Sheet is one of a series describing types and basic forms of construction of retaining wall.

Crib Wall

Civil Engineering Code of Practice C.P.2 (1951) *Earth Retaining Structures* defines a "crib wall" as "any structure for retaining earth which is so built up of individual units that they form a series of box-like structures into which the backfill is placed to form an integral part of the retaining wall." The drawing on the face of this Sheet illustrates crib wall construction using precast concrete units. The following notes are based upon the Code of Practice. Early cribs were constructed in timber but any material is suitable which is capable of being built with an open or entirely closed face, but able to retain the filling material, with ties to an inner face completing the box form.

Materials:
Timber crib walls can be constructed with rough-sawn timbers or whole logs. Sawn timbers should be creosoted.

Reinforced concrete crib walls constructed from precast concrete members comprise stretchers, which are the wall face units, and headers or ties, which are the anchor units at right angles to the stretchers, anchoring the whole structure back into the earth. If additional weight is required a lean concrete filling can be used instead of earth.

Uses: Crib walls may be used to retain cutting slopes but are particularly suitable for earth which has to be tipped. When used to support an existing slope, a crib wall can normally retain a greater quantity of earth than a gravity wall. A crib wall should not be used if it is intended to carry a building immediately above it. Also it is inadvisable to use a crib wall if the slope to be retained is liable to slips, owing to the disturbance of the toe of the existing slope by the excavations and the difficulty of carrying the crib wall below any potential slip plane. Whilst satisfactory for temporary work, timber crib walls are not to be recommended for permanent work due to the short life of timber in contact with earth filling. Precast reinforced concrete walls have the advantage over gravity walls of using less concrete and being quicker to erect.

Design: A crib wall is essentially a composite gravity type of retaining wall and all its elements must be so designed and tied together that the whole structure behaves as a single unit. The design should be based on practical experience. The size of the precast units is often dictated by the requirements of casting and handling.

Filling material would normally be the locally excavated material. Materials able to develop high internal friction, such as coarse sand, gravel and rock rubble should be used, whenever obtainable, in preference to soils of low internal friction. With the former there is less risk of distortion of the cribs.

Construction: To assist in erection and to hold units in position during filling, the units should be interlocking. Weepholes are not necessary since the joints will not be pointed up. Crib walls should be built on an inclined plane with a batter not greater than 1 in 6 nor less than 1 in 8. Where the height is less than the length of the ties, however, walls may be built with a vertical face.

In-situ Concrete Sheet Piles

This type of retaining wall has particular application in confined spaces. The work of constructing such piles is of a specialist nature. Two firms in this country which specialise in this work are ICOS (Great Britain) Ltd., 46 Victoria Street, London S.W.1, and Soletanche Ltd., 36 Victoria Street, London S.W.1. They should be consulted for details of their individual proprietary techniques. The principle involved in constructing in-situ concrete sheet pile retaining walls is illustrated in the diagrams on the face of this Sheet. Generally the procedure is as follows:

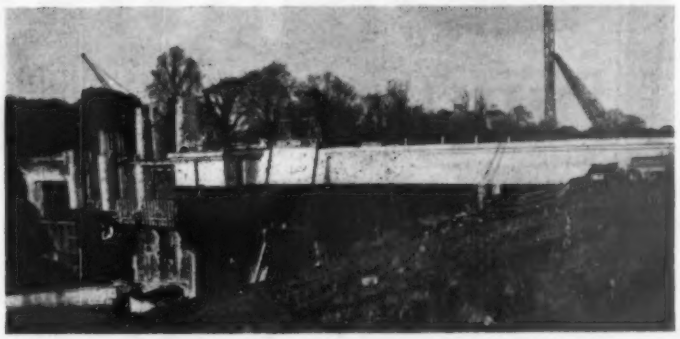
1 A narrow trench is dug and its faces lined with concrete. The trench is then filled with a material such as Bentonite in slurry form.
2 The trench is excavated to the full depth required for the retaining wall, the Bentonite keeping it open.
3 Reinforcement is inserted.
4 Concrete is poured into the bottom of the trench filling it up to form the reinforced concrete retaining wall. The Bentonite slurry is pumped out at the same time and recovered. The excavation can then be completed.

SfB (13)

SPECIFY INERTOL

for the WATERPROOFING and PROTECTION

of concrete surfaces
and metal structures



LEIXLIP HYDRO ELECTRIC SCHEME, EIRE.
PROTECTED WITH INERTOL STANDARD BLACK.
CONTRACTORS : HUSSEY, EGAN & PICKMERE, LTD.
BIRMINGHAM 4.

* SURFACE WATERPROOFING

INERTOL STANDARD BLACK protects concrete and similar surfaces against Moist Gases, Industrial Sewage, Sulphates and Sea Water. For lining tanks, retaining walls, etc.

INERTOL " 49 " BLACK protects concrete against acidic and sulphate-bearing waters. For lining reservoirs and tanks containing drinking water.

INERTOL ENAMEL is a stabilised coating based on chlorinated rubber. It is waterproof and resistant to acid and alkali. In an almost unlimited colour range, this grade is particularly recommended in cases where a decorative finish is required as in swimming pools, etc.

MEMBRANE WATERPROOFING

INERTOL STANDARD BLACK, applied by brush or spray, may be used as a membrane for rafts and concrete to take brick cladding.

INERTOL THICK, stouter than STANDARD, is also for brush application and fulfils similar needs where a greater degree of protection is required. Particularly recommended for retaining walls prior to back-filling.

INERTOL HOTMASTIC is a tough quick-setting asphaltic compound, applied hot. Recommended where a thick waterproof membrane is necessary, e.g., bridge deckings, tanks, roofs and also in concrete floors.

TANKING

INERTOL EPOXIDE COATINGS are available in a variety of types for almost all industrial needs. Grades are available for protection against sewage, petrol, oils, acids, etc. A special tank lining technique has been developed and details will be provided to meet particular requirements.

EXPANSION JOINTING

INERTOL EXPANSION JOINTING is a bituminous poured jointing for sealing expansion, contraction and vibration joints in concrete roads, bridges, reservoirs, etc.

Technical literature is available on request or detailed specifications will be prepared to individual requirements.

BARBOUR INDEX FILE No. 14

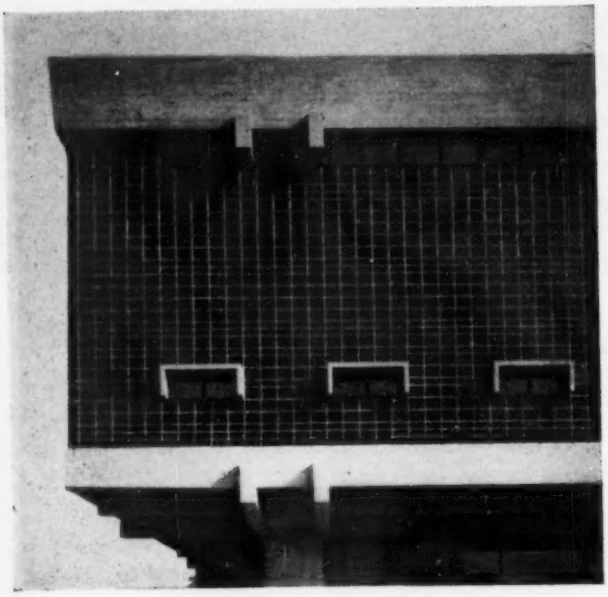
Inertol
REGD TRADE MARK

INERTOL COMPANY LIMITED
WEST CARR LANE · STONEFERRY · HULL

Tel : 42115 *Grams :* INERTOLCO HULL

London Office : 348 Upper Richmond Road, Putney, S.W.15 *Tel :* Putney 3376
Glasgow Office : 3-7 Colvend Street, S.E *Tel :* Bridgeton 4105

SfB (13)



New Japanese Architecture

by Udo Kultermann

Western opinion has an ideal image of modern Japanese architecture: spare, elegant, informal. While the work of Junzo Sakakura seemed to support this, there is an increasing awareness that in Kenzo Tange Japan possesses an architect who probably ranks with the world's top ten, but practises an entirely different kind of architecture.

Dr Kultermann's book shows how different the work of Tange and other leading Japanese architects has turned out to be. It is not afraid of mass, thickness and solidity; not afraid of bold plastic and sculptural forms; not afraid to mate the most advanced technology with the most hallowed traditional usages.

All these qualities are brought out in dramatic photographs, backed by analytical texts and biographies of leading architects. Since some of these men were born within a few years of Mendelsohn and Le Corbusier, the modern architecture of Japan rests on a tradition almost as old as that of the West. As a result, Japan's new architecture has nothing unpractised or unconvincing about it, but is already so secure in its aims that the Japanese themselves speak of it not as a foreign importation, but simply as the re-awakening of Japanese architecture.

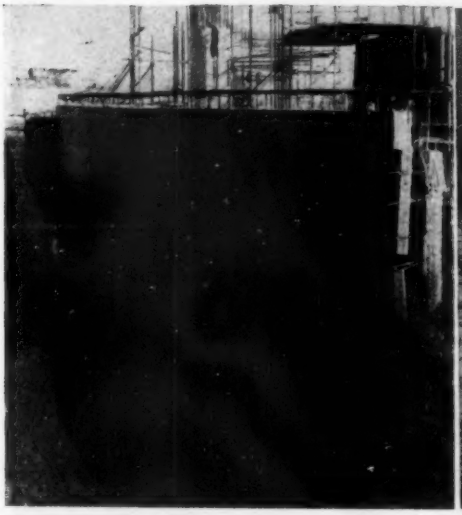
The Architectural Press
9–13 Queen Anne's Gate. London, S.W.1.

Size 11¼ × 8¾ ins. 212 pages. 180 half-tone illustrations. 63*s. net*. Postage 2*s*.

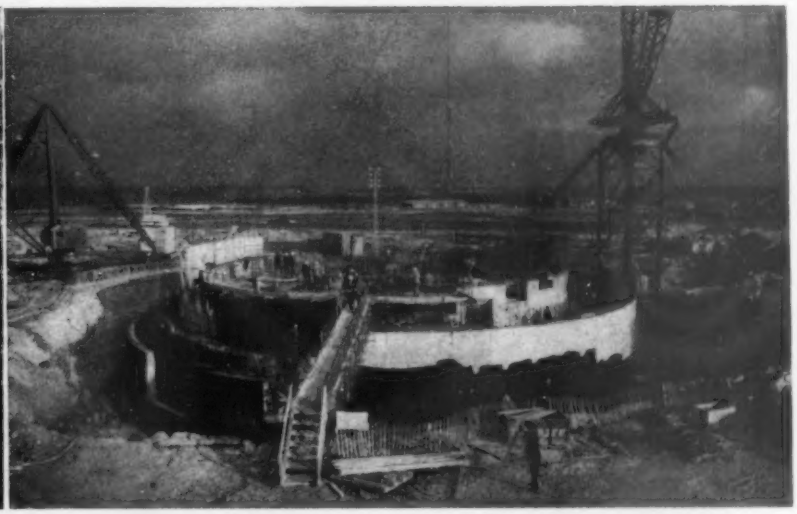
SfB No. 13

R.I.W. LIQUID ASPHALTIC COMPOSITION

. . . has been serving the Building & Civil Engineering Industry for over a century and derives its superiority from the fact that it is based upon a natural asphalt.



Close-up showing the tough protective coating of R.I.W. Liquid Asphaltic Composition to the external walls of the "Dragon" Reactor, Winfrith, Dorset, 25 feet below ground level.



Overall view of "Dragon" Reactor, Winfrith, illustrating application of R.I.W. Liquid Asphaltic Composition during construction and prior to earth back-fill.

Photographs by courtesy of United Kingdom Atomic Energy Authority.

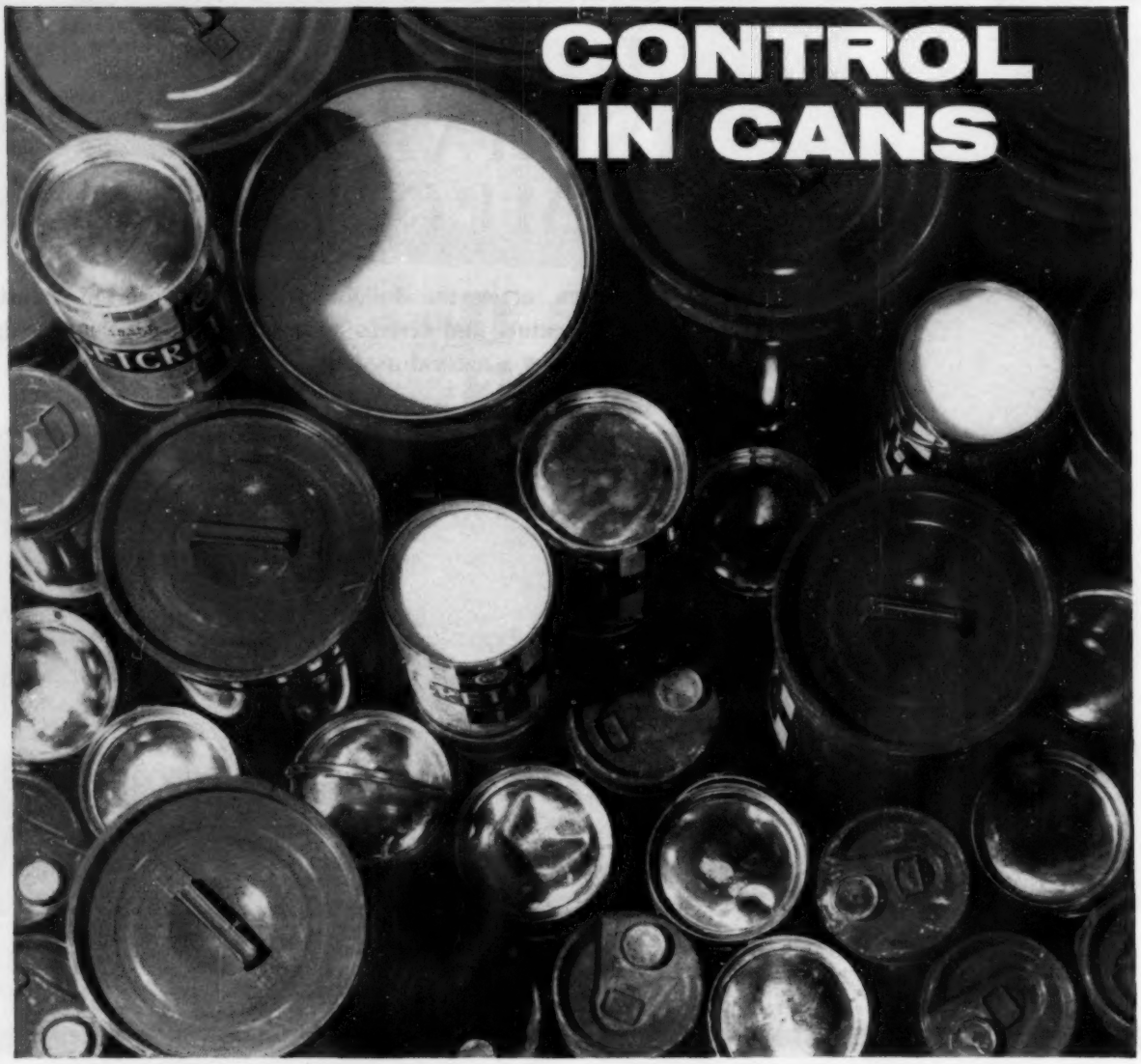
R.I.W. Liquid Asphaltic Composition applied cold, in two coats, provides a permanent, impervious, waterproof and vapour-proof barrier, in horizontal and vertical applications at, above and below ground level.

SPREADING CAPACITY :	per gallon, one coat: 1st coat: 80 sq. ft. 2nd coat: 125 sq. ft.
PREPARATORY WORK :	Surfaces to be coated should be dry, free of any foreign matter and brushed clean of all dirt and loose material prior to application.
APPLICATION :	Turks head brush or coco fibre broom.
PACKING :	1 gallon cans; 5 gallon drums; 40/45 gallon barrels.
PRICE :	250 gallon lots 40/45 gallon barrels (free) . . . 13/9d. per gallon (carriage paid).
TECHNICAL LITERATURE AND SPECIFICATIONS :	Leaflet 3/53; Drawing Nos. 12558 and 26960; Test Reports by R. H. Harry Stanger; Illustrated leaflet—"Stop Damp, Corrosion & Decay".

For full details of the complete range of R.I.W. constructional, protective and decorative products against a wide variety of destructive agencies, please apply to:

R.I.W. PROTECTIVE PRODUCTS CO. LTD., 325 WHITEHORSE ROAD, CROYDON, SURREY · Tel. THO 6121/2/3

SfB (13)



THE **SETCRETE** SECRET OF BETTER MIXES

Key to supremely successful mixes – concrete, cement, mortar and the like – lies in **control.** For real control Setcrete products – result of 35 years' specialised experience – provide the answers.

CONTROL uniformity of strength and impermeability of mass and reinforced concrete by integral waterproofer Setcrete No. 1.

CONTROL plasticity and workability of concrete; Flocrete increases workability up to 150%.

CONTROL setting times of concrete, cement, rendering, gunite, screeds; Setcrete No. 6 gives dense, waterproof, hard finish – ready for use in 24 hours.

CONTROL rising damp in solid concrete floors by damp-proof membrane provided by Setcrete No. 10.

CONTROL performance, speed and economy factors: floor hardener – Setcrete No. 16 – reduces porosity and "dusting"; mortar plasticiser – Setcrete No. 17 – non-detergent air entrainer which replaces lime; plaster sealer – Paloseal – excellent for hardboard (and cement too); water repellent – Setcrete No. 19 – invisible silicone protection for outside walls; frost proofer – Setcrete No. 25 – increases rate of set and strength - gain at low temperatures.

Bulk delivery can be arranged direct to site.

QUICKSET WATER SEALERS LIMITED
Manufacturing and Sales Division 20 Albert Embankment, London SE1
Telephone: Reliance 6731-2-3 Telegrams: Tanking London (Telex)

Bentley Works, Doncaster *Doncaster 54175-9*
248 Monument Road, Birmingham 16 *Edgbaston 1525*
Haddricks Mill Road, South Gosforth, Newcastle-upon-Tyne *Gosforth 53906-8*

THE TRETOL GROUP

Waterproofers for Structural Concrete and Renderings

SfB (13)u2

Tretol CONCRETE liquid Waterproofer

FUNCTION:

Waterproofing Concrete of a structural nature:
Foundations, Ductings, Floor Slabs, Retaining Walls, Columns, Boiler Houses, Beams, Underground Garages, etc.

TYPE:

Concentrated Liquid used diluted with gauging water.

EFFECT OF USE:

Waterproofs efficiently without adversely affecting compressive strength of Concrete. Its incorporation in mix will provide some reduction in water/cement ratio.

SPECIFICATION:

Tretol *Concrete* Liquid waterproofer to be added to gauging water in proportion of:

1 part Waterproofer to 25 parts water.

Gauge and mix in normal fashion reducing water/cement ratio to provide the desired slump.

Results of percolation tests made in the R.H. Stanger Laboratories on 2″ thick specimen containing TRETOL RENDERING LIQUID WATERPROOFER. Each pressure maintained for 1 hour.

Water pressure	Foot Head	Quantity of water percolating through specimen per hour
30lb psi	69	Nil
50lb psi	115	Nil
100lb psi	230	Nil
150lb psi	345	Nil

Tretol RENDERING liquid Waterproofer

FUNCTION:

Waterproofer internal and external renderings and floor screeds of basements and cellars, waterproofing of tanks and pits. Interior Waterproofing of walls with defective DPC. Waterproofing mortar for external plastering, shingle or Spar Dashing and Roughcasting.

TYPE:

Concentrated Liquid—used diluted with gauging water.

EFFECT OF USE:

Permanent Waterproofing: Improved workability, adhesion and finish of Rendering. Reduction of cracking and crazing by retarding loss of gauging water.

SPECIFICATION:

Type of Waterproofing Work	Method	Mix and Dilution Rate
Basements, Cellars, Water-containing Structures.	(1) First render walls 3 coats each ½″–⅝″ total 1″. Working joints should not occur at vertical angles or coincide in successive coats. Form concave fillets at all angles. (2) LAY FLOOR LAST in one operation 1½″–2″ thick, concave fillets at angle of wall and floor—bullnose corners.	2½ parts clean, sharp sand, 1 part fresh Portland Cement. *Dilution*—1 part Tretol Rendering Liquid Waterproofer to 20 parts gauging water.

IMPORTANT NOTE—It is necessary to obviate water pressure or penetration during work and for 5-7 days after completion.

Interior walls having defective d.p.c.	(1) Render 2 coats to total thickness of ½″–¾″ to at least 18″ above visible level of dampness. (2) (Optional) Dig soil away to foundations and render to 6″ above normal soil level externally.	2½ parts clean, sharp sand, 1 part fresh Portland Cement. *Dilution*—1 part Tretol Rendering Liquid Waterproofer to 20 parts gauging water.
External wall plastering. (1) Shingle or Spar Dashing. (2) Roughcasting. (3) Plain Rendering.	(1) Render and scratch first coat: allow to set but apply second whilst damp. Dash with pea gravel, chippings, etc., and press in with trowel. (2) Render and float as above but throw on roughcast whilst 2nd coat still plastic. (3) Render and float in 3 coats to total thickness of ½″–1″.	4½ to 5 parts clean, sharp sand, 1 part fresh Portland Cement. *Dilution*—1 part Tretol Rendering Liquid Waterproofer to 30 parts gauging water.

Note: All rendering to be kept damp for 4 to 5 days following completion.

PREPARATION:

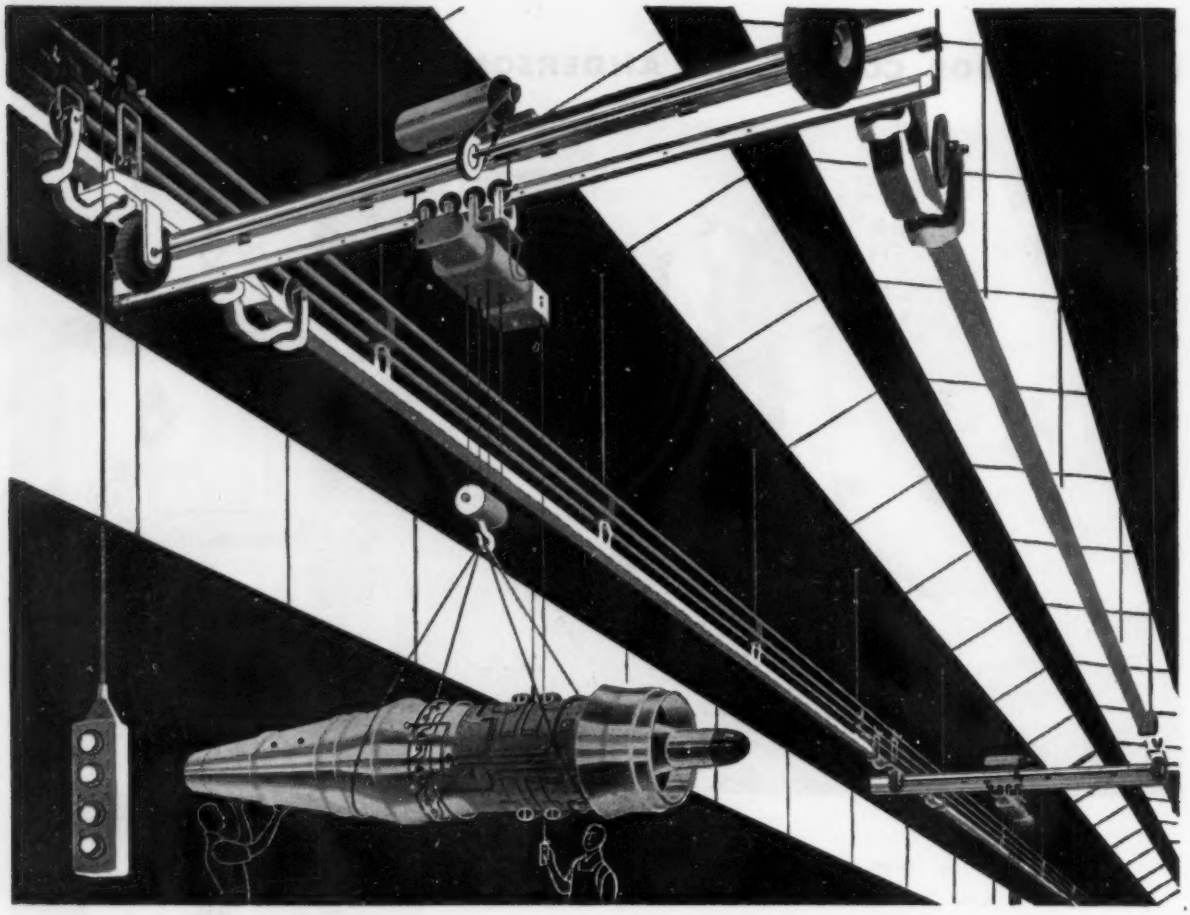
Remove old decorative material where present. Close-hack Concrete surfaces, Rake out brick joints ½″–¾″ deep and score bricks. Wash dust off all surfaces and leave damp.

TRETOL LIMITED
Tretol House · The Hyde · London NW9
Telephone: COLindale 7223

AJ SfB (13)

Retaining structures

END



Industry's new motorways speed heavy loads OVERHEAD

After a survey of your plant, we produce a tailor-made plan. This and the estimate are free.

Loads up to ten tons can be transferred smoothly across the factory with Underslung Bridge cranes specially developed by British MonoRail. With spans up to 200 feet they will straddle wide bays. The underslung principle permits interlocking between parallel cranes, and the transfer of loads from one bridge to another. When the cranes are installed as part of a complete MonoRail system, the load can be transferred beyond the crane area to any part of the factory.

More advantages of MonoRail Underslung Cranes. Economical in headroom. Low in deadweight. All materials specially rolled, forged or cast for the job. Rubber-tyred crane drive eliminates track wear. Track of standard flange width and specifically designed for this purpose. Local, remote or automatic control optional.

A complete Overhead System. Underslung cranes are just part of the MonoRail handling and transfer system. It is an individually tailored system, covering every type of installation from the smallest gravity drive to the most complex automated systems.

IF YOU WANT TO GET A MOVE ON

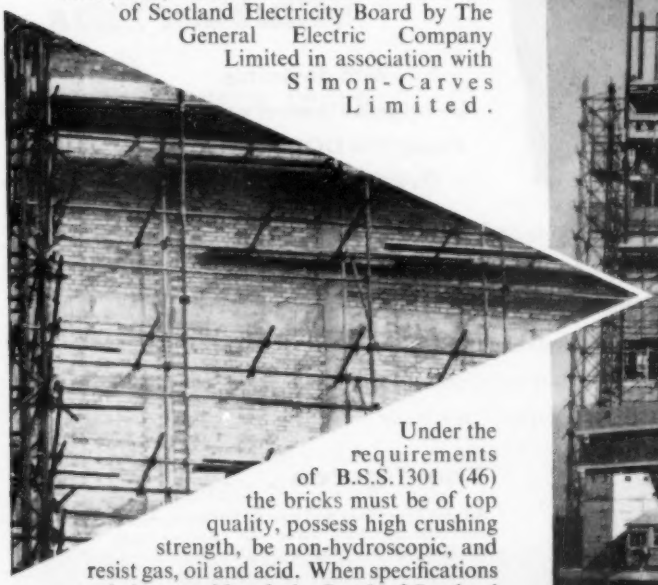
Send for the man with the MONORAIL plan

BRITISH MonoRail LIMITED WAKEFIELD ROAD · BRIGHOUSE · YORKS · TELEPHONE: BRIGHOUSE 2244

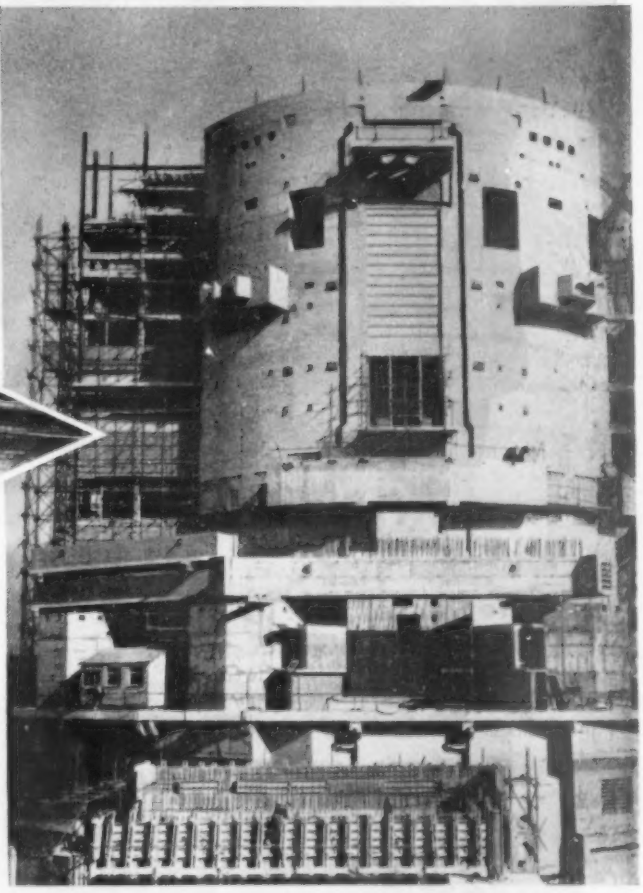
A member of the Herbert Morris Group of Companies

HAUNCHWOOD BLUE BRICKS CHOSEN FOR HUNTERSTON NUCLEAR POWER STATION

Nuclear power station construction demands special characteristics in the materials used. Haunchwood Blue Pressed Engineering Bricks were therefore chosen for parts of the outer radiation shielding of the reactors at Hunterston, under construction for the South of Scotland Electricity Board by The General Electric Company Limited in association with Simon-Carves Limited.



Under the requirements of B.S.S.1301 (46) the bricks must be of top quality, possess high crushing strength, be non-hydroscopic, and resist gas, oil and acid. When specifications were being considered, the South of Scotland Electricity Board, Simon-Carves Ltd., and the main Civil Sub-contractors, John Mowlem (Scotland) Ltd., were unanimous in their choice — Class "A" Blue Pressed Engineering Bricks — by Haunchwood and their associate company G. W. Lewis Tileries Ltd.



HUNTERSTON NUCLEAR GENERATING STATION, WEST KILBRIDE, AYRSHIRE

CLASS 'A' BLUE PRESSED ENGINEERING BRICKS

by HAUNCHWOOD *of course!*

Enquiries invited — standards or specials — from HAUNCHWOOD BRICK & TILE CO. LTD. Stockingford, Nuneaton. Telephone: Nuneaton 3419

FWS. *Haunchwood Brick & Tile Co. Ltd. In association with G. W. Lewis Tileries Ltd.*

For Sale!

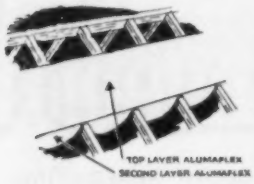
Pocketsful of air

. . . with desirable
U-value at lowest cost.
Apply the DOUBLE-'A'
System . . . NOW!

The Facts . . . . . .

ALUMAFLEX IS A FIRST-CLASS ROOF INSULATING MATERIAL—

a reinforced bituminous felt **plus** a surfacing of flame resisting burnished aluminium foil that reflects 95% radiant heat back into the building.



THE NEW DOUBLE-'A' SYSTEM

consists of **two** layers of ALUMAFLEX . . . the first allowed to drape between the beams, the second stretched taut over the beams.

This creates pockets of warm air at the highest point of the building — and the most effective barrier yet against penetration of cold and loss of heat through the roof.

The Figures . . . . . .

An average ceiling and roof including ordinary underslating felt gives an approximate U-value of ·43.

ONE LAYER OF ALUMAFLEX—

in place of ordinary felt yet costing only about 7d. per sq. yd. more — **gives an approximate U-value of ·30.**

THE DOUBLE-'A' SYSTEM—

costing **less** than 3/- per sq. yd. more than ordinary underslating felt – **gives an approximate U-value of ·21!**

This — and the cost of labour **saved** by installing complete roof insulation in one operation — makes DOUBLE-'A' the finest system at the lowest possible cost available today!

ALUMAFLEX

In time for **your** next important project . . . please ask for a sample of ALUMAFLEX and full details of THE DOUBLE-'A' SYSTEM . . . Post your business letterhead or the coupon provided, to . . .

ENGERT & ROLFE LIMITED
Barchester Street London E14
Tel: EAST 1441

Please send a sample and details of ALUMAFLEX and the DOUBLE-'A' SYSTEM

to.....

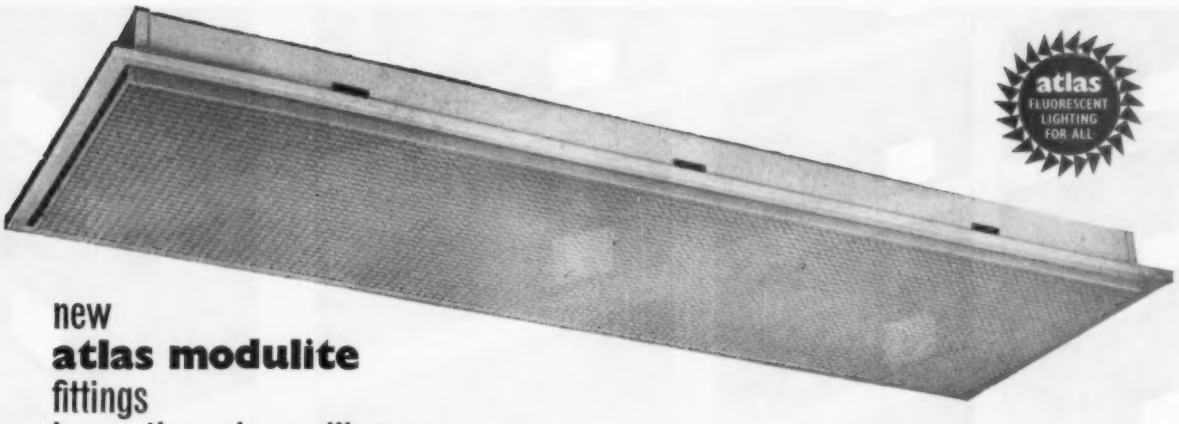
(Designation).....

of.....

.....

.....

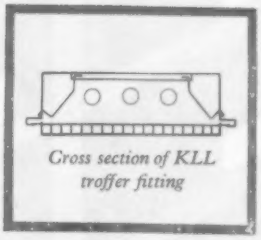
A.J.2.



atlas FLUORESCENT LIGHTING FOR ALL

new **atlas modulite** fittings lower the price ceiling of 'modular' lighting

The new Atlas **Modulite KL** Series of troffer fittings bring 'modular' lighting into the 'popular' price range. These fittings are extra shallow, only 3½" deep, and lightweight, great advantages when it comes to installations where the tiles are fitted close to the true ceiling. Like all Atlas Modulite fittings, the KL Series is designed for easy and neat installation, and to allow for easy maintenance after fixing. Three elegant Atlas diffusers complete the picture, Translucent 'Perspex', Interlocking Vinyl Sections, and Shallow Plastic Louvre. All three are available in 2, 4, 6 and 8 ft. lengths on a 2 ft. module, or for continuous mounting.

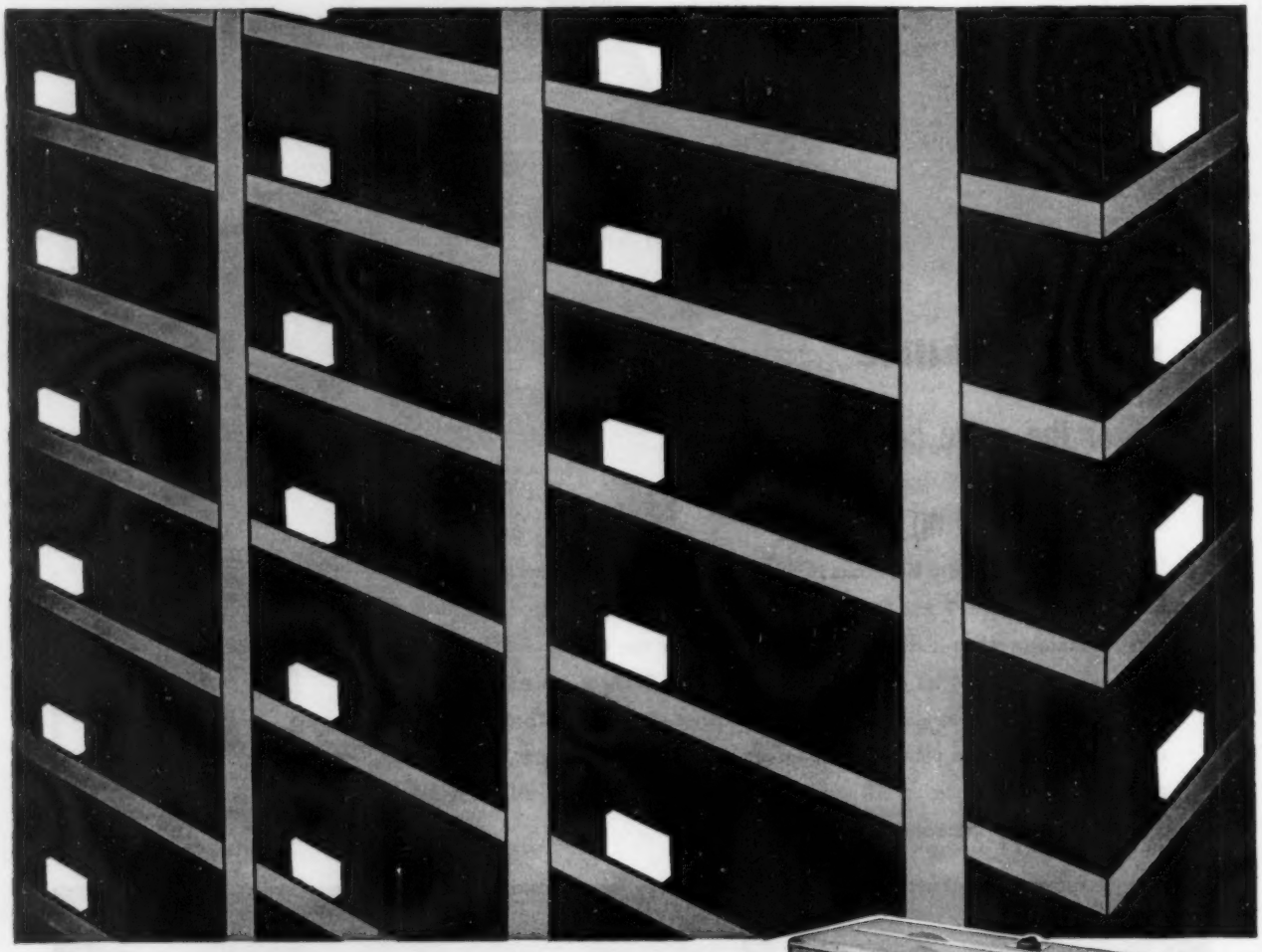


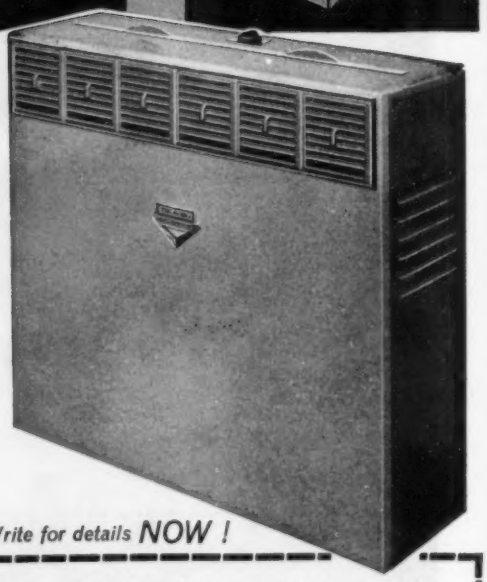
Cross section of KLL troffer fitting

Barbour Index No. 200

atlas Atlas Lighting Ltd · Thorn House · Upper St. Martin's Lane · London WC2 DTV

revolutionary new method of air conditioning





for 1 room or every room in the building —at lower cost

Put one *new* TEMKON, floor-mounted, room air conditioner, in *every* room in the building, and the cost will still be 30% to 50% *less* than a central station plant. Running costs are lower because each conditioner is used individually as and when required, making the installation wholly flexible.

The appearance of the conditioner is attractive. Their slim-line construction and duo-tone finish ensure that they blend with any office decor – and this unit heats as well.

And it's the World's quietest air conditioner

TEMKON ***FLOOR-MOUNTED, ROOM AIR CONDITIONER***

TEMPERATURE LIMITED BURLINGTON ROAD, LONDON S.W.6
Phone Renown 5813. Cables: Temtur London

Makers of the World's quietest room air conditioner. 142

Write for details NOW !

Please send details of the new TEMKON floor-mounted room air conditioner.

NAME _____

POSITION _____

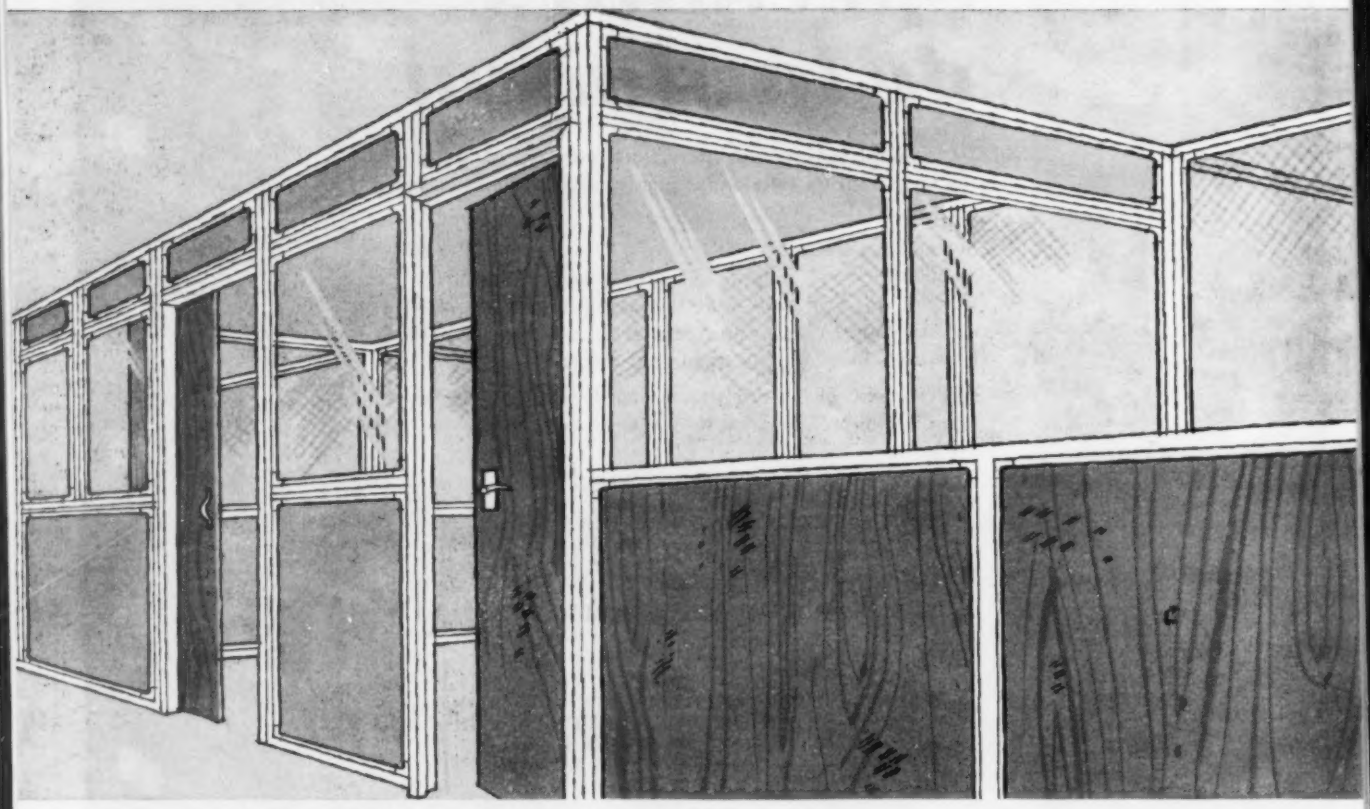
COMPANY _____

ADDRESS _____

P5612/K

WHATEVER THE MODULE

save space and time



with UNISTRUT *Partition Framing*

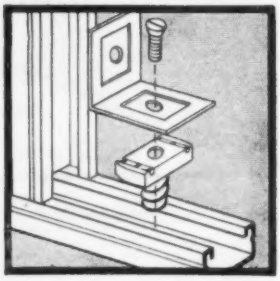
With this unique system no special tools or detail drawings are required—you use standard Unistrut components and erection methods throughout.

ACCEPTS ANY TYPE OF PANEL

The rapidly assembled framework takes panel materials of any kind up to ½" thickness. You can at any time change the type of panel and re-arrange the framework to meet changing needs.

YOUR MAINTENANCE STAFF CAN DO THE WHOLE JOB!

By following easy assembly instructions your own staff can install or modify UNISTRUT partitioning to suit your exact requirements.

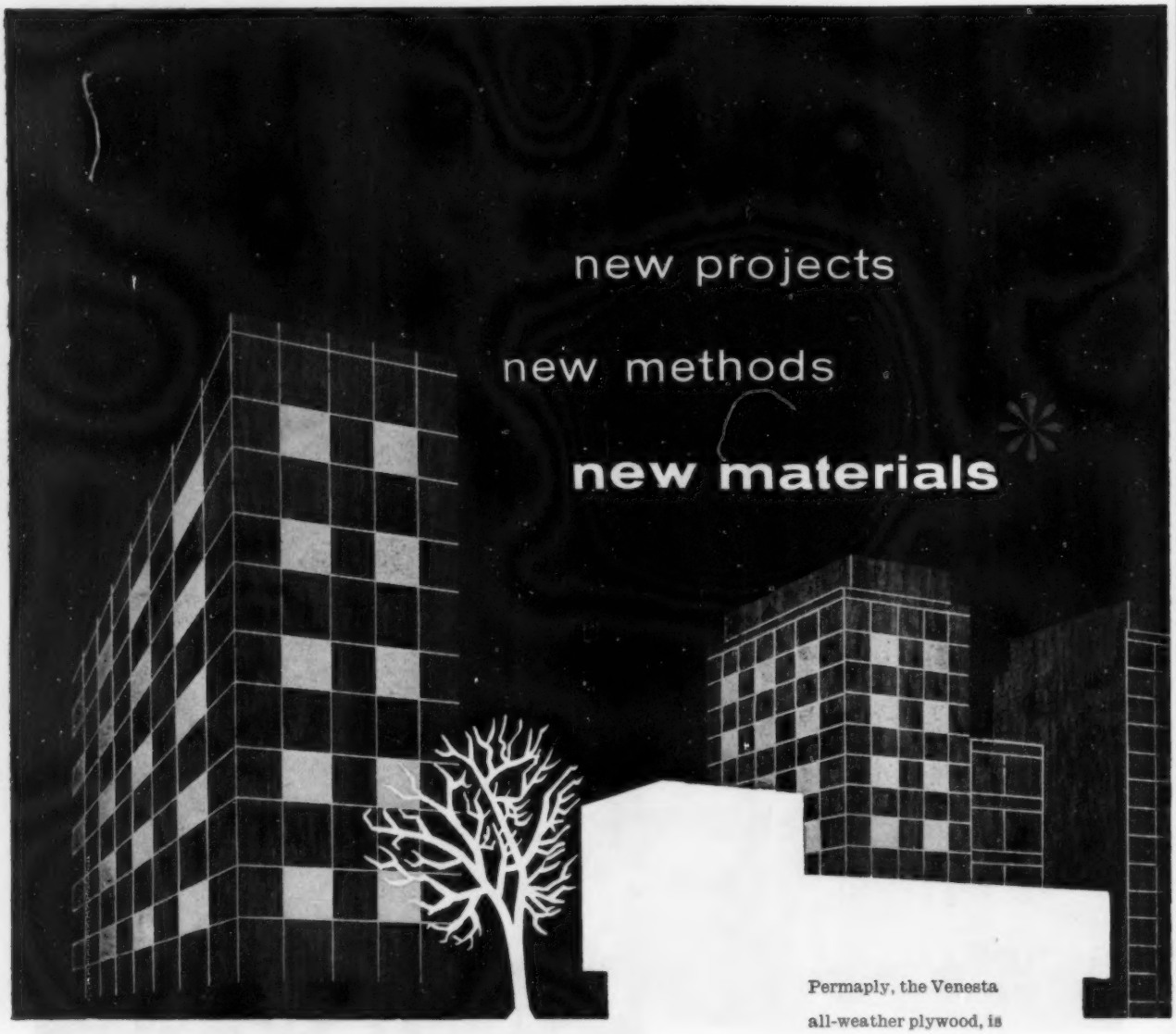


This simple assembly is used throughout.

Solve your framing and support problems with **UNISTRUT.**
Take the first step by sending for comprehensive literature *now*, to:

UNISTRUT DIVISION OF SANKEY-SHELDON LIMITED

43-45 Broadwater Road, Welwyn Garden City, Herts.
Tel: Welwyn Garden City 26321 (4 lines)



Permaply

the all-weather plywood for curtain walling

Permaply, the Venesta all-weather plywood, is enabling architects to add distinction and variety to curtain walling, obtaining on exterior surfaces effects hitherto confined to interiors. Permaply does not need the protection of paint against weathering. It is impregnated with phenolic resin which renders it rot-proof, stable, strong and pest-resistant.

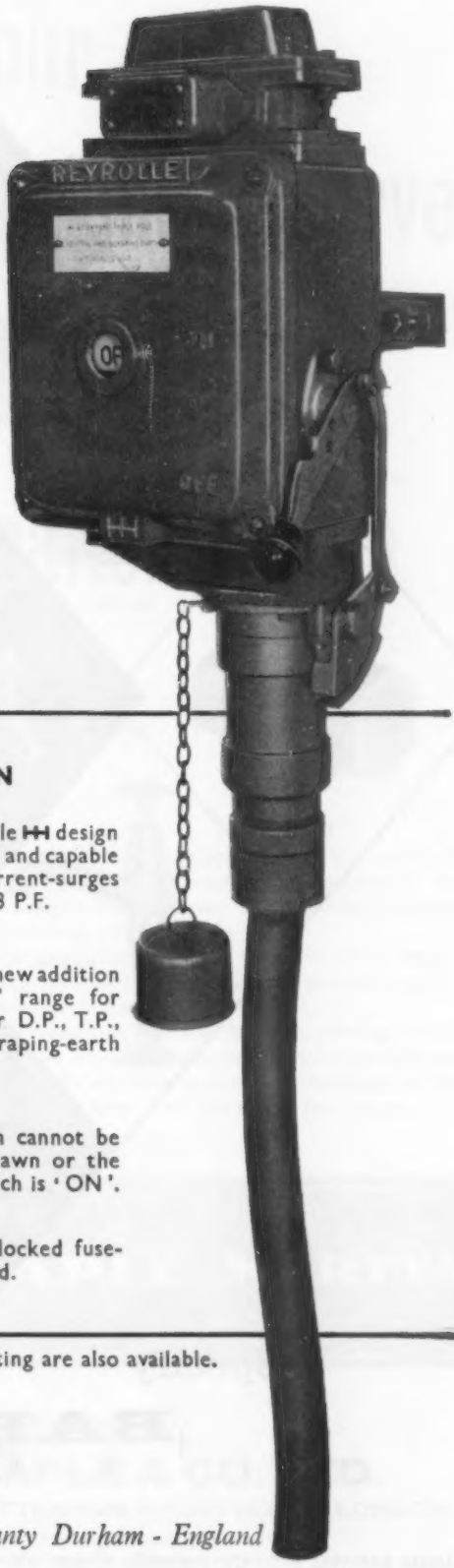
Rot-proof Permaply has opened up a whole new field for plywood—you can find all the facts in our leaflet (L 12)—let us send you a copy.

VENESTA PLYWOOD LIMITED
Vintry House, Queen Street Place, London E.C.4.

Telephone CENtral 3040

VENESTA PRODUCT

HH
SWITCH AND PLUG UNIT



Introducing a new 60-ampere 550-volt switch and plug unit capable of working continuously at full load in heavy industrial conditions.

Ask for pamphlet 1308

SPECIFICATION

SWITCH: The latest Reyrolle HH design rated at 60 amperes 550 volts and capable of making and breaking current-surges of up to 360 amperes at 0·3 P.F.

PLUG AND SOCKET: A new addition to the Reyrolle "Easigo" range for industrial duty, available for D.P., T.P., or T.P. & N. service with scraping-earth connection.

INTERLOCKS: The switch cannot be closed with the plug withdrawn or the plug removed while the switch is 'ON'.

PROTECTION: An interlocked fuse-unit can be added if required.

Other switch-and-plug units of up to 300-ampere rating are also available.

Reyrolle

A. Reyrolle & Company Limited - Hebburn - County Durham - England

your designs deserve MAPLES craftsmanship

MAPLES, the largest furnishing house in the world, offer to Architects the comprehensive MAPLE-MARTYN Service which embraces every aspect of constructional, decorative and furnishing contract work.

The illustrations indicate only two of the many outstanding projects throughout the world carried out by this renowned organisation.

In architectural metalwork and in carving, whether of wood, stone or fibrous plaster, MAPLE-MARTYN craftsmen are supreme. For all these, as well as for furniture and decoration, only the finest work can match your design.

MAPLE MARTYN

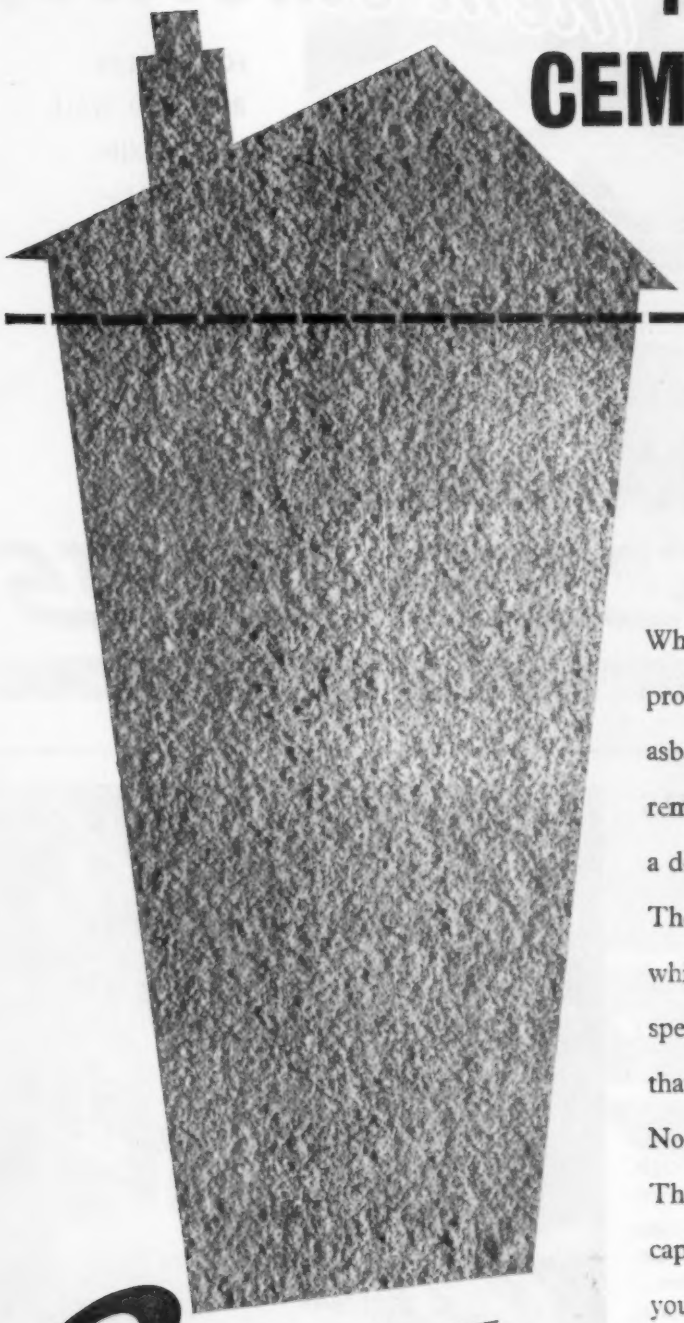
CONTRACT DEPARTMENT:

MAPLE & CO. LTD.

TOTTENHAM COURT ROAD · LONDON · W1

In association with its subsidiary
H. H. Martyn & Co. Ltd., Cheltenham

MC62/1



NEW CEMENTONE No. 9 now goes 25% further... and is easier to apply

Whenever you are faced with the problem of covering brickwork, concrete, asbestos-cement, plaster or compoboard, remember that Cementone 9 will give you a double job with a bonus.

The indestructible aggregate from which it is compounded, together with its special medium, gives a stone finish that is both waterproof and alkali resisting.

No primer is necessary.

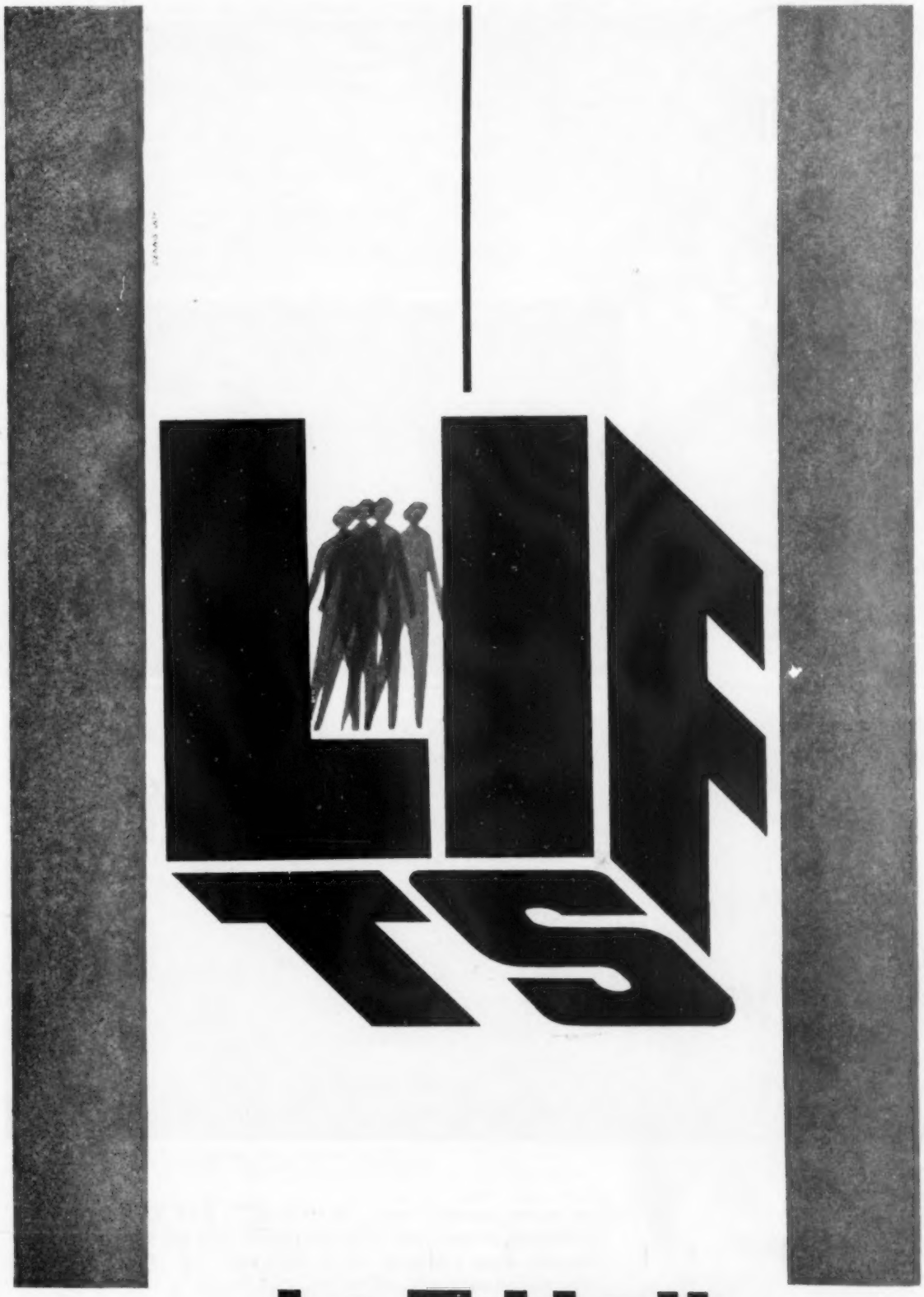
There are 20 colours. Covering capacity is 25% more. So don't forget your bonus when you cost!

Cementone No. 9 WATERPROOF STONEFACE COMPOSITION

Write for your copy of the Cementone Handbook

JOSEPH FREEMAN SONS & CO. LTD.

Cementone Works • London • S.W.18 • Telephone: VANdyke 2432 (10 lines)



J & E Hall

J & E Hall Ltd Dartford Kent London office: 60 Rochester Row SW1: Victoria 0354: A member of the Hall-Thermotank Group

When you're in the market for a better building

Perhaps it's because Romford Market is the Mecca of suburban Essex bargain hunters that Romford Borough Council have such a keen eye for a good buy. In the market for a solution to their housing land shortage, they went to Wates, the high building specialists. Result was this 11-storey block of 53 flats, plus another one just like it. Wates worked from the outset in closest collaboration with Borough Engineer and Surveyor, Hugh Hurd, and Deputy Borough Architect, Stanley Stewart, preparing site reports, surveys, plans, drawings, specifications, and bills of quantities. Wates also conducted negotiations with public service authorities and submitted a firm price, inclusive of all charges and fees... and Romford got two better buildings, in a shorter time, at a lower cost.

WATES build

a better building
in a shorter time
at a lower cost

WATES LIMITED, 1260 London Road, Norbury, London, S.W.16 POLlards 5000

Overcome screeding problems at the planning stage by specifying Mangers Cement Weld. This unique bonding fluid enables sand/cement screeds to be applied in a fraction of the time. No need for costly hacking and raking. No need to waste unnecessary time and labour. Cement Weld is the perfect solution—screeds bonded with Cement Weld go on and stay on!

Plan with Cement Weld NOW to save those unnecessary and costly hours later on!

Cement Weld provides a satisfactory bond for rendering to the following surfaces:

SMOOTH FACED CONCRETE. SOUND PAINTED BRICKWORK. FAIR FACED POINTED BRICKWORK. ANY FIRM, SOUND AND CLEAN SURFACE HOWEVER SMOOTH.

...specify

MANGERS

CEMENT WELD

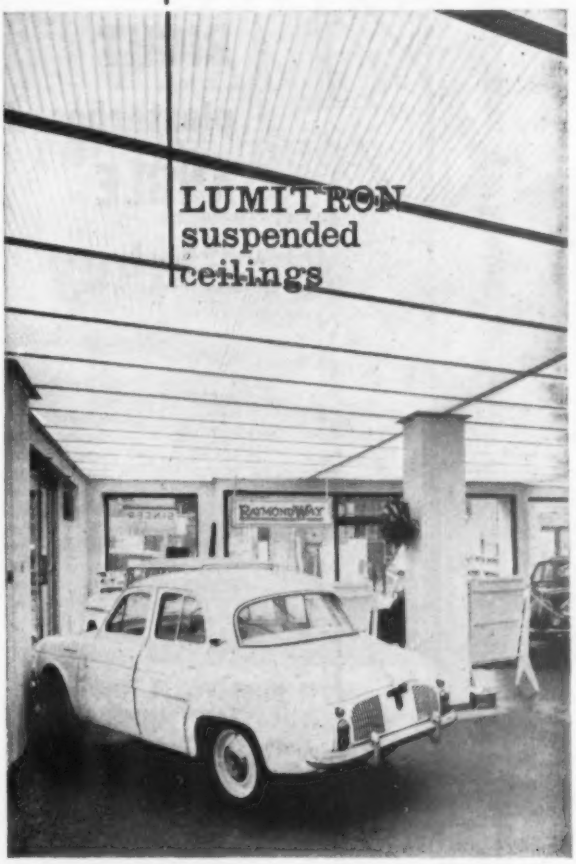
Our Technical department will be very pleased to help you with any sand/cement bonding problem. Write or phone:

J. MANGER & SON Dept. I **AMASAL HOUSE, CONNOCK ROAD, STAFFORD**

Tel: Milford 561

AN Amasal COMPANY

above all...



for
economy
elegance
increased sales

LUMITRON *are already nationally renowned among architects and electrical contractors for their impeccable range of lighting fittings. Now they are introducing their unique pre-fabricated suspended ceilings with which every electrical contractor and shopfitter can carry out his* own *installations from beginning to end. Designed to give the maximum value at minimum cost. LUMITRON suspended ceilings enable contractors to secure the best in this kind of ceiling at manufacturer's cost—so ensuring tremendous economy all round.*

Write for detailed brochure today.

LUMITRON multi-purpose suspended ceiling

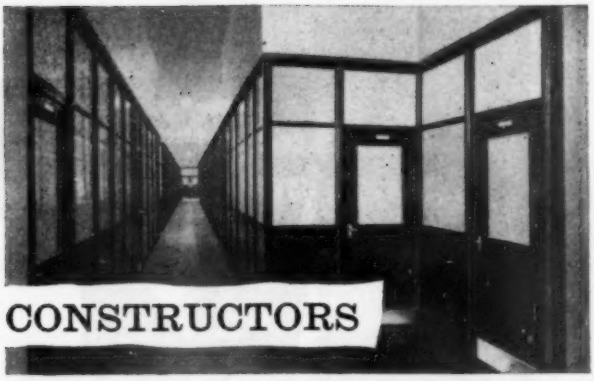
BRITISH LIGHTING COUNCIL BLC MEMBER

LUMITRON LTD.

Manufacturers of Contemporary Lighting Fittings

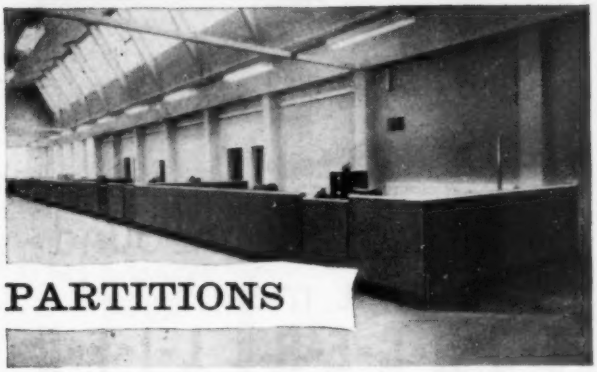
Showrooms & Trade Counter
180 Shaftesbury Avenue, London, W.C.2
COVent Garden 0126/7

Works & Trade Counter
Hythe Road, Scrubs Lane London, N.W.10
LADbroke 2262/3



CONSTRUCTORS

METAL



PARTITIONS

Constructors Metal Partitions are not only extremely pleasing to the eye but of great strength and serviceability. Their freedom from warping, cracks or decay and their resistance to fire and vermin make them the obvious choice for the sub-division of building interiors. They are very adaptable to changing requirements as they can be dismantled easily and quickly for re-siting in new positions in order to use space in the most efficient and economical manner.

See us on Stand H.8.
Factory Equipment Exhibition
November 13th—18th

GOOD PLANNERS ALWAYS CONSULT

CONSTRUCTORS

THE MANUFACTURERS OF STEEL EQUIPMENT

CONSTRUCTORS LIMITED, Dept. AI
TYBURN ROAD, ERDINGTON, BIRMINGHAM 24
TELEPHONE: ERDington 1616
London Office: 98 Park Lane, W.1. Telephone: MAYfair 3074
Leeds Office: 25 Merrion Street. Telephone: LEEDS 28017

strength with economy

'BONDENN'

BRICKWORK REINFORCEMENT

— makes strong walls with fewer bricks

'Bondenn' Reinforcement ends the need for thick, expensive brick walls. 4½" brickwork strengthened with 'Bondenn' in many cases replaces ordinary 9" walls. Result — substantial savings in bricks, cement, labour and time.

'Bondenn' in brickwork increases the resistance to load by 68% — an invaluable advantage when foundations stand in made-up ground or doubtful subsoil and in structures where heavy and intermittent loads are applied.

'Bondenn' consists of rolls of straight longitudinal steel wires of 25/30 tons tensile secured with mild steel spacing wires. Hot spelter galvanising after fabrication ensures high resistance to deterioration.

BOULTON AND PAUL

Write now for full technical information to

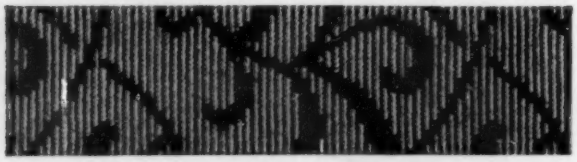
Boulton & Paul Ltd.

NORWICH P.O. Box 5, Riverside Works, Norwich. NOR 72A
Telephone: Norwich 25251. Telegrams: Boulpaul, Norwich

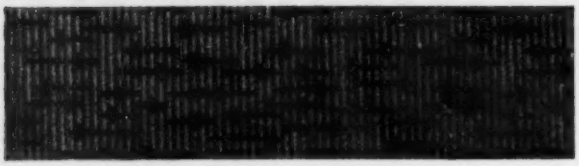
LONDON 5th Floor, Trevor House, 96-104, Brompton Road, London, S.W.3. Telephone: KNI 6226
Telegrams: Boulpaul, Wesdo, London

TIPTON P.O. 11, Midland Works, Tipton, Staffs
Telephone: Tipton 1191/2 Telegrams: Boulpaul, Tipton

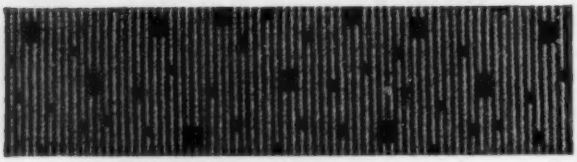
B.20



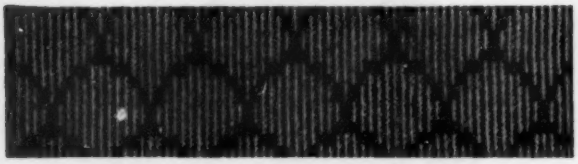
THE NEW



ROSSLYN



RANGE IN



Replin

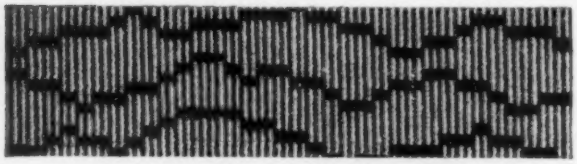
REGD.

THE SUPREME FURNISHING FABRIC

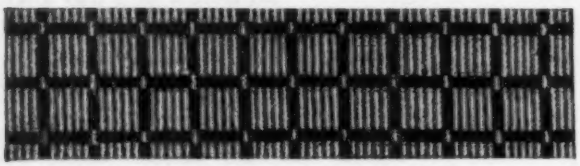
Now available in cut lengths ex stock is this new outstanding REPLIN range—the "Rosslyn Range" comes in six different patterns on six background colours—each possesses the unsurpassed features of quality, elegance and endurance—the hallmark of REPLIN.

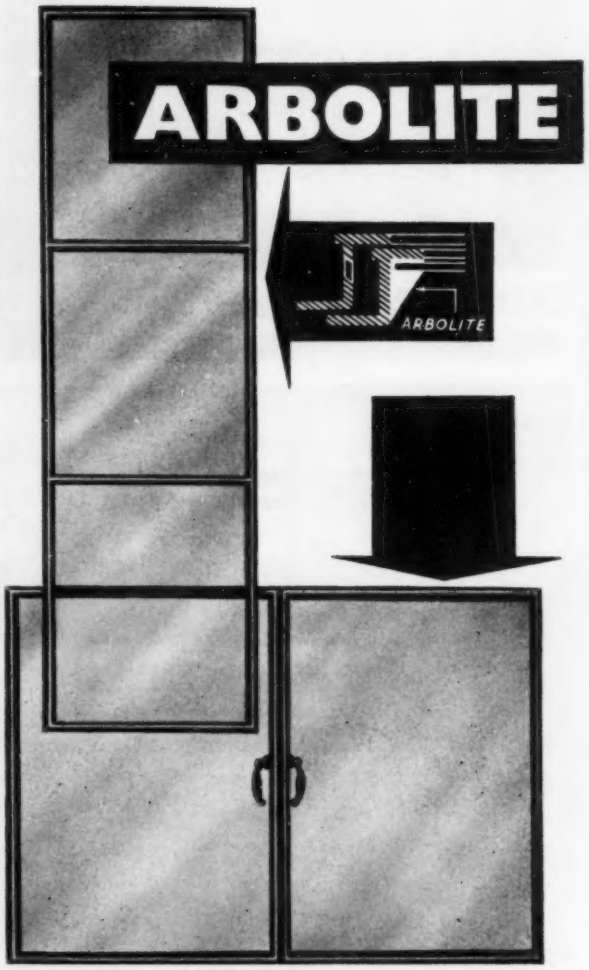
When choosing a furnishing or upholstery fabric you owe it to yourself to see these new ranges and designs. REPLIN is also available in cut lengths from stock in 36 plain colours, stripes and other patterns.

Write, telephone or call at our London showrooms for full details and samples. Our Design Department will be delighted to suggest schemes to meet your particular requirements.



BRITISH REPLIN LTD.,
2 South Audley Street, London, W.1.
Telephone: GROsvenor 6892.
MILL: Belvidere Terrace, Ayr, Scotland. Ayr: 67271/2.





the master compound that means

L-O-N-G-E-R L-I-F-E

FOR

METAL WINDOWS

Scientifically blended with exclusive ARBOSYN, ARBOLITE Metal Casement Putty seals glass to metal in a firm, fast inseparable union

There is no cracking and wrinkling with ARBOLITE. It has greater durability and provides absolutely perfect adhesion plus controlled setting properties.

—the men who know start right with ARBOLITE.

ADSHEAD RATCLIFFE

ADSHEAD RATCLIFFE & CO. LTD

BELPER · DERBY · Tel: Belper 2891/2/3.

CLASSIFIED ADVERTISEMENTS

Advertisements should be addressed to the Advertisement Manager, "The Architects' Journal," 9, 11 and 13, Queen Anne's Gate, Westminster, S.W.1, and must reach there by first post Friday morning for inclusion in the following Wednesday's paper.
Replies to Box Numbers should be addressed care of "The Architects' Journal," at the address given above.

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

Public and Official Announcements

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

BOROUGH OF HESTON AND ISLEWORTH
APPOINTMENT OF SENIOR PLANNING ASSISTANT

Applications are invited for the post of Senior Planning Assistant at a salary in accordance with Grades III-IV of the A.P.T. Division of the National Joint Council's Scale of Salaries (£960—£1,310 plus London "weighting").

Candidates should have passed at least the Intermediate Examination of the Town Planning Institute or other equivalent and must have had experience in a Town Planning Department of a local authority.

The Council is unable to assist the successful candidate with housing accommodation.

Applications are to be submitted by 23rd October, 1961, on forms obtained from and returned to the Borough Engineer and Surveyor, 88, Lampton Road, Hounslow.

Will applicants please quote code AJ.

D. MATHIESON,
Town Clerk.

Town Hall,
Hounslow,
Middlesex. S9556

BOROUGH OF HESTON AND ISLEWORTH
APPOINTMENT OF SENIOR ARCHITECTURAL ASSISTANT

Applications are invited for the permanent appointment of a Senior Architectural Assistant in the Borough Engineer and Surveyor's Department. Salary in accordance with A.P.T. Grade V (£1,310—£1,480 plus London "weighting").

Applicants must have had good experience in architectural design and building work under construction, and, other things being equal, preference will be given to applicants who have passed the examination for Associate R.I.B.A. or hold a University Degree or Diploma in architecture accepted by that Institute.

The Council is unable to assist the successful candidate with housing accommodation.

Applications are to be submitted by 23rd October, 1961, on forms to be obtained from and returned to the Borough Engineer and Surveyor, 88, Lampton Road, Hounslow.

Will applicants please quote code AJ.

D. MATHIESON,
Town Clerk.

Town Hall,
Hounslow,
Middlesex. S9557

BOROUGH OF LUTON
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:—

(*a*) PRINCIPAL ASSISTANT ARCHITECTS—Scale A (£1,380—£1,565).
(*b*) SENIOR ASSISTANT ARCHITECTS—A.P.T. V (£1,310—£1,480).
(*c*) ASSISTANT ARCHITECT—A.P.T. IV (£1,140—£1,310).
(*d*) ARCHITECTURAL ASSISTANT—A.P.T. III (£960—£1,140).
(*e*) ARCHITECTURAL ASSISTANT—A.P.T. I (£645—£815).

Applicants for posts (*a*), (*b*) and (*c*) must be Associate Members of the Royal Institute of British Architects.

Under (*d*) the Council will consider applications from candidates who have completed professional training but have not passed their Final examinations.

The salaries at which all appointments will be made will depend on qualifications and experience.

Consideration will be given to the provision of housing accommodation for married applicants and payment of reasonable removal expenses for all appointments.

Luton is a rapidly developing borough with a large and varied programme of capital works in hand or projected which offers exceptional opportunities of gaining experience.

Forms of application may be obtained from the Borough Architect, Town Hall, Luton, by whom applications should be received not later than 23rd October, 1961.

Borough Architect's Department,
Town Hall,
Luton.
September, 1961. S9568

WARWICKSHIRE COUNTY COUNCIL
ARCHITECT'S DEPARTMENT
ASSISTANT ARCHITECTS, Grade A.P.T. IV (£1,140—£1,310).

Applications are invited from qualified Architects. The persons appointed will work in groups on large projects and an opportunity will be given to men with enthusiasm and ability to design and carry out projects under a group architect.

ARCHITECTURAL ASSISTANTS, Grade A.P.T. II (£815—£960).

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

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

L. EDGAR STEPHENS,
Clerk of the Council.

26th September, 1961. S9571

NEWCASTLE REGIONAL HOSPITAL BOARD
EXPANSION OF ARCHITECTURAL DEPARTMENT
P. H. KNIGHTON, M.B.E., A.R.I.B.A., REGIONAL ARCHITECT
ARCHITECTURAL STAFF

The Board has prepared a 10-years programme containing a large number and variety of major hospital projects. Planning and building is already current on schemes costing about £15,000,000. As the programme includes also a wide range of buildings which are not peculiar to hospitals, good general experience as well as specialist experience may be gained.

Applications are invited for the following (superannuable) posts:

1. SENIOR ASSISTANT ARCHITECTS
(£1,300 × £60 (5)—£1,600).
Open to registered architects with experience in the design and construction of major public buildings. Experience of hospital work desirable but not essential. Assistance with removal expenses if appointee at present in a lower-graded Health Service post.
2. ASSISTANT ARCHITECTS
(£905 × £35 (1) × £45 (6) × £50 (2)—£1,310).
Applicants must have passed the R.I.B.A. Final Examination. For registered architects increments can be given above the bottom of the grade in accordance with relevant practical experience.
Qualified but unregistered architects can enter the Architectural Assistant scale at a salary point of £865 per annum with a view to entering the Assistant Architect grade when registered.
3. ARCHITECTURAL ASSISTANTS
(£625 × £30 (8) × £35 (1)—£900).
Intermediate R.I.B.A. and preferably some practical experience.
4. ARCHITECTURAL DRAUGHTSMEN
(£475 × £25 (6) × £30 (2)—£685).
Three years' previous experience in an architect's drawing office and good draughtsmanship required.

Evening study facilities available at King's College of Durham University in Newcastle.

A five-day working week is in operation.

Details of training, qualifications, experience, present salary etc., with the names of three referees, should reach the Secretary to the Board, Benfield Road, Newcastle upon Tyne, 6, not later than 25th October, 1961. Canvassing will disqualify. S9638

SOUTHWICK URBAN DISTRICT COUNCIL
APPOINTMENT OF
JUNIOR ARCHITECTURAL ASSISTANT

Applications are invited for the position of Junior Architectural Assistant in the Engineer and Surveyor's Department of this progressive and attractive south coast town.

Applicants will be considered for appointment on either of the following alternative salary scales:—

(*a*) APT. 1 (£645—£815) in the case of applicants who have completed at least three years' training and have passed the R.I.B.A. intermediate or equivalent examination.
(*b*) General Division (£420 at age 21—£630) in the case of an applicant who does not satisfy the conditions for Grade APT. 1. An applicant on this scale will also be allowed one day per week off to attend an approved course at Brighton College of Art.

In either case the Council will give financial assistance in respect of approved courses of study for professional examinations, and the point of entry into the appropriate scale will be determined according to extent of training and experience.

A five-day week is in operation and the district offers exceptional facilities for technical education, and for recreational, sporting and cultural activities. Full particulars of the district and the work in hand may be obtained from the Engineer and Surveyor, 215, Albion Street, Southwick.

Applications stating age, details of education, nature and period of training and experience to be forwarded to the undersigned not later than 18th October, 1961.

A. R. SHOTT,
Solicitor,
Clerk of the Council.

Town Hall,
Southwick,
Sussex. 9672

CITY AND COUNTY OF
NEWCASTLE UPON TYNE
CITY ARCHITECT'S DEPARTMENT

A unique opportunity exists in this office to take part in one of the most ambitious programmes of varied building works in the country, and vacancies in the establishment occur as follows:—

ARCHITECTS—who will be considered on their ability in design, experience and architectural outlook.

J.N.C. "D" £1,710—£1,975 per annum. (New Town Hall Section.)
J.N.C. "C" £1,560—£1,825 per annum. (General Section and Re-Housing Sections.)
J.N.C. "B" £1,410—£1,670 per annum. (Housing Section.)
J.N.C. "A" £1,365—£1,565 per annum. (Housing Section.)
A.P.T. V £1,310—£1,480 per annum. (General, Education, Housing, Re-Housing and New Town Hall Sections.)
A.P.T. IV £1,140—£1,310 per annum. (General, Education and Housing Sections.)
A.P.T. III £960—£1,140 per annum. (General, Housing and Re-Housing Sections.)
A.P.T. II £815—£960 per annum. (General and Re-Housing Sections.)
A.P.T. I £645—£815 per annum. (Housing and Re-Housing Sections.)

The Department is engaged upon a wide and varied programme of major re-development schemes, embracing multi-storey flats, shopping precincts and associated community buildings, one of which schemes is the Scotswood Road Redevelopment Area to re-house approximately 5,000 people, and which is expected to cost in the region of £12 million.

Planning work has now commenced on the new Education Precinct in the central area, comprising Colleges of Further Education, Art and Industrial Design, Drama, Commerce, and Multi-storey Hostels, which will be the largest development of its kind in the country.

Further projects include: Airport Terminal; Abattoir and Fatstock Market; Vegetable Markets; Central Library; and Divisional Police Headquarters etc., and a varied programme of normal Housing development of a stimulating character.

The Department is also engaged on the New Town Hall where an exceptional opportunity is presented for working on a building of some £4 million in value, and being executed in materials of the highest quality.

QUANTITY SURVEYORS:
A.P.T. IV £1,140—£1,310 per annum.
A.P.T. I £645—£815 per annum.

LANDSCAPE ARCHITECT:
J.N.C. "A" £1,365—£1,565 per annum.

Applicants will be considered on their ability in design, experience and capacity to carry out creative work, and the successful candidate will be required to prepare comprehensive schemes of Landscaping for the major Redevelopment Areas, Housing Estates, New Town Hall, Education Precinct etc.

Applicants for posts in A.P.T. III and above must have appropriate professional qualifications.

The City Council has agreed (*a*) to pay 50 per cent. of the total cost of removal expenses of successful candidates up to a maximum grant of £50 in those cases where the Committee feels it is warranted, subject to the successful candidate remaining in the post for a minimum period of two years from the date of taking up the appointment, otherwise refund of the grant will be required; (*b*) to offer the successful candidates, in cases where the Committee deems it is warranted, the tenancy of a dwelling to be let at an economic rent and (*c*) to draw candidates' attention to the facilities under the Council's scheme for advance on mortgage, whereby in approved cases a loan for the purchase of a house up to 100 per cent. of valuation may be granted by the Council.

Those wishing to take part in one of Britain's most stimulating programmes should apply immediately for further details and forms of application to George Kenyon, A.R.I.B.A., A.M.T.P.I., City Architect, 18 Cloth Market, Newcastle upon Tyne, 1, indicating the grade for which they wish to be considered.

JOHN ATKINSON,
Town Clerk.

Town Hall,
Newcastle upon Tyne, 1.
2nd October, 1961. TC9623

BOROUGH OF RAWTENSTALL
APPOINTMENT OF
ARCHITECTURAL ASSISTANT

Applications are invited for the above permanent appointment at a salary within A.P.T. IV (£1,140—£1,310 per annum). Applicants should be members of the R.I.B.A.

The appointment will be subject to the provisions of the Local Government Superannuation Acts, the National Scheme of Conditions of Service and the termination by one month's notice by either side. Housing accommodation will be available.

Applications including names and addresses of two referees should reach the undersigned not later than Monday, the 23rd October, 1961. Canvassing will disqualify. Any relationship to members or senior officers of the Council must be disclosed.

COLIN CAMPBELL,
Town Clerk.

Town Hall,
Rawtenstall,
Rossendale,
Lancs. 9596

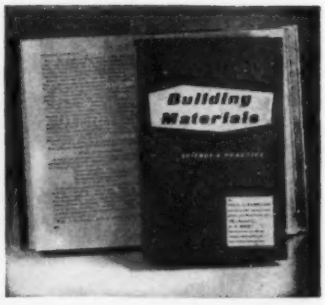
a trilogy of books on modern building construction

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 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: 9 in. by 6 in. Containing 342 pages including 62 diagrams and halftone illustrations. Third edition, 30s. net, postage 1s. 5d.



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.

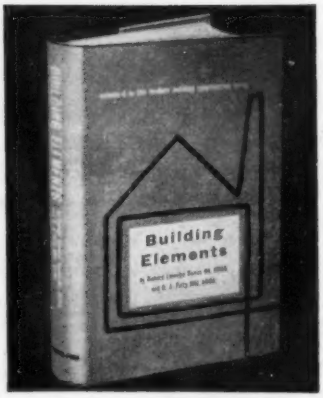
Size: 9 in. by 6 in. Containing 268 pages including over 150 diagrams and halftone illustrations. Second impression, 30s. net, postage 1s. 4d.

building elements by R. LLEWELYN DAVIES, M.A., F.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: 9 in. by 6 in., containing 386 pages including over 190 diagrams and halftone illustrations. Second Edition revised. 37s. 6d. net, postage 1s. 9d.



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

URBAN DISTRICT COUNCIL OF BASILDON
(Population 90,000—27,000 acres. Rapidly developing district).

(*a*) ARCHITECTURAL ASSISTANT—within A.P.T. I/II (£645—£960).
(*b*) ARCHITECTURAL DRAUGHTSMAN / WOMAN—within Miscellaneous VI (£760—£825).
(*c*) JUNIOR ASSISTANT—within Miscellaneous III/IV (£555—£685).

These appointments offer excellent opportunity to gain experience. Wide range of works in prospect including Community Centres, multi-storey housing and swimming pool.

Housing accommodation and removal expenses. Five-day week.

Full particulars and forms from Engineer & Surveyor, Council Offices, 88, Town Square, Basildon, Essex. Closing 23rd October. 9625

BOROUGH OF SWINDON
ARCHITECTURAL ASSISTANT

Applications are invited for the above appointment in the Borough Architect's Department at a salary within A.P.T. Grades III/IV (£960—£1,310), according to experience.

Applicants must have passed the Final Examination of the Royal Institute of British Architects.

The Department is engaged in a large and varied programme of development, including housing schemes, neighbourhood shopping centres, civic works and industrial buildings.

Housing accommodation and assistance with removal expenses may be offered.

Applications, on forms to be obtained from the Town Clerk, Civic Offices, Swindon, must be returned by 25th October, 1961. 9627

SOUTH EASTERN ELECTRICITY BOARD invite applications for ASSISTANT ARCHITECT in the Surveyor's section, Engineer-in-Chief's Department, at Area Board Headquarters, Hove, Sussex. Salary £1,250 × £35—£1,355 under N.J.C. Grade VII. Applicants should be registered architects with experience in the preparation of schemes including showrooms, offices, stores and garages. Preference to applicants who are associates of the R.I.B.A. or I.A.A.S. Superannuable. Applications quoting AJ and naming two referees to Surveyor, Seeboard, 10, Queen's Gardens, Hove 3, Sussex, by 23rd October, 1961. 9619

STAINES URBAN DISTRICT COUNCIL
ENGINEER AND SURVEYOR'S DEPARTMENT
ARCHITECTURAL ASSISTANT, A.P.T. IV, £1,140—£1,310 plus London Weighting.

Applicants must have had a good experience in architectural design and building work under construction and should have passed the examination for associateship of the R.I.B.A.

Application form may be obtained from the Engineer and Surveyor, Shortwood House, 240, London Road, Staines, and must be returned to him in suitably endorsed envelope, not later than 5 p.m. on Monday, 16th October, 1961.

F. ENTWISTLE,
Clerk of the Council.
9635

TETTENHALL URBAN DISTRICT COUNCIL
ARCHITECTURAL DRAUGHTSMAN

Applications are invited for the position of ARCHITECTURAL DRAUGHTSMAN in the Engineer and Surveyor's Department. Candidates should be competent draughtsmen able to prepare plans from sketches and have full knowledge of Building Construction with a view to preparing working drawings. The salary will be within the Grade Miscellaneous IV (£625—£685) according to qualifications and experience.

Applications, accompanied by the names of two referees, should be sent to J. W. Mason, M.I.Mun.E., M.T.P.I., Engineer and Surveyor, Council Offices, Upper Green, Tettenhall, not later than the 21st October, 1961.

2nd October, 1961. 9634

AIR MINISTRY WORKS ORGANISATION requires QUANTITY SURVEYING ASSISTANTS Grade III at R.A.F. and Ministry of Aviation stations throughout the United Kingdom. The work includes abstracting and billing, site measurement and preparation of estimates.

Salary, which is dependent upon age, qualifications and experience, ranges from £749 (age 23) to £988 National Rate (max.) in Grade III. There are pension prospects and also opportunities of advancement to numerous posts in the higher grades, viz.

Technical Grade II:	£988 —£1,128	123 posts
Technical Grade I:	£1,128—£1,388	42 posts
Technical Grade B:	£1,388—£1,602	8 posts
Technical Grade A:	£1,482—£1,747	5 posts

Vacancies occurring in these higher grades are as a rule filled by promotion of existing staff.

Overseas tours for which special allowances ranging at present up to £1,800 p.a. are payable in addition to a higher salary. Financial assistance and time off allowed for recognised courses of study leading to higher qualifications. Five-day week with 18 days paid leave a year initially.

Applicants who must be natural born British subjects, must hold O.N.C. (Building or Builders Quantities) or equivalent and had good experience under Quantity Surveyor or Building Contractor. Knowledge of W.D. Schedule an advantage. Forms from Manager (P.E.2), Ministry of Labour Professional and Executive Register, Atlantic House, Farringdon Street, London, E.C.4. Candidates selected will be interviewed in Air Ministry, London, and certain expenses reimbursed. Only applicants selected for interview will be advised. S8923

ABERCARN URBAN DISTRICT COUNCIL
APPOINTMENT OF TECHNICAL ASSISTANT

Applications are invited for the post of TECHNICAL ASSISTANT N.J.C. Scale A.P.T. II (£815—£960 per annum).

It is essential that applicants have experience in all or some of the following:—Surveys, Contouring, Design, Development and Management of Housing Estates, and technical administration in connection with Improvement Grants and Byelaw applications.

Applicants will be expected to produce examples of the work they have undertaken.

The holding of the R.I.C.S. or R.I.B.A. Intermediate Certificate will be an advantage.

The provision of housing accommodation, if desired, will be considered.

The appointment will be subject to a satisfactory medical examination, the usual Local Government Conditions of Service, to one month's notice on either side, and to the Local Government Superannuation Acts.

Applications, giving full particulars of age, qualifications, experience, and positions held, together with names and addresses of two persons to whom reference can be made, should be submitted to the undersigned not later than 6 p.m. on Monday, 13th November, 1961.

N. C. BIZLEY,
Clerk of the Council.

Council Offices,
Abercarn, Mon. 9631

BOROUGH OF LUTON
DEPUTY BOROUGH ARCHITECT

Applications invited from qualified Architects with wide local authority experience. Commencing salary in Scale "D" (£1,710—£1,975) commensurate with qualifications and experience.

Application form and particulars of appointment obtainable from Town Clerk, Town Hall, Luton, to be returned by 20th October, 1961. S9541

AIR MINISTRY WORKS DEPARTMENT invites applications for ARCHITECTURAL ASSISTANTS, primarily for the architectural branch of the designs office in London.

SALARY (inner London Scale):
Grade II: £1,048—£1,220.
Grade III: £658—£1,048 (£866 at age 25).
Starting salary depends on age, qualifications and experience.

Qualifications and Experience: The work includes a wide range of domestic, administrative and technical buildings in varying forms of construction offering scope for imaginative design for which adequate training and architectural office experience is necessary. O.N.C.(Bldg.) some advantage for Grade III posts but progressive design ability is sought for Grade II. Financial assistance and time off may be allowed for recognised courses of study, *e.g.*, R.I.B.A.

Prospects: Appointments are non-pensionable (retirement/resignation gratuity payable after 5 years' or longer service) but good opportunities exist both for establishment to pensionable posts, when all service counts, and for advancement to the higher grades in which posts number some 35. Higher grade salaries vary between £1,277 and £2,015 (inner London scale) and vacancies are, as a rule, filled by promotion of serving staff. Opportunities for tours of duty overseas, when additional allowances ranging, at present, up to £1,800 p.a. (depending on circumstances) are payable. Five-day week with 26½ days' paid leave per year initially including public holidays.

Applicants, who must be natural born British subjects, should write to AIR MINISTRY, W.G.d. LACON HOUSE, THEOBALDS ROAD, LONDON, W.C.1, or to any Employment Exchange (quoting Kings Cross, 838) giving age, details of training, qualifications and full particulars of former posts held. Candidates selected will normally be interviewed in London and certain expenses reimbursed. S9460

DENBIGHSHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT
WREXHAM

Applications are invited for the appointment of a QUANTITY SURVEYING ASSISANT, A.P.T. Grade III (salary £960—£1,140 per annum), in the above Department.

Contribution made towards removal expenses of successful applicant and consideration given to the payment of a lodging allowance to married officers.

Application form and further particulars obtainable from me. Completed forms to be returned by 28th October, 1961.

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

County Offices,
Ruthin. 9605

ROXBURGH COUNTY COUNCIL invite applications from Architects with A.R.I.B.A. and A.M.T.P.I. qualifications for post of COUNTY ARCHITECT AND PLANNING OFFICER. Salary Scale £2,480 × £75 × £70 (4) to £2,835 with placing according to qualifications and experience. Car allowance in accordance with J.I.C. Scale C. Housing accommodation may be made available. Post superannuable. Medical examination. Canvassing will disqualify. Applications, stating age, qualifications, professional experience and present appointment, and giving names and addresses of three referees, to be lodged by 31st October with the County Clerk, County Offices, Newtown St. Boswells. 9588

BOROUGH OF SOLIHULL
APPOINTMENT OF PRINCIPAL ASSISTANT ARCHITECT (HOUSING)
and
PRINCIPAL ASSISTANT QUANTITY SURVEYOR

Applications are invited for the above appointments in the Architects' Section of the Borough Engineer and Surveyor's Department at salaries within Scale A (£1,400 per annum—£1,565 per annum), commencing according to experience and qualifications of the successful applicants. In addition, a casual user car allowance is applicable for each post.

The Council will be prepared to assist in providing housing accommodation as soon as possible and the whole of the reasonable removal expenses of the persons appointed will be paid, subject to twelve months' service with the Council.

Each appointment will be subject to the usual Local Government Conditions of Service and to a satisfactory medical examination.

The Council have a large capital programme of schools, housing, health and welfare buildings and a swimming bath, etc., and the Authority has been recommended for County Borough status by the Local Government Commission in its final report on the West Midlands Special Review Area.

Applications, giving full particulars as to age, qualifications, present and past appointments and experience, together with the names and addresses of two persons to whom reference can be made, should be submitted to the Borough Engineer and Surveyor, 90, Station Road, Solihull, not later than Friday, 27th October, 1961.

W. MAURICE MELL,
Town Clerk.

The Council House,
Solihull.
4th October, 1961. S9659

WESSEX REGIONAL HOSPITAL BOARD

There are vacancies for ASSISTANT ARCHITECTS in the Architect's Department to assist with the Board's expanding building programme. Salary scale £905 × £35 (1) × £45 (6) × £50 (2)—£1,310.

Applicants must be registered architects and have passed the Final examination of the Royal Institute of British Architects. Experience in hospital design desirable, but not essential.

The work offers excellent opportunity for gaining experience in the whole field of hospital architecture and covers all stages from sketch plans to supervision of construction.

Please apply to the Secretary, Highcroft, Romsey Road, Winchester, for application forms, which should be returned by the 21st October, 1961. 9608

BOROUGH OF ILFORD
BOROUGH ENGINEER'S DEPARTMENT
APPOINTMENT OF ASSISTANT ARCHITECT GRADE A.P.T. IV

Candidates should have completed a course of study for the Final examination of the R.I.B.A. and have suitable experience in the development of Council housing and multi-storey flats.

The commencing salary will be fixed within the scale, £1,140—£1,310, according to qualifications and experience. London weighting payable in addition. Five-day week.

The appointment will be subject to one month's notice on either side, to the provisions of the Local Government Superannuation Acts, to the National Conditions of Service and to satisfactory medical examination.

The Council is prepared to consider, if necessary, the provision of housing accommodation.

Application forms, obtainable from Borough Engineer, P.O. Box 7, Town Hall, Ilford, should be returned not later than Monday, 23rd October. 9609

COUNTY BOROUGH OF DUDLEY
ASSISTANT ARCHITECTS

Appointments in Borough Architect's Department APT. Grade IV/V—£1,140—£1,480, commencing salaries according to qualifications and experience.

Applicants must be A.R.I.B.A.

Limited housing accommodation is available.

Applications, stating age, qualifications, present and past appointments, experience, together with the names and addresses of two referees, to be received by me as soon as possible.

P. D. WADSWORTH,
Town Clerk.

The Council House,
Dudley,
Worcs.
3rd October, 1961. 9657

ADMINISTRATIVE COUNTY OF LEICESTER

(*a*) PRINCIPAL ASSISTANT ARCHITECT, £1,410—£1,565.
(*b*) CHIEF ASSISTANT ARCHITECTS, £1,310—£1,480.
(*c*) SENIOR ASSISTANT ARCHITECTS, £1,140—£1,310.

Candidates for (*a*) must be members of the R.I.B.A., have had sound experience and be capable of acting as Group Leaders on an extensive programme of education buildings. Candidates for (*b*) must be members of the R.I.B.A., have had considerable office experience and be capable of taking charge of contracts from inception to completion. For (*c*), should be members of the R.I.B.A., have had office experience and be capable of taking charge of small contracts. Lodging allowance and removal expenses may be paid to a married man. Apply on form obtainable from County Architect, 123, London Road, Leicester. TC9044

New Ideal Homesteads Limited

ARCHITECTS and ASSISTANTS

who are interested in the DESIGN, RESEARCH and DEVELOPMENT of Multi-storey projects and Contemporary Housing schemes, are urgently required by this progressive company.

SALARIES UP TO £1,650
according to experience

Apply in confidence to Chief Architect,
61 SOUTH STREET, EPSOM, SURREY.
or ring Epsom 1144

COUNTY BOROUGH OF WOLVERHAMPTON

BOROUGH ENGINEER & SURVEYOR'S DEPARTMENT

Applications are invited for the following newly-created posts:—

(a) ARCHITECTS, Scale "B"
(£1,500—£1,670) (Two posts).

(b) ARCHITECTS, Scale "A"
(£1,450—£1,565) (Two posts).

These posts rank next in seniority to the Deputy Borough Architect and the Chief Assistant Architect.

N.J.C. Conditions of Service—five day week—superannuated posts—medical examination.

Housing accommodation and car allowances may be made available. Removal expenses reimbursed to successful married candidates.

Applications with names and addresses of two referees should be sent to the Borough Engineer, Town Hall, Wolverhampton, by Saturday, 21st October, 1961.

DERBYSHIRE COUNTY COUNCIL

COUNTY ARCHITECT'S DEPARTMENT

ARCHITECTURAL STAFF REQUIRED:—

SENIOR ARCHITECTS

ON SENIOR OFFICERS' SCALE A

Salary £1,370 × £70 (2) and £55 (1) to £1,565 per annum. This department provides scope for enthusiastic architects who possess considerable experience, and have a sound knowledge of modern trends in design and the latest forms of construction. A knowledge of public building projects such as: Schools, Welfare and Children's Homes, Hostels, Clinics, Occupation Centres, Police, Fire and Ambulance Stations, in addition to Housing, will be an advantage.

Local Government Superannuation Scheme. Five-day week. Scheme of allowances towards removal and lodging expenses in appropriate cases. Nationally negotiated conditions of service. Canvassing disqualifies.

APPLICATION FORMS FROM—
F. HAMER CROSSLEY, Dipl.Arch.(L'pool), F.R.I.B.A.,
County Architect, County Offices, MATLOCK, Derbyshire,
to whom they should be returned as soon as possible.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD
40 EASTBOURNE TERRACE, LONDON, W.2
W. G. Plant, Dip.Arch.(L'pool.), F.R.I.B.A.,
Regional Architect.

APPOINTMENT OF ASSISTANT REGIONAL ARCHITECT

The Board is engaged on a large and expanding programme of Hospital Development and for part of the Programme, including several major development projects ranging in cost up to £2,000,000, Private Architects are engaged. The Regional Architect, however, acts as Consultant and is responsible to the Board for all aspects of the work carried out by the Private Architects, from preliminary design to supervision of site construction, and there is a vacancy for an ASSISTANT REGIONAL ARCHITECT to assist him in controlling this part of the Programme.

The successful applicant will be responsible, under the direction of the Regional Architect, not only for controlling the design stage of schemes for which Private Architects are engaged, but also for the progress of work on site.

He will be required to investigate projected schemes in consultation with Medical Staff and to prepare development plans prior to the appointment of Private Architects.

Applicants for the post must be Registered Architects, having passed the requisite examinations and must be good designers with experience in the design and management of substantial projects; experience in hospital work, while not essential, is desirable.

SALARY: £1,875 per annum, rising to £2,225 inclusive. Five-day week.

Leave 25/30 days. Superannuable. Mileage allowance paid for use of car on business.

Application forms obtainable on request to be returned to the Secretary, North East Metropolitan Regional Hospital Board, 40 Eastbourne Terrace, London, W.2, by 28th October, 1961.

GLOUCESTERSHIRE COUNTY COUNCIL
APPOINTMENT OF ASSISTANT ARCHITECTS
Applications are invited for the above appointments "Career Class" commencing in A.P.T. IV (£1,140—£1,310 p.a.) progressing to A.P.T. V (£1,310—£1,480 p.a.) subject to satisfactory report on reaching appropriate incremental point in Grade. Applicants must be Registered Architects and Associate Members of the R.I.B.A.
N.J.C. Conditions of Service, superannuation, medical examination. Canvassing will disqualify.
Applications stating age, present position and salary, details of previous appointments, and naming two referees must reach the County Architect, Shire Hall, Gloucester, by 23rd October, 1961.

GUY H. DAVIS,
Clerk of the County Council.
9592

CAERNARVONSHIRE COUNTY COUNCIL
Applications invited for posts of ASSISTANT ARCHITECTS (salary A.P.T. IV, £1,140—£1,310). Further particulars and application forms from Clerk of County Council, County Offices, Caernarvon. Closing date, 31st October, 1961. 9593

BOROUGH OF JARROW
Applications are invited for the following appointments:—
(*a*) CHIEF ASSISTANT ARCHITECT.
Salary within A.P.T. Grade IV/V.
Applicants to be A.R.I.B.A. or equivalent.
(*b*) ASSISTANT ARCHITECT.
Salary A.P.T. Grade III.
Housing accommodation available for both posts.
Details and application forms obtainable from the Borough Engineer, Town Hall, Jarrow, Co. Durham.
Completed applications should reach the undersigned not later than noon on Tuesday, 24th October, 1961.

M. L. ROTHFIELD,
Town Clerk.
9594

CORPORATION OF LONDON
CITY SURVEYOR'S OFFICE
ARCHITECTURAL & BUILDING DIVISION
invite applications for appointment of SITE ARCHITECT for the redevelopment of a section of London Central Markets, Smithfield: for approximately three years at a salary of up to £1,480.
Applicants should be fully qualified architects with experience of construction and supervision of major building contracts. Consideration will be given to candidates of Intermediate standard having the required experience.
Write, giving full details of experience, age, etc. and previous positions, with names of two referees, within 14 days, to City Surveyor, Guildhall, E.C.2. S9597

CORBY NEW TOWN
SENIOR ASSISTANT ARCHITECT
There is a vacancy for a Senior Assistant Architect within the department of the Chief Architect at a salary within the Grade A.P.T. V (£1,310—£1,480 per annum). The appointment offers exceptional experience and extensive development work will continue for many years.
Housing is available and removal expenses will be paid. There is a Superannuation Scheme either under the conditions of the Local Government Superannuation Act or under the New Towns Pension Fund.
Apply by Tuesday, 24th October, stating age, present appointment and salary, details of qualifications and experience and the names of two referees, to:—

R. F. BROOKS GRUNDY,
General Manager.
Corby Development Corporation,
Spencer House,
Corby, Northants. 9600

METROPOLITAN BOROUGH OF CAMBERWELL
ARCHITECTS
Vacancies for Architects in the Borough Architect's Department within a salary range of £855 and £1,525 (Grades A.P.T. II to V of the National Scales). Grade and commencing salary according to qualifications and experience. The work of the department includes design and construction of public buildings, housing estates, including multi-storey construction. Application form from Town Clerk, Town Hall, S.E.5. TC9602

URBAN DISTRICT COUNCIL OF CORBY
APPOINTMENT OF
SENIOR ARCHITECTURAL ASSISTANT
Applications are invited for this appointment from qualified Architects of not less than five years' experience (including the period of theoretical training).
Salary within Grade A.P.T. IV (£1,140—£1,310 per annum) according to experience.
Corby is a rapidly expanding town and the Council's building programme will provide opportunities for good experience.
Housing accommodation will be available to the successful candidate, if married.
Forms of application may be obtained from the undersigned, to whom they should be returned by not later than Monday, 23rd October, 1961. Testimonials will be required only from applicants selected for interview.

G. B. BLACKALL,
Clerk of the Council.
Council Offices,
Corby,
Northants.
29th September, 1961. 9591

QUANTITY SURVEYING ASSISTANT required by the National Coal Board in their Divisional Production Department at Llanishen, Cardiff.
The successful applicant will assist the Quantity Surveyor in the preparation of Bills of Quantity; interim valuations; and final accounts on building contracts. Applicants should preferably have passed the Intermediate examination of the R.I.C.S. but applications will also be considered from persons with outstanding practical experience.
Salary scale £785 × £30—£935 per annum (exceptionally £1,100).
Applications (quoting 544/39) should reach the Divisional Chief Staff Officer, National Coal Board, Ty Glas Avenue, Llanishen, Cardiff, by 19th October, 1961. 9589

COUNTY BOROUGH OF DARLINGTON
BOROUGH ARCHITECT'S DEPARTMENT
Applications are invited for the following appointments:—
One SENIOR ASSISTANT ARCHITECT (Group Leader). Salary—Grade V of N.J.C. Scales (£1,310—£1,480).
Two SENIOR ASSISTANT ARCHITECTS. Salary—Grade IV of N.J.C. Scales (£1,140—£1,310).
One ASSISTANT ARCHITECT. Salary—Grade II of N.J.C. Scales (£815—£960).
One DRAUGHTSMAN. Salary—General Division of N.J.C. Scales (£455, aged 22, to £630).
One JUNIOR QUANTITY SURVEYOR. Salary—Grade I of N.J.C. Scales (£645—£815).
The department has a large programme including Secondary and Primary Schools, Welfare Schemes, Housing, Municipal Offices, Markets and Central Redevelopment. Preference will be given to candidates experienced in this class of work and who are, in the case of architects, members of the R.I.B.A.
Applicants for the post of Junior Quantity Surveyor should be experienced in the preparation of Bills of Quantities, interim valuations, and the settling up of final accounts.
Applications, stating post and giving full particulars of age, qualifications, present appointment with salary, previous appointments with dates, and name and address of three referees, to be received by E. A. Tornbohm, A.R.I.B.A., A.M.T.P.I., Borough Architect, Central Buildings, Darlington, not later than 30th October, 1961.
Consideration will be given to provision of housing accommodation, if required. S9668

STAFFORDSHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT
VACANCIES
(*a*) ASSISTANT ARCHITECTS, £1,140—£1,310.
(*b*) ASSISTANT QUANTITY SURVEYORS, £1,140—£1,310.
(*c*) ARCHITECTURAL ASSISTANTS, £815—£960.
Applicants should hold for post (*a*) A.R.I.B.A.; (*b*) A.R.I.C.S.; and (*c*) Intermediate R.I.B.A.
The Architect's Department is a busy and expanding office, dealing with a wide variety of projects, including Fire Stations, Colleges, Schools, Police Stations, Offices, Ambulance Stations, Clinics, Libraries, etc.
Good working conditions, assistance with removal expenses, etc.
There is a possibility that housing may be made available in special circumstances.
Forms of application from P. Woodcock, F.R.I.B.A., County Architect, Green Hall, Lichfield Road, Stafford.
Closing date—23rd October, 1961.

T. H. EVANS,
Clerk of the County Council.
9658

BOROUGH OF SCUNTHORPE
(Population—67,500; Area—7,895 acres; R.V.—£1,562,541)
BOROUGH SURVEYOR'S DEPARTMENT
APPOINTMENT OF
ASSISTANT QUANTITY SURVEYORS
Applications are invited from appropriately qualified persons for the following appointments:
1. ASSISTANT QUANTITY SURVEYOR, A.P.T. I (£645—£815) capable of site measurement, interim valuations, abstracting and billing.
2. ASSISTANT QUANTITY SURVEYOR, A.P.T. II (£815—£960) for site measurement, interim valuations, abstracting, billing and taking off under supervision.
3. ASSISTANT QUANTITY SURVEYOR, A.P.T. III(£960—£1,140) for abstracting, billing and taking-off for houses and public buildings of all types.

Housing accommodation available if required, approved removal expenses reimbursed in full, five-day working week.
Applications, stating age, details of present and past appointments, training, qualifications and experience, together with the names of two persons to whom reference may be made, should be sent to F. J. Bowyer, A.M.I.C.E., Borough Engineer & Surveyor, Borough Surveyor's Department, Laneham Street, Scunthorpe, on or before Friday, 20th October, 1961. 9653

PERTH COUNTY COUNCIL
Applications are invited for vacancies in the COUNTY ARCHITECT'S DEPARTMENT, Perth, on salary scale £1,000 to £1,300. Applicants should be fully qualified A.R.I.B.A. but applicants with a Diploma in Architecture will be considered. Placing on the scale may be given according to experience. Housing accommodation will be available. Particulars and forms of application from The County Clerk, P.O. Box 15, County Offices, York Place, Perth. Applications to be lodged by 30th October, 1961. 9611

SURREY COUNTY COUNCIL
Applications invited for appointment of ASSISTANT ARCHITECT Grade IV (£1,140—£1,310 p.a. plus £45 p.a. London Allowance). Must be A.R.I.B.A. and have had experience in preparation of drawings and specifications and be capable of assuming responsibility for medium to large scale contracts.
Some housing accommodation available.
Applications stating age, qualifications, education and experience, present salary and three copy testimonials, preferably one from present employer, to County Architect, County Hall, Kingston, as soon as possible, marked (H) in top lefthand corner. 9643

THE UNIVERSITY OF LEEDS. Applications are invited for the post of SURVEYOR OF THE FABRIC. On the retirement of the present Surveyor in September, 1962, it is intended that the successful applicant shall assume responsibility for the maintenance of all buildings and service installations in the University and for the execution of minor works of alterations and improvements up to a value of £20,000. Candidates must have appropriate professional qualifications and should preferably be architects or surveyors. They should have experience in the maintenance of buildings and be capable of administering a direct labour force of building tradesmen as well as preparing drawings and specifications for building contracts. Commencing salary will be not less than £1,700 depending upon qualifications and experience, with superannuation benefits and child allowance. Further particulars may be obtained from the Bursar, The University, Leeds, 2, to whom applications should be submitted by 21st October, 1961. Envelopes should be marked "Surveyor." 9645

THE URBAN DISTRICT COUNCIL OF FELLING
SURVEYOR'S DEPARTMENT
APPOINTMENT OF ASSISTANT ARCHITECT
Applications are invited for the appointment as Assistant Architect in the Surveyor's Department. The salary payable will be within Grade A.P.T. IV of the National Salary Scales (£1,140—£1,310 per annum).
Applicants must have passed the Final examination of the Royal Institute of British Architects.
Forms of application together with particulars and conditions of employment can be obtained from the undersigned to whom they must be returned not later than the 16th October, 1961.
Housing accommodation will be provided by the Council if required or a 100 per cent. mortgage for the purchase of an approved private dwelling-house.
Canvassing will disqualify any applicant.

JOHN DONKIN,
Clerk of the Council.
Council Buildings,
Felling,
Gateshead 10. 9652

CITY OF PORTSMOUTH EDUCATION COMMITTEE
COLLEGE OF ART
Hyde Park Road,
PORTSMOUTH
Principal: W. J. L. GAYDON, A.R.C.A.
The Governors invite applications for a post of SENIOR LECTURER in the School of Architecture. Duties to commence, if possible, before January 1962.
The person appointed will be responsible mainly for thesis research, design and construction in the Fifth Year of the Diploma Course. Considerable ability in design is required for this post.
Candidates must be professionally well qualified and possess appropriate experience in architectural practice and teaching.
Salary: £1,550 × £50—£1,750 per annum (at present under review).
Further particulars and forms of application are obtainable from the Registrar. S9671

BOROUGH OF WEMBLEY
ASSISTANT ARCHITECTS or ARCHITECTURAL ASSISTANTS—A.P.T. I-IV. Grade and commencing point according to experience and qualifications. A.P.T. IV (£1,140—£1,310) applicable to Associates of the R.I.B.A. or Registered Architects. London "weighting" allowance payable. Varied programme. The Council are unable to provide housing accommodation.
Application forms, returnable by 23rd October, 1961, obtainable from Borough Engineer and Surveyor, Town Hall, Wembley, Middx. Quote ref. "B." 9663

CITY OF LEICESTER EDUCATION COMMITTEE
LEICESTER COLLEGE OF ART
Principal: E. E. PULLEE, A.M.C.A., F.R.S.A.
Applications are invited for the post of LECTURER in the School of Building. Applicants should be Chartered Surveyors in either the Quantity Surveying or Building sections.
Salary Burnham Technical Scale—£1,370 to £1,550 p.a.
Further particulars and application forms may be obtained from the Registrar at the College. 9610

THE UNIVERSITY OF LEEDS. ASSISTANT ARCHITECT required in the Planning Office to assist in the Development Programme (which will be based upon the Chamberlin Report). Applicants must be A.R.I.B.A. with several years' office experience. Commencing salary in accordance with qualifications and experience on a scale rising at present to £1,850. Further particulars are available from the Bursar, The University, Leeds, 2. Applications are to be submitted by 21st October, 1961. 9645

LEEDS REGIONAL HOSPITAL BOARD
Applications are invited for the post of ASSISTANT LAND SURVEYOR—salary scale £905 × £35 (1) × £45 (6) × £50 (2)—£1,310. The commencing salary will be dependent on practical experience and may be at an incremental point above the minimum of the scale provided that the additional increments do not exceed the number of years by which the candidates age exceeds 25.
Applicants must be Associate Members of the R.I.C.S.
Applications stating age, qualifications and experience, together with the names and addresses of two referees to The Secretary, Park Parade, Harrogate, by 22nd October, 1961. 9656

Tenders Invited

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

CITY OF BIRMINGHAM
HOUSING MANAGEMENT DEPARTMENT
REINFORCED CONCRETE FENCING POSTS
TENDERS are invited for the supply and delivery of 5 ft. 6 in. × 4 in. × 4 in. and 2 ft. 10 in. × 5 in. × 4 in. reinforced concrete fencing posts to be supplied as required during the twelve months commencing 1st November, 1961. Forms of Tender can be obtained from the undersigned at Bush House, Broad Street, Birmingham, 1.

J. P. MACEY,
Housing Manager.
Housing Management Department,
Bush House,
Broad Street,
Birmingham, 1. 9632

Competition

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

THE UNIVERSITY OF LIVERPOOL

OPEN COMPETITION

Architects are invited to submit designs for halls of residence for 1,100 to 1,200 students on the Carnatic site at Mossley Hill, Liverpool. The cost of the works will be approximately £1,500,000.

Assessors: Sir James Mountford, M.A., D.Litt., D.C.L., LL.D. (Vice-Chancellor).
Donald Gibson, C.B.E., M.A., D.C.L., F.R.I.B.A., M.T.P.I.
Professor Myles Wright, M.A., F.R.I.B.A., M.T.P.I.

Premiums: £5,000; £3,000; £1,000. Further premiums, to a total not exceeding £2,000, may be awarded at the discretion of the Assessors for other designs of merit.

Sending in Day: 4 September, 1962.

Last Day for Questions: 1 January, 1962.

Conditions may be obtained, upon payment of a deposit of £3, from The Registrar, The University of Liverpool, Liverpool, 3. Quoting Reference RVCH/518/AJ. 9547

Architectural Appointments Vacant

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra

CITY Architects urgently require SENIOR ASSISTANTS. Long term projects of contemporary design. Assistants would be in charge of projects to completion. Five-day week. Salary up to £1,750 per annum plus Luncheon Vouchers. Box S9466.

RALPH TUBBS has vacancies for ARCHITECTS for a variety of interesting jobs. Good opportunities for keen and competent persons. Pleasant office in Harley Street area. Phone WELbeck 0694 or write 46 Queen Anne Street, London, W.1. S9562

£1,000 / £2,000 p.a. will be paid to experienced competent ARCHITECTS by a private practice in the City of London. The work will be primarily on the drawing board on new and interesting projects of magnitude. A high standard of design and detailing ability is required. Please apply in writing to Box TC9360.

A FEW vacancies still left for experienced and confident ARCHITECTS to fill positions of responsibility in a growing and varied practice with industrial and commercial work throughout the southern half of the country. Applicants must have initiative as well as architectural ability to carry through contracts up to £100,000, working directly with Principals but with minimum supervision. Apply in writing to Thomas Mitchell & Partners, 20 Bedford Square, London, W.C.1. TC7443

LANCHESTER & LODGE urgently require ARCHITECTURAL ASSISTANTS of all grades. Work includes hospitals, laboratories, universities, offices, housing, etc. Write full particulars or ring for interview: 10, Woburn Square, W.C.1. MUS 0845-6-7. TC7348

£850-£1,600. ARCHITECTURAL ASSISTANTS required. Long term prospects. Non-contributory pension and life assurance schemes. Five-day week. Telephone or write: Ronald Ward & Partners, 29, Chesham Place, Belgrave Square, S.W.1. Belgravia 3361 TC6106

ARCHITECTS' ASSISTANT required, up to Intermediate standard, to work on large and interesting projects. Salary within range £600—£800. Applicants must be good draughtsmen, with sound knowledge of detailing. Please write giving full particulars of experience, age, etc., to: F. W. Beech & E. Curnow Cooke, F./L.R.I.B.A., 15, Dix's Field, Exeter. TC8706

ARCHITECTURAL ASSISTANTS of all grades, particularly Intermediate standard, required on varied and interesting projects. High salaries will be paid in accordance with skill or experience of applicant. Lewis Solomon, Kaye & Partners. City 8811. TC5970

SOUTHAMPTON. ASSISTANT of at least Intermediate standard required to help with projects in Hampshire and the Isle of Wight. Apply to E. M. Galloway & Partners, F./A.R.I.B.A., 10 Portland Street, Southampton. TC9098

ARCHITECTURAL ASSISTANTS required in Busy Bloomsbury office with varied practice. Good salary and prospects for suitable applicants. Five-day week. Write giving particulars of age, qualifications, experience, etc., to Box 918, c/o 7, Coptic Street, W.C.1. TC5647

SENIOR ARCHITECTURAL ASSISTANTS. Large Office has a limited number of vacancies for Senior Architectural Assistants, salary range £900—£1,500, to undertake work of a varied and interesting character.
Reply with particulars of experience to Box TC6875.

ROBERT MATTHEW & JOHNSON-MARSHALL have vacancies in their London office for ARCHITECTS at all levels of experience for a variety of interesting jobs. Apply to Robert Matthew & Johnson-Marshall, 24, Park Square East, N.W.1. TC6547

SENIOR ASSISTANTS required immediately. Salary by arrangement. Theo. H. Birks, 38, Portland Place, London, W.1. LAN. 7236. TC1486

ERIC FIRMIN & PARTNERS require ASSISTANT of Intermediate or Final standard preferably with previous office experience for interesting variety of projects. Five-day week, Luncheon Vouchers, holiday arrangements respected. Salary by arrangement according to qualifications and experience. Write to Thavies Inn House, Holborn Circus, E.C.1, or 'phone CITy 8811. TC8904

CITY Architects urgently require JUNIOR ASSISTANTS experienced in detailing and capable of assisting in design. Long term projects. Five-day week. Salary up to £1,250 per annum plus Luncheon Vouchers. Box 9467.

SENIOR and JUNIOR ASSISTANT ARCHITECTS required with progressive outlook, for work on a wide range of projects. Starting salaries up to £900 for Intermediate standard and up to £1,250 for Final standard, according to experience. Five-day week. Box TC9219.

JUNIOR, INTERMEDIATE and SENIOR ARCHITECTURAL POSTS offered with good salaries and working conditions. Salary by arrangement and according to ability. Interesting projects at home and overseas. Apply in writing with full details to Covell, Matthews and Partners, 34 Sackville Street, Piccadilly, W.1. S9369

ERNO GOLDFINGER requires several qualified ASSISTANTS and DRAUGHTSMEN with at least two years' experience to take part in a growing programme of interesting work which includes large office buildings, central developments, schools and private houses. Good salaries and scope for men with sound knowledge of construction. Phone HYDe Park 5657. TC9448

ELIE MAYORCAS requires ARCHITECTURAL ASSISTANTS with a minimum of three years' office experience in this country. Write giving brief particulars of architectural education and experience, to: 13, David Mews, Baker Street, W.1. TC9442

BIRMINGHAM—We need a young ARCHITECT, either qualified or in training, with a good sense for clean and straightforward design. There is plenty of scope for the right man. Salary according to ability and experience. Apply: J. Alfred Harper & Son, 63, Temple Row, Birmingham. S9436

EXPERIENCED ASSISTANT ARCHITECT required in West End office. Varied work, must be a competent designer and administrator. Opportunity for advancement to position of responsibility. Starting salary up to £1,250 according to experience. Luncheon vouchers. Five-day week. Box TC9218.

EXPERIENCED ASSISTANT, not necessarily qualified, required for small progressive office in Hammersmith. Salary by arrangement. Ring RIV 8021 or write Norman Starrett, 269, King Street, W.6. S9521

ASSISTANTS, Intermediate or Qualified. Wimbledon Office overlooking the Common, five-day week, no town travelling, varied work in U.K. and Overseas. Apply J. E. K. Harrison, F.R.I.B.A., Eagle House, Wimbledon, S.W.19, or 'phone WIM. 4244. S9463

CLIFFORD CULPIN AND PARTNERS need additional staff in their London and Hemel Hempstead offices. Men of about Intermediate standard particularly required to join small teams of keen men on important, varied projects. All must have a sound sense of modern design. 39, Doughty Street, London, W.C.1. CHAncery 5395. TC9379

SMALL PROGRESSIVE AND CONTEMPORARY LONDON OFFICE REQUIRES ASSISTANTS. GOOD OPPORTUNITY FOR PEOPLE WISHING TO GAIN EXPERIENCE IN ALL ASPECTS OF A VARIED PRACTICE. BOX S9447.

ARCHITECTURAL ASSISTANT required of Intermediate standard, capable of working on own initiative. Ample opportunity to control projects from design to completion. Write or 'phone: Nicholson and Rushton, 2, New Square, Lincoln's Inn, W.C.2. HOLborn 2095. TC9446

SENIOR ARCHITECTURAL ASSISTANT. Vacancy occurs in leading Bristol Office engaged in highly interesting projects. Applicant must possess initiative and be thoroughly conversant with supervision in addition to being first-class in design and details. The position offered covers the use of a car and inclusion in a Non-Contributory Pensions Scheme. Apply with full details of experience etc., and indication of salary required to: Alec F. French Esq., F.R.I.B.A., Pearl Assurance House, Queen Square, Bristol, 1. S9522

BIRMINGHAM **£1,600.** LEONARD J. MULTON & PARTNERS require QUALIFIED ARCHITECTS AND ASSISTANTS. Five-day week. Private Pension Scheme. Salary up to £1,600 per annum, according to qualifications and experience. Work includes Multi-storey Flats and Housing, Hospital Work, Factories and Centre City Development. If you require a progressive position, please write to 6, Greenfield Crescent, Edgbaston, or telephone Edgbaston 4188. S9538

SCHERRER AND HICKS
REQUIRE in their London Office
Junior Assistants with two or three years' experience.
Salary £500/£700 per annum.
Intermediate Assistants with several years experience.
Salary £1,000 per annum.
Reply to 19, Cavendish Square, London, W.1. S9526

ARCHITECTURAL ASSISTANT required for permanent position in Architect's Department of progressive East Coast Brewery Company. Sound training and experience together with an interest in interior design essential. The Company operates a Pension Scheme with substantial benefits. Five-day week. Write giving age, salary required and full details of training and experience to Box S9528.

INTERMEDIATE or SENIOR ASSISTANTS required for office with varied practice. Write W. F. Howard, F.R.I.B.A., 35 Thurloe Street, South Kensington, S.W.7. S9530

ASSISTANT ARCHITECTS OF INTERMEDIATE STANDARD REQUIRED BY E. R. COLLISTER AND ASSOCIATES, 41, BUCKINGHAM PALACE ROAD, LONDON, S.W.1. SALARY WILL BE BY ARRANGEMENT. S9461

AN ARCHITECT is required to take charge of the Architects' Department of a major Building Company based upon Liverpool. The successful applicant will take charge of an office responsible for the design and development of Offices, Flats, Housing, Shops and Industrial Building. Apply, giving full particulars to Box G 303, Lee & Nightingale, Liverpool, 2. S9545

ERIC LYONS has place for experienced ASSISTANT ARCHITECT who wants responsibility and opportunities. Brief particulars to: Mill House, Bridge Road, Hampton Court, Surrey. TC9542

RESPONSIBLE older type of ASSISTANT required, experienced in large buildings. Excellent salary and conditions. Kensington area. Box S9499.

EXPERIENCED SENIOR ARCHITECTS required. Apply stating age and salary required to: Robert J. Wood & Partners, 29, Widmore Road, Bromley, Kent. RAVensbourne 9788. S9501

KNAPTON DEANE have vacancies for ARCHITECTURAL ASSISTANTS in all grades. Congenial conditions, interesting work, high salaries and opportunities for advancement. VICtoria 0053. S9514

NORMAN JONES, SONS & RIGBY require an experienced ARCHITECTURAL ASSISTANT. Salary range £1,000—£1,250 per annum. Write with details to 271 Lord Street, Southport, Lancashire. S9515

TWO SENIOR ASSISTANTS required urgently for responsible positions. Good working conditions, five-day week, lunch facilities. Salaries £1,000—£1,500 according to experience. Apply to Alan A. Briggs, F.R.I.B.A., 10, Fleet Street, London, E.C.4. Telephone CITY 4400. S9566

INTER-STANDARD ASSISTANT required in small office for work on variety of jobs. Salary £800 p.a. Write Brian Drury, A.R.I.B.A., 34 Selsdon Road, South Croydon. 9518

ARCHITECTURAL ASSISTANT. Man or Woman with some office experience required for interesting country practice. L. H. Bond and R. W. Read, 44, Castlegate, Grantham. TC8851

JUNIOR ASSISTANT, male or female, approaching Intermediate standard, required for small office in Reading. Study concessions would be considered and real assistance and interest given to a keen applicant. Write to Gordon H. F. Thompson, A.R.I.B.A., 64, The Forbury, Reading. 9565

ARCHITECT required as head of consulting engineers Architectural department, work varied including industrial, commercial and domestic schemes. Pension scheme, progressive salary, initially £1,600 p.a. Box 9569.

WELLS, HICKMAN & PARTNERS require first-rate ASSISTANTS for varied and interesting work. Salary according to ability and experience. 'Phone: TERminus 1404. 9624

A SMALL but steadily expanding Wimpole Street office with a young progressive staff working as a team on several medium sized projects would like another YOUNG MEMBER to join the team who must be:

(*a*) Final standard or nearly, with office experience and able to drive a car.
(*b*) Keen about good design, construction and contract management,

and is now looking for a job where skill, hard work and enthusiasm will be rewarded by an assured future with the practice. Write in confidence to Box 9622.

OSCAR GARRY & PARTNERS require ASSISTANTS of both Intermediate and Final standard, with at least two years' office experience in this country, to work on interesting projects in early design and contract stages. Five-day week, luncheon vouchers. Salary by arrangement, according to qualifications and experience. Phone WEL 2507 or write 66, Gloucester Place, London, W.1. TC9621

SENIOR ARCHITECTURAL ASSISTANT

A PROFESSIONAL firm of Architects in Bedford have a vacancy for Senior Architectural Assistant. Salary will be in the £1,250—£2,000 range and living accommodation is available. Architects interested please write to Box 9620. All applications will be treated in strictest confidence.

ENTHUSIASTIC ASSISTANT (up to Intermediate standard) required immediately by small but busy City Architects. Phone LON 3825. B9616

REQUIRED: QUALIFIED ASSISTANT. General and varied practice in town and country including modernisation of hotels. Full particulars to Fry, Paterson & Jones, 28, Waterloo Street, Weston-super-Mare. 9615

INTERMEDIATE ASSISTANTS required in busy provincial office. Wide variety of work of an interesting nature. Contemporary outlook welcomed—good rates of pay in accordance with experience. Hare & Pert, A/A.R.I.B.A., 29, Elm Street, Ipswich. 9595

ASSISTANT ARCHITECTS and ARCHITECTS' ASSISTANTS required on interesting and varied public buildings. Small office. Generous salary. Apply, The Secretary, McMorran and Whitby, 14, North Audley Street, London, W.1. Telephone MAYfair 6036. 9604

ARCHITECTURAL ASSISTANT required in London for varied work home and overseas—airports, industrial installations, etc. Age range 25-30. Intermediate to R.I.B.A. standard. Scope for individual architectural ability within the team. Full details of qualifications and experience requested as such will be basis of remuneration. Sir Alexander Gibb & Partners (H. L. Ford, F.R.I.B.A.), Queen Anne's Lodge, Westminster, S.W.1. 9607

INTERMEDIATE TO FINAL ASSISTANTS required immediately. Salary from £1,000 onwards and luncheon vouchers. Theo. H. Birks, 38, Portland Place, London, W.1. LAN 7236. TC8906

C. H. ELSOM & PARTNERS have vacancies in their Victoria office for ARCHITECTS at all levels of experience for work on town centre redevelopment, schools, housing, commercial buildings and hotels. Superannuation scheme and luncheon vouchers. Applications in writing only please, giving brief details to 10, Lower Grosvenor Place, London, S.W.1. S9231

KINGSTON-UPON-THAMES, SENIOR ASSISTANT required (male or female) for interesting and varied work. Salary up to £1,150 per annum for suitable applicant. Pleasant and congenial office conditions. Five-day week. Applications in writing only giving full particulars. Donaldson & Co., Architects, 75 London Road, Kingston-upon-Thames. TC9281

SEVERAL ARCHITECTURAL ASSISTANTS required up to Intermediate and Final standard in progressive Hampstead office. Five-day week. Experience on flat design necessary. Please apply D. Newton, A.R.I.B.A., M.R.S.H., of 307 Finchley Road, N.W.3. Tel.: SWI 5152. S9238

ARCHITECTURAL ASSISTANT for setting out for Architectural Model Making from architects' drawings. Interesting work and good opportunity to get on in growing profession. London District. Box 9465.

ARCHITECTS in Watford, London and Glasgow require ASSISTANTS of Intermediate/Final R.I.B.A. standard for work on interesting commercial and industrial projects. Salary range: £800—£1,250. Quarterly bonus scheme. Non-contributory pension scheme. Apply Box TC8120.

ARCHITECTS with busy practice in Brighton require ASSISTANTS with practical experience for varied work. Salary up to £750 per annum. Five-day week, pension scheme, etc. Box TC5848.

FARMER AND DARK

have some vacancies for
QUALIFIED ARCHITECTS, age 25/35,
preferably with office experience
for varied and interesting home
and overseas work. Five-day week.
Apply to Romney House, Tufton Street, S.W.1.
Tel.: ABBey 6311. S9628

BRYAN AND NORMAN WESTWOOD require a SENIOR ASSISTANT ARCHITECT; salary around £1,200. Apply to 21, Suffolk Street, S.W.1. TRAfalgar 1106. TC9630

GOTCH AND PARTNERS, Architects, require SENIOR and JUNIOR ASSISTANTS in their London, Brighton and Bristol Offices. Five-day week. Luncheon vouchers. Good salary for enthusiastic and capable men. Reply: 8, City Road, E.C.1. S9583

ARCHITECTS desiring a change of environment would be well advised to apply for the vacancies occurring in our City of London Office. Interesting and varied projects, generous salaries, L.Vs, State and Non-contributory Private Pension Schemes, five-day week. Apply Box 9582.

ARCHITECTURAL ASSISTANT required with sound general experience for busy West End practice. Salary by arrangement. Telephone REGent 5006. 9580

GLASGOW: Baron Bercott & Associates have vacancies for ARCHITECTURAL ASSISTANTS (Intermediate to Final standard) to work on varied large-scale projects. Opportunity to work either in the Glasgow office or Falkirk office. Non-contributory Pension Scheme, five-day week. Write or telephone to Baron Bercott & Associates, 118, Blythswood Street, Glasgow, C.2. (CENtral 6556/7.) S9578

GLASGOW: ASSISTANT ARCHITECTS (qualified) urgently required to work either in Glasgow office or Falkirk office, on varied large scale projects. Five-day week, and non-contributory Pension Scheme. Write or telephone to Baron Bercott & Associates, 118, Blythswood Street, Glasgow, C.2. (CENtral 6556/7.) S9579

CORK, Ireland.—ARCHITECTURAL ASSISTANTS required in busy city office. Salaries according to ability and experience. Frank Murphy, B.Arch., M.R.I.A.I., A.R.I.B.A., 46, South Mall, Cork. 9576

£900 P.A. ARCHITECTURAL ASSISTANT required up to Intermediate standard for London Office. Some experience in shop and store design an advantage. Details to Box TC9660.

A. M. GEAR & ASSOCIATES have vacancies for STAFF interested in (*a*) Research and Development; (*b*) a variety of Building Projects, Factories, Laboratories, Office Blocks and Educational. Please write giving details of training and experience to 12, Manchester Square, London, W.1. S9577

ASSISTANT ARCHITECT and ARCHITECTURAL ASSISTANTS required, A.R.I.B.A. or Intermediate. Wide variety of projects including University Buildings, Schools, Flats. Full particulars to Geens, Cross & Sims, F/F/A.R.I.B.A., Metropole Chambers, The Lansdowne, Bournemouth. 9585

POULTON AND FREEMAN require two qualified ASSISTANTS, age about 30, with some experience of school and office design. Telephone AMBassador 2211 or write 7a, Wyndham Place, W.1. 9587

SENIOR ASSISTANTS required for work on large hospital programme, excellent opportunities for the right men. Salary £1,000—£1,400. Luncheon vouchers and five-day week. Write giving full particulars: Watkins Gray & Partners, 57, Catherine Place, S.W.1. TC9590

PERSONAL INTERMEDIATE ASSISTANT required for Architect in Holland Park Office in a private residence. Salary by arrangement. PAR. 7042. S9598

WE require experienced ARCHITECTS for DESIGN work on varying projects of considerable size and interest covering Domestic, Industrial and Commercial Buildings.

Permanent and progressive appointments with commencing salaries up to £1,650 per annum for a five-day week in West London.

Please write in confidence to Box 9599.

ARCHITECTURAL ASSISTANT required, qualified, with office experience. Interesting and varied work. Good salary. Write to Messrs. Berry, Crane & Noble, Suckling House, St. Andrew's Hill, Norwich. 9601

ASSISTANT ARCHITECT required for practice in Devon and Cornwall. Salary range £1,000—£1,300. Industrial and domestic experience with some knowledge of ancient buildings. Preference to applicant with five years' office experience. Apply Box 9670.

OFFICE OF PATRICK GWYNNE

Experienced ASSISTANTS
houses interiors furniture
personal transport advantageous.

The Homewood Esher Surrey. 9669

CHELTENHAM Architects with busy general practice require SENIOR ASSISTANT not afraid of responsibility. Permanancy to right man. Write giving experience, etc., to Box B9667.

CHARLES B. PEARSON SON & PARTNERS require Intermediate standard and qualified ARCHITECTS at Lancaster and Manchester to work on varied and interesting projects, particularly hospitals.

18, Dalton Square, Lancaster.
24, Loxford Street, All Saints, Manchester, 15. 9664

W. H. SAUNDERS & SON, L./A./A.R.I.B.A., A.M.T.P.I., require additional staff to fill the following vacancies:—

LONDON OFFICE.—ARCHITECTURAL ASSISTANTS with experience, to work on schemes for central area redevelopment of some magnitude, multi-storey car park projects, schools and varied work in the central London area.

SOUTHAMPTON OFFICE.—ARCHITECTURAL ASSISTANTS of about Intermediate grade, to join teams working on a variety of large scale commercial and industrial projects.

Write or telephone 53, Goodge Street, W.1 (LANgham 9908), or 22, Brunswick Place, Southampton (Southampton 20302). B9647

ARCHITECT'S ASSISTANT required, qualified, with general experience, for London Office. Apply G. Langley-Taylor & Partners, 9, King's Bench Walk, London, E.C.4. Tel. CENtral 4774. 9666

MUNCE & KENNEDY, ARCHITECTS AND CONSULTING ENGINEERS, URGENTLY REQUIRE ASSISTANTS FOR THEIR EXPANDING LONDON OFFICE. SALARY RANGE £950 (INTERMEDIATE STANDARD) TO £1,250 (FINAL STANDARD) DEPENDING ON EXPERIENCE AND ABILITY, PLUS BONUS. APPLY IN WRITING TO: JOHN SHELDON, A.R.I.B.A., M.S.I.A., at 10/11, BULSTRODE PLACE, LONDON, W.1. 9654

ARCHITECTURAL ASSISTANTS required, concerned with large development schemes, salary ranging from £850 to £1,500 per annum. Apply to Ian Burke, Martin & Partners, 1, Park Circus Place, Glasgow, C.3, and 11, South Tay Street, Dundee. 9651

INTERMEDIATE / FINAL ASSISTANT required, male or female, for varied, interesting work. Telephone or write, S. P. Jordan, A.R.I.B.A., M.S.I.A., 13, Beauchamp Place, S.W.3. KNI 4541. 9650

SOUTH KENSINGTON

Opportunities for working in small groups in direct contact with jobs in hand, including multi-storey luxury private development, high block development, for Local Authorities and other interesting work. Positions are vacant for ASSISTANT ARCHITECTS having Intermediate and one-two years' experience. Write or 'phone R. Mountford Pigott and Partners, 3, Cromwell Place, S.W.7. KENsington 1242. S9641

EFFICIENT ASSISTANT required. Intermediate, Final or recently qualified, sound knowledge of building construction essential. Pay in accordance with ability. Apply M. de St. Croix, A.R.I.B.A., Staff Architect, Truscon Limited, 36/41, Lower Marsh, S.E.1. Phone WATterloo 6922. S9642

DESIGN PARTNERSHIP, Architects, require an experienced ASSISTANT to work in their Manchester Office. Varied and interesting work. Salary up to £1,500, paid overtime, three weeks' holiday. Apply D. A. Cobb, 26, Cross Street, Manchester, 2. 9639

Architectural Appointments Wanted

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

EXECUTIVE ARCHITECT (55), A.R.I.B.A., A.A.Dip. Wide and varied experience, seeks responsible position in London or Home Counties. Box S9554.

SENIOR ASSISTANT, 14 years' experience general practice, requires position (not Home Counties or London). Box 9613.

MANCHESTER

INTERMEDIATE ASSISTANT requires long term post in small architect's office, mainly dealing in small jobs in the Manchester outlying districts.

Limited experience. Modern outlook but great love for good traditional architecture. Three-four years' office experience. Requires eventually when settled in to be given chance to design, plan and run jobs, within capacity and limits of experience.

School trained. Not qualified. Designed and built own house.

Do not require to start for one month and can wait longer if prospects suit. References supplied. Please reply: Brian T. Sharp, 33, Gibson's Road, Heaton Moor, Stockport, Cheshire. TC9640

QUALIFIED ARCHITECT (40), with extensive overseas and U.K. experience, requires responsible and progressive position, preferably connected with overseas work. Minimum salary £2,000 p.a. Replies to Box 9637.

Other Appointments Vacant

3s. per line: minimum 12s. Box Number, including forwarding replies, 2s. extra.

THE ARCHITECTS' JOURNAL requires a good DRAUGHTSMAN, full time, for the preparation of Information Sheets and Working Details. An interest in compiling technical information is essential. Write to the Editor (Information Sheets), 9, Queen Anne's Gate, S.W.1, stating age, training and experience and salary required. TC9432

ARCHITECTURAL DRAUGHTSMAN, able to work on own initiative and carry out design and detailing of small and medium sized works, with scope for own ideas. Pension Scheme and permanency for the right man. Details of experience and salary required to be forwarded to the Chief Engineer, White City Stadium, London, W.12. S9505

ARCHITECTURAL REPRESENTATIVE.—We have two positions for first-class senior men. Manchester and Gloucestershire would be ideal bases but some flexibility in this. Requirements are sound constructional knowledge, feeling for modern architecture, enthusiasm for hard work, loyalty, initiative, level headed business ability and considerable experience in negotiating large scale contracts with architects. Life will be spent travelling over a wide area to discuss modern factory-produced constructional systems at a high level. Applications will be considered only from men with above qualities who send complete details in first instance, covering age, background, qualifications, full career, salary levels, etc. Write in confidence to Box S9606.

£750—£1,000. SHOPFITTING DESIGNER/DRAUGHTSMEN required by Architects with large scale programme for Leading Multiples. Permanency and excellent prospects. Five-day week. Interview expenses covered. Write: Stephenson, Gillis & Partners, 2, Saville Chambers, North Street, Newcastle on Tyne, or telephone 28407. S9586

ARCHITECTURAL DRAUGHTSMAN required in London on varied and interesting work home and overseas. Good draughtsmanship essential with reasonable technical knowledge. Remuneration will be considered in relation to experience. Sir Alexander Gibb & Partners (H. L. Ford, F.R.I.B.A.), Queen Anne's Lodge, Westminster, S.W.1. 9649

Other Appointments Wanted

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

LIBRARIAN, experience in large architect's office with SfB, wants full or part-time work in London aiding architects with technical literature problems. Box 9648.

QUALIFIED INTERIOR DESIGNER (26), woodworking experience (qualified cabinet-maker), with one year's experience in an architect's office, seeks interesting work, but study concessions if possible. Box 9655.

Services Offered

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

"DON" ARCHITECTURAL MODEL MAKERS. We offer the highest grade work with speed and reliability.—Please 'Phone Woolwich 1262 or write 6, Pelham Crescent, Hastings. TC1673

FULLY experienced in all Building and Architectural work, I am available to undertake: Designs, Working Drawings, Details, Surveys, Specifications, Models, etc. Just telephone Wallington 9883 (near Croydon) and I will call anywhere and take your instructions. Box TC5548.

MODELS AND COLOUR PERSPECTIVES. Charles Monthuesen offers work of the highest quality. 15, Thames Street, Sunbury-on-Thames, Middlesex. Sunbury 5728. TC2599

SURVEYS. Large or small, drawn to large scales, accuracy guaranteed. Structural sewerage, sewage disposal, sanitary plumbing and drainage design. The Site Survey Company, London, S.E.3. Telephone LEE Green 7444. TC6088

ARCHITECTURAL MODELS.—Thomas K. Bartlett and Partners specialise in this work. 5, King's Ave., W.5. Phone Perivale 6283. TC6176

CASHMORE ARCHITECTURAL MODELS have a reputation for craftsmanship, speed and dependability and will help you to "put it over to your clients." Coleham Head, Shrewsbury. Tel. 52186. TC8632

"NAPIER MODELS." Specialists in Architectural work. Stanley Studios, S.W.10. FLAxman 2118. TC9172

PERSPECTIVE DRAWINGS. Alan Mitchell, 12-26 Lexington Street, Fourth Floor, London, W.1. Regent 4655. S9348

HORTICULTURAL CONSULTANT—former Curator Kew. Landscape design. Tree planting and preservation. Write W. M. Campbell, N.D.H., V.M.H., 6, Moy Avenue, Eastbourne. S9421

TWO destitute inebriates require part-time work. We will design anything; pigsties a speciality. Phone Costello, WAT 4362, before opening time, or HORnchurch 43965 after 7 p.m. R.I.P. 9603

EXPERIENCED ARCHITECT in South of England offers service to others in preparation of working drawings, survey, etc. Can take on work immediately. Box 9612.

ARCHITECTURAL AND EDUCATIONAL MODELS of all kinds, accurately made to scale with latest up-to-date materials. Models of realistic and artistic appearance made for clients in all parts of the world for over 20 years. Send drawings for free estimate to:—
Educational Models,
4, Avenue Road,
Duffield,
Derby, England.
Telephone: Duffield 2081. TC8604

SENIOR ASSISTANT, Final standard, available evenings and week-ends for freelance work. Tel.: FIN. 5006. 9633

DALE PERSPECTIVES: Work done quickly in any medium. 1, Scarsdale Studios, Stratford Road, W.8, or phone MOU. 3753. 9629

PERSPECTIVE DRAWINGS, coloured or black and white. W. A. A. Cox, A.R.I.B.A., 10, Knaresborough Place, London, S.W.5. FRObisher 1215. S9574

ALLMODELS STUDIO, 2, Burlington Mews, London, W.3. Acorn 7655. S9575

AN exceptionally witty group of qualified Architects, of interminable experience, offer comprehensive services. At once contact Box 9636.

EXPERIENCED FELLOW, 47, young outlook, based London, would give immediate help with large commission. Box 9661.

CHARTERED ARCHITECT (47), accepts long or short term, part-time, salaried appointments, Bristol and West, as site or representative architect, surveyor or consultant. Box S9565.

Partnership and Financial

3s. per line: minimum 12s. Box Number, including forwarding replies, 2s. extra.

FELLOW, early 40's, with substantial provincial practice, seeks amalgamation with architects in or near London. Box 9662.

Property for Sale

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

NEWPORT, MON. Site for comprehensive Shopping Centre. Planning permission. Freehold. Vacant possession. Details write Box S9564.

Property To Let

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

TADLEY, HANTS.—Site for six shops situated in expanding residential area. All services. Freehold. Write Box S9617.

READING.—Half-acre site for 12 flats and garages. All services. Freehold. Details write Box S9618.

Premises To Let

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

ROOM AVAILABLE in professional office, approximately 13 ft. × 16 ft., in Lincoln's Inn area. Rent £120 p.a. exclusive. Telephone installed. Immediate occupation. Write Box S9584.

PRESTIGE OFFICES, Berkeley Square, 2 floors to let, separately or together, each 750 sq. ft. 30s. per sq. ft. Apply Box 9581.

For Sale and Wanted

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

OFFERS invited for Mason 33 in. plan printing machine. Details from Borough Surveyor, Guildhall, Kingston-upon-Thames. 9626

Miscellaneous

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

A. J. BINNS, LTD., Specialists in the supply and fixing of all types of Fencing, Gates and Cloakroom Equipment.—Harvest Works, 96/107, St. Pauls Road, N.1. Canonbury 2061. TC2093

CROGGON & CO., LTD.—Chain Link Fencing and all types of Wrought Iron Fencing supplied and erected.—230, Upper Thames Street, London, E.C.4. CENtral 4382. TC9429

HANDMADE CLAY TILES available in many beautiful colours. The perfect roofing material with the longest life. Particulars, samples and brochure from G. Tucker & Son Ltd., Loughborough, Leicestershire. Phone: Loughborough 2446/7. TC1609

Educational Announcements

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

R.I.B.A. and T.P.I. EXAMS.—Stuart Stanley (Ex. Tutor Sch. of Arch., Lon. Univ.), and G. A. Crockett, M.A./D.A., F./F.R.I.B.A., M./A.M.T.P.I., prepare Students by correspondence. 10, Adelaide Street, Strand, W.C.2. TEM. 1603/4. TC9953

INTERIOR DESIGN AND DECORATION. The Rhodec School offers a home study course in interior design and decoration. Course 1, for professional use. Course 2, for personal use about your home. Send 4d. stamp for free booklet to Dept. AJ, BCM/Rhodec, London, W.C.1. TC4089

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, SW1

FOLD HERE

The new AJ—your own copy

Please send me The Architects' Journal until further notice at the annual subscription rate of £2 15s. 0d.,*

Name .....

Address.....

.....

Signature .....

Date .....

* Overseas rate £3 10s. 0d.
Student rate £1 10s. 0d. to members of a recognised school of architecture.

TUCK IN THIS FOLD

AJ SfB

Alphabetical index to advertisers

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 _____

_____

11.10.61

PRODUCTS FILE

BRITAIN'S TALL BUILDINGS

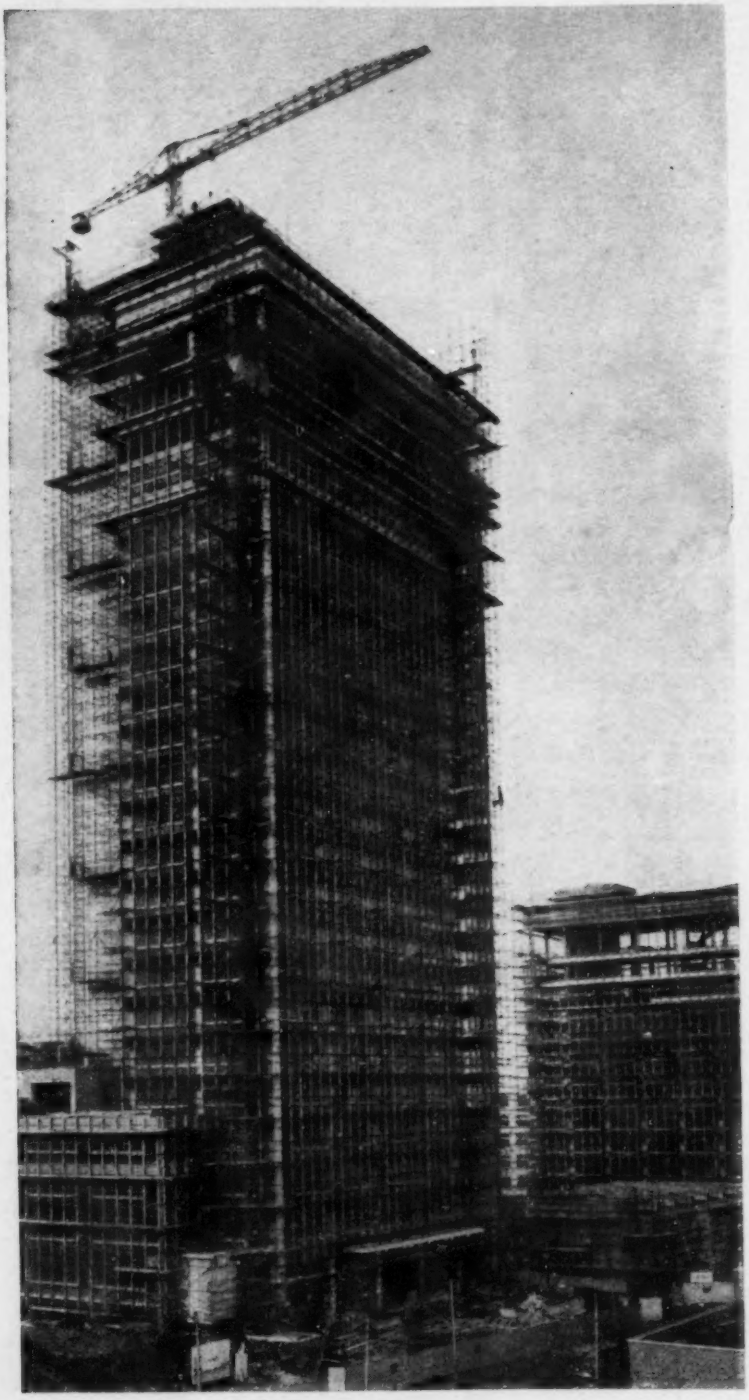
New Chief Offices for Co-operative Insurance Society Ltd, Manchester

One of the country's largest office blocks, the 400 ft. high new building for the Co-operative Insurance Society Ltd, will have a floor area of over 12½ acres, incorporating three levels of basement, a five-floor podium and a 25-storey tower.
Also included in the scheme, which is due for completion in 1962, is a Conference Hall to seat 1,000 and a 14-storey tower block to be occupied by the Co-operative Wholesale Society Ltd.

Architects G. S. Hay, F.R.I.B.A. Chief Architect, Manchester, Co-operative Wholesale Society Ltd, in association with Sir John Burnet, Tait and Partners.

Engineering Services: O. Castick, A.M.I.Mech.E. Chief Engineer, Manchester, Co-operative Wholesale Society Ltd.

Structural Engineer: A. E. Beer, E.R.D., A.C.G.I, M.I.C.E, M.I.Struct.E.



LAING

John Laing and Son Limited
Great Britain and Overseas

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. Registered as a Newspaper