The Architects' JOURNAL for November 6, 1958

THE ARCHITECTS' JOURNAL

standard contents

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

No. 3323] [Vol. 128

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

Price 1s. 0d.
Registered as a Newspaper.

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

ILA	Institute of Landscape Architects. 2, Guildford Place, W.C.1.	Holborn 0281
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand, W.C.2.	Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1.	Museum 7179
IQS	Institute of Quantity Surveyors. 98, Gloucester Place, W.1.	Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3.	Avenue 6851
IRA	Institute of Registered Architects. 68, Gloucester Place, W.1.	Welbeck 9966
ISE	Institution of Structural Engineers. 11, Upper Belgrave Street, S.W.1.	Sloane 7128
JFRO	Joint Fire Research Organisation (DSIR & Fire Offices' Committee). Fire Research Station, Boreham Wood, Herts.	Elstree 1341/1797
LDA	Lead Development Association. 18, Adam Street, W.C.2.	Whitehall 4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1.	Museum 3891
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1.	Trafalgar 7711
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1.	Mayfair 9400
MOH	Ministry of Health. 23, Savile Row, W.1.	Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1.	Whitehall 4300
MOLNS	Ministry of Labour and National Service, 8, St. James's Square, S.W.1.	Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, W.C.2.	Gerrard 6933
MOT	Ministry of Transport, Berkeley Square House, Berkeley Square, W.1.	Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1.	Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1.	Abbey 1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1.	Abbey 4813
NBR	National Buildings Record, 31, Chester Terrace, Regent's Park, N.W.1.	Welbeck 0619
NCBMP	National Council of Building Material Producers, 10, Storey's Gate, S.W.1	Abbey 5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, W.C.2.	Trafalgar 3927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1.	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4.	Macaulay 4451
NFHS	National Federation of Housing Societies. 12, Suffolk St., S.W.1.	Whitehall 1693
NHBRC	National House Builders Registration Council. 58, Portland Place, W.1.	Langham 0064/5
NPL	National Physical Laboratory. Head Office, Teddington.	Molesey 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3.	Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street, S.W.1.	Trafalgar 6838
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1.	Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1.	Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1.	Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh.	Fountainbridge 7631
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1.	Langham 5533
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1.	Whitehall 5322/9245
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1.	Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, W.1.	Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2.	Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1.	Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19.	Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1.	Victoria 2186
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1.	Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, E.C.3.	Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, W.C.1.	Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1.	Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen	
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1.	Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2.	Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, E.C.4.	City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1.	Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4.	City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1.	Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1.	Grosvenor 6636

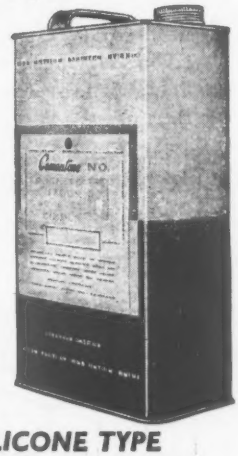
damp walls?

CEMENTONE NO. 3 STANDARD		CEMENTONE NO. 3 SILICONE TYPE.
Building Research Station test shows 5½ years plus: practical experience indicates 5-15 years.	LIFE OF TREATMENT	Estimated to be approximately five years.
Surface treated must be perfectly dry to be effective: rain immediately after application is not important.	APPLICATION CONDITIONS	Surface must be perfectly dry; and dry conditions must prevail for two or three hours after application.
Has a slight deepening effect.	EFFECT ON COLOUR OF WORK TREATED	Will not darken or change the colour of the surface in any way.
May be painted at a later date with Cementone No. 6. Ordinary paints should not be used.	LATER TREATMENTS	No difficulty about painting over at a later date.
Practically indefinite.	STORAGE LIFE	All Silicone Waterproofers have a limited shelf life: 12 months should be considered maximum.

Porous exterior walls of Brick, Concrete, Cement or Plaster can be effectively waterproofed against driving rain by the simple brush application of one of the Cementone No. 3 Waterproofing Liquids—Standard or Silicone. The merits of each type of waterproofer are given in the adjoining table to help you decide which product to use for any particular job.

number 3 WATER-PROOFING LIQUIDS

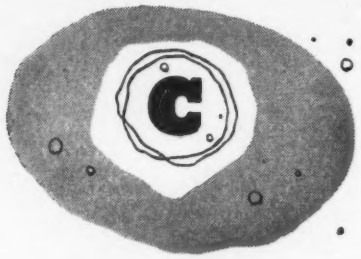
STANDARD OR SILICONE TYPE



YOU CAN DEPEND ON THE *Cementone* PRODUCTS
specially made for the job

Write for further details and your copy of the Cementone Handbook.

JOSEPH FREEMAN SONS & CO. LTD., CEMENTONE WORKS, WANDSWORTH, LONDON, S.W.18
Telephone: VANdyke 2432 (10 lines)



what do you look for in roof lighting?

The danger of fire spread, particularly in roofs is a matter of major concern to all associated with the building industry. Vague claims are often made about the flame spread characteristics of roof lighting sheets. The accepted authority is BS. 476:1953.

safety at the point of danger

To clarify the position a series of tests, summarised below, were made by a leading independent laboratory in accordance with BS. 476:1953. The results clearly establish Corroglaze as ***the only corrugated roof lighting sheet which cannot in any way assist the spread of flame.*** Corroglaze is **100**% pure glass, reinforced with 1" square wire mesh. It cannot flash, smoulder or drip flaming particles. Corroglaze gives better light transmission and distribution and is unaffected by exposure or fumes. It compares favourably in cost with all other forms of roof lighting and is suitable for use with corrugated sheeting.

MATERIAL	Time Lapse before ignition	Spread of flame after 30 secs.	Condition after 3-3¼ minutes
Sample 'A'	5-7 seconds	2"	Complete disintegration with molten material dripping off
Sample 'B'	5-7 seconds	2"	Completely burnt out—shell of burnt out fibre only remained
CORROGLAZE	NO IGNITION	NO IGNITION	No melting, the only effect being a slight cracking of the glass

LABORATORY REMARKS: Tests would classify Samples 'A' and 'B' as Class 4, Rapid Spread of Flame (B.S. 476: 1953 refers)

Designed and constructed under the supervision of G. A. Wilson, Esq., M.Eng., M.I.C.E., M.I.Mech.E., Chief Engineer, Port of London Authority; Main Contractors, Messrs. Tubewrights Ltd.

corroglaze

the sheet that never burns

For further information and A. J. Information Sheet No. 666 write to :—

CORROGLAZE LTD., PALACE OF ENGINEERING, WEMBLEY, MIDDLESEX - - TEL: WEMBLEY 9411.

Modern joiners make full use of EVO-STIK 'impact'

The adaptability of Perstorp laminated plastic board combined with the strength of Evo-Stik 'Impact' adhesive 528 have been used to produce interesting curved effects in the kitchen of a bungalow at Hutton, Essex.
The laminate is bonded to ¾" Novobord on both sides and the work was carried out by B. & H. (Woodworkers) Ltd. of 22 Palmerston Road, Wealdstone, Harrow, Middlesex, with materials supplied by C. F. Anderson & Son Ltd.

Do you?

Evo-Stik Impact Adhesive techniques have been developed for a great variety of modern building operations. If you have sheet materials of any kind to apply to any surfaces we shall be glad to advise you of ways in which accurate bonds of great strength can be obtained with a minimum of labour.

Fill in this coupon

EVO-STIK 'impact' Adhesives

Reg'd trade mark

EVODE LTD. (INDUSTRIAL ADHESIVES DIVISION), COMMON ROAD, STAFFORD. TEL: 2241 (5 lines)

LONDON OFFICE: 82 VICTORIA STREET, S.W.1 ABBEY 4622/3

Manufactured in Eire by Evode Industries Ltd., Swords Co. Dublin.

• Please send me brochure giving full technical details of Evo-Stik adhesives.

NAME .....

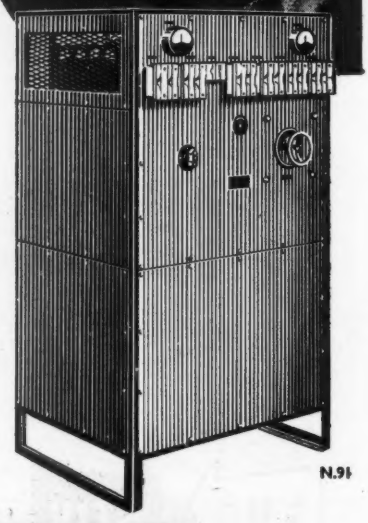
ADDRESS .....

.....

They never let you down

THE POLICE FORCE

The policeman patrolling his beat is backed by many specialist departments. In an emergency, a 'phone call will quickly bring an ambulance to the scene or put a police car on the track of a stolen car or wanted person. Special police telephone boxes and radio-controlled cars enable the police to be on the spot in a matter of minutes. They never let you down.



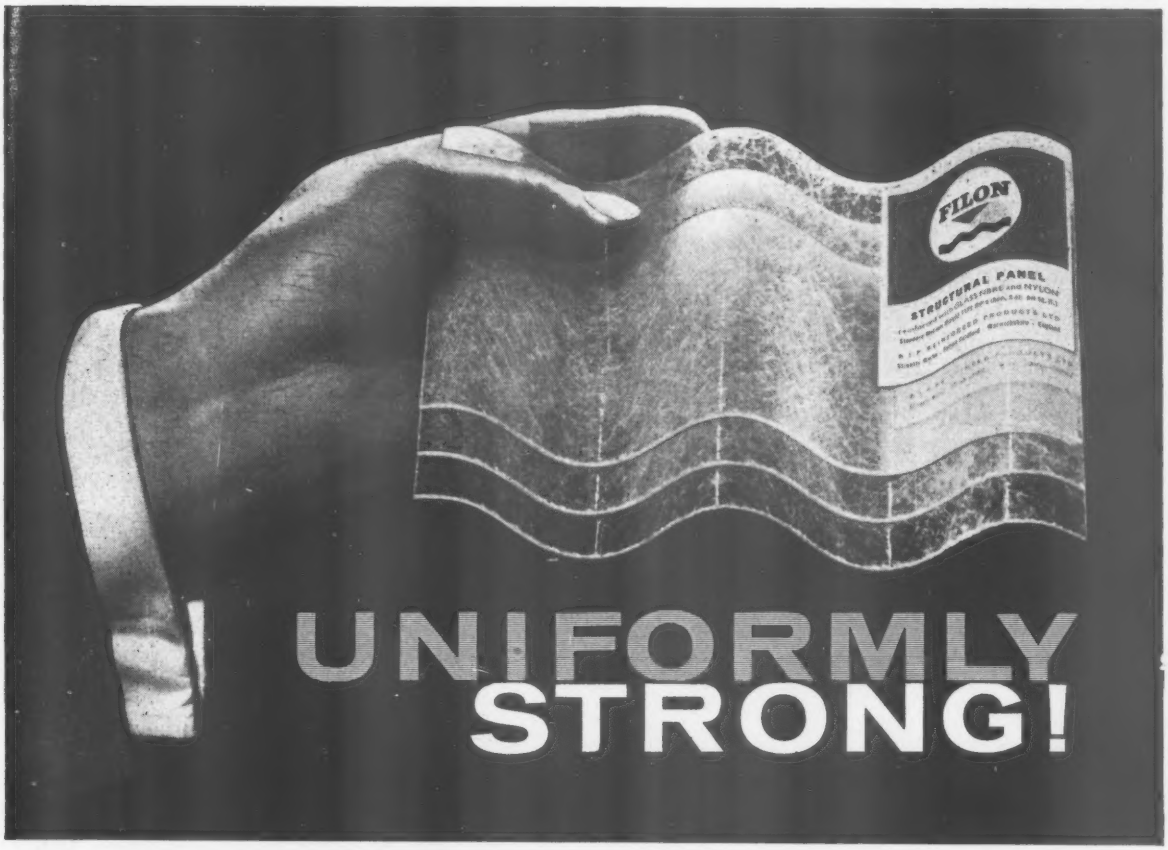
YOU CAN BE CERTAIN TOO that Nife-Neverfayle Emergency Lighting Equipment will never let you down. *Whenever needed*, these reliable units will instantly, automatically spring into action. That is the special advantage of the Nife Steel Alkaline Battery—it never deteriorates, even after long periods of inactivity. Nife-Neverfayle units occupy only one-third of the space required by conventional equipment, and, as they can be installed adjacent to other equipment, a separate battery room is not needed — a point worth remembering when planning new buildings. Maintenance costs are negligible—after years of trouble-free service you will realise just how economical your Nife-Neverfayle equipment has been.

N.91

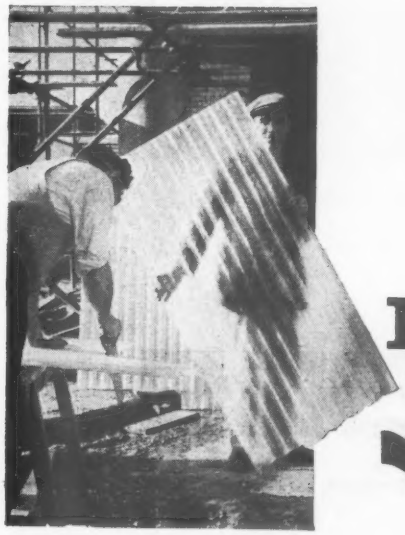
NIFE-NEVERFAYLE

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

NIFE BATTERIES · REDDITCH · WORCESTERSHIRE



Uniformly strong at every point, because of its uniform thickness throughout the sheet—that's FILON; all this because FILON polyester/glass fibre/nylon structural sheeting is produced by a continuous process. FILON is non-corrodible, and needs little maintenance or protection throughout a long life. It is shatterproof, and weight-for-weight is stronger than steel. FILON is economical to install because it is light, and therefore easily handled. It is worked with ordinary carpenter's tools, and fixed by conventional methods.



IN COMMERCE
Counter Fronts · Movable Screens · Window Displays · Partitions · Lighting Effects · Awnings · Shopping Canopies · Diffused Lighting · Exhibition Stands

IN TRANSPORT
Gangways · Rolling Stock · Railway Station Roofs · Airports · Washing Sheds Bus Shelters · Awnings · Maintenance Sheds · Garage Roofs and Doors

IN INDUSTRY
Glazing · Luminous Ceilings · Partitions · Warehouse Roofs · Signs and Notices Dock Roofs · Shower Compartments · Cladding

IN THE HOME AND GARDEN
Verandah Roofs · Skylights · Movable Screens · Greenhouses · Fences Shower Compartments · Porches · Awnings · Wind Breaks · Garage Doors Pool Enclosures · Sun Lounges · Canopies · Partitions · Garden Sheds · Glazing

IN AGRICULTURE
Barn Skylights · Storage Sheds · Greenhouses · Dairy Roofing · Poultry Equipment · Cow Byres · Cloches & Frames · Piggeries · Machinery Storage Rooms · Granaries & Driers · Stockhouse Roofs

FILON

STRUCTURAL SHEETING

for light with lightness and strength with economy

B.I.P. Reinforced Products Ltd.
Streetly Works, Sutton Coldfield · Phone: Streetly 2411

BRITISH ALUMINIUM

FOR DOCKYARD BUILDINGS

Aluminium resists attack by salt air, and Rigidal corrugated aluminium sheeting is widely used for cladding dockyard sheds. Belfast, Liverpool and London docks all have large areas of warehousing clad with Rigidal, and many shipbuilders are using it in new and reconstructed buildings.

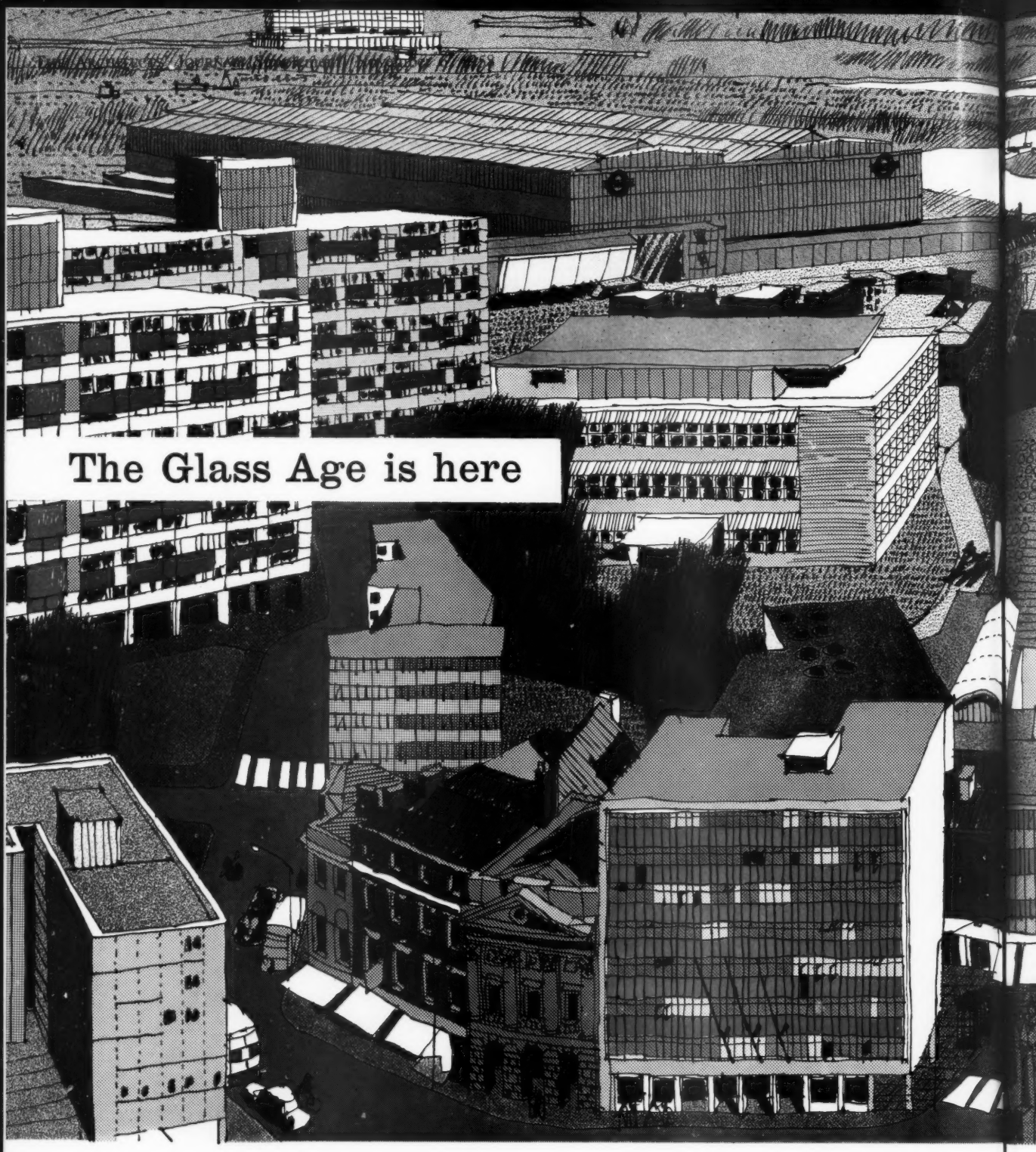
This photograph of Alexandra Dock, Liverpool, shows 40 tons of Rigidal Industrial Trough 6T used to cover a building 1,500 ft long by 90 ft span (over 2,000 squares). The cladding was carried out by Freeman, Morrison Ltd.

REMEMBER POPPY DAY

The BRITISH ALUMINIUM Co Ltd

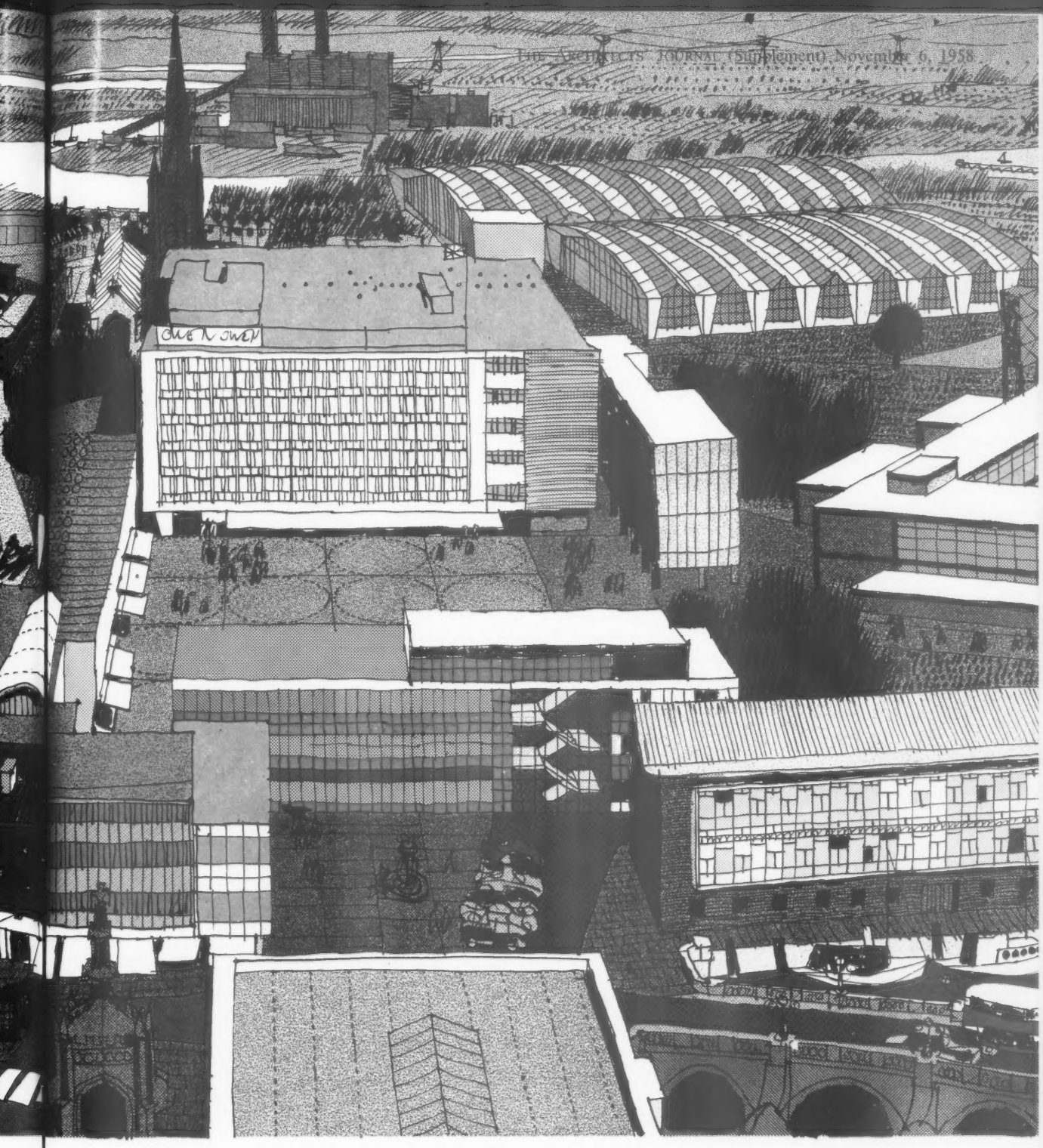
NORFOLK HOUSE ST JAMES'S SQUARE LONDON SW1

AP268

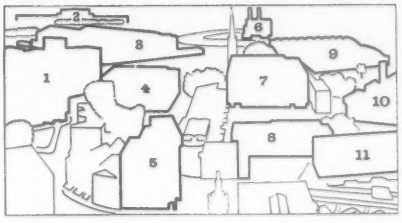


City of Britain

The components of this city already exist. The eleven contemporary buildings assembled here—drawn by Gordon Cullen—adorn different localities. They reveal the graceful and elegant shape of things as they are and illustrate the part glass plays in the technique of the new Western Architecture which has arisen from the modern movement in design. The Glass Age is here.



1 *Picton Street Housing L.C.C., by the Architect to the London County Council.*
2 *Gatwick Airport. Architects: Yorke, Rosenberg & Mardall.*
3 *Aldenham L.T. Bus Depot. Architect: Thomas R. Bilbow,* F.R.I.B.A.
4 *McAlpine Offices, Hemel Hempstead. Architect: M. H. J. Bebb,* L.R.I.B.A., A.I.A.A.
5 *British India Steam Navigation Co. Ltd., Aldgate, E.C.3. Architect: Theo Birks,* F.R.I.B.A.
6 *Stella North Power Station, Central Electricity Generating Brd. Architects: L. J. Couves & Ptrs.*
7 *Owen Owen's Store, Coventry. Architects: Rolf Hellberg & Maurice Harris.*
8 *Bowater Research Development Co. Ltd., North Fleet Offices. Architects: Farmer & Dark.*
9 *Matthews & Mumby Works, Denton. Architect: Haydn W. Smith,* A.R.I.B.A.
10 *Hunstanton School. Architects: Alison & Peter Smithson,* A.A.R.I.B.A.
11 *Mitchell Engineering Buildings, Peterborough. Architect: Howard V. Lobb & Partners.*



PILKINGTON BROTHERS LIMITED

Manufacturers of all types of structural glass · St. Helens · Lancashire

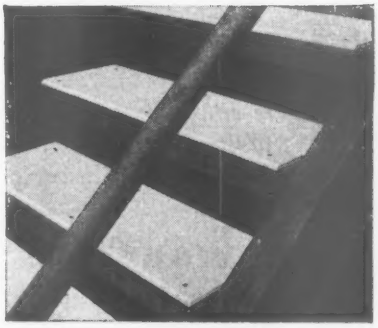
Altro safety treads made from I.C.I. 'Corvic' used on factory stairs by the Ford Motor Company Ltd.

When stairs are treaded with p.v.c. for safety

tread them with I.C.I. 'Corvic'

ONLY 'CORVIC' p.v.c. polymers are backed by I.C.I. research and technical service. When you're about to use p.v.c. get in touch with I.C.I. Their service is at your disposal. They'll be glad to hear from you and talk to you about 'Corvic'.

One of the many invaluable uses to which 'Corvic' is put is in the manufacture of safety treads for stairs. Factory stairs at the Ford Motor Co. Ltd., have Altro safety treads made from I.C.I. 'Corvic' by Welwyn Plastics (1955) Ltd. for the Adamite Co. Ltd.



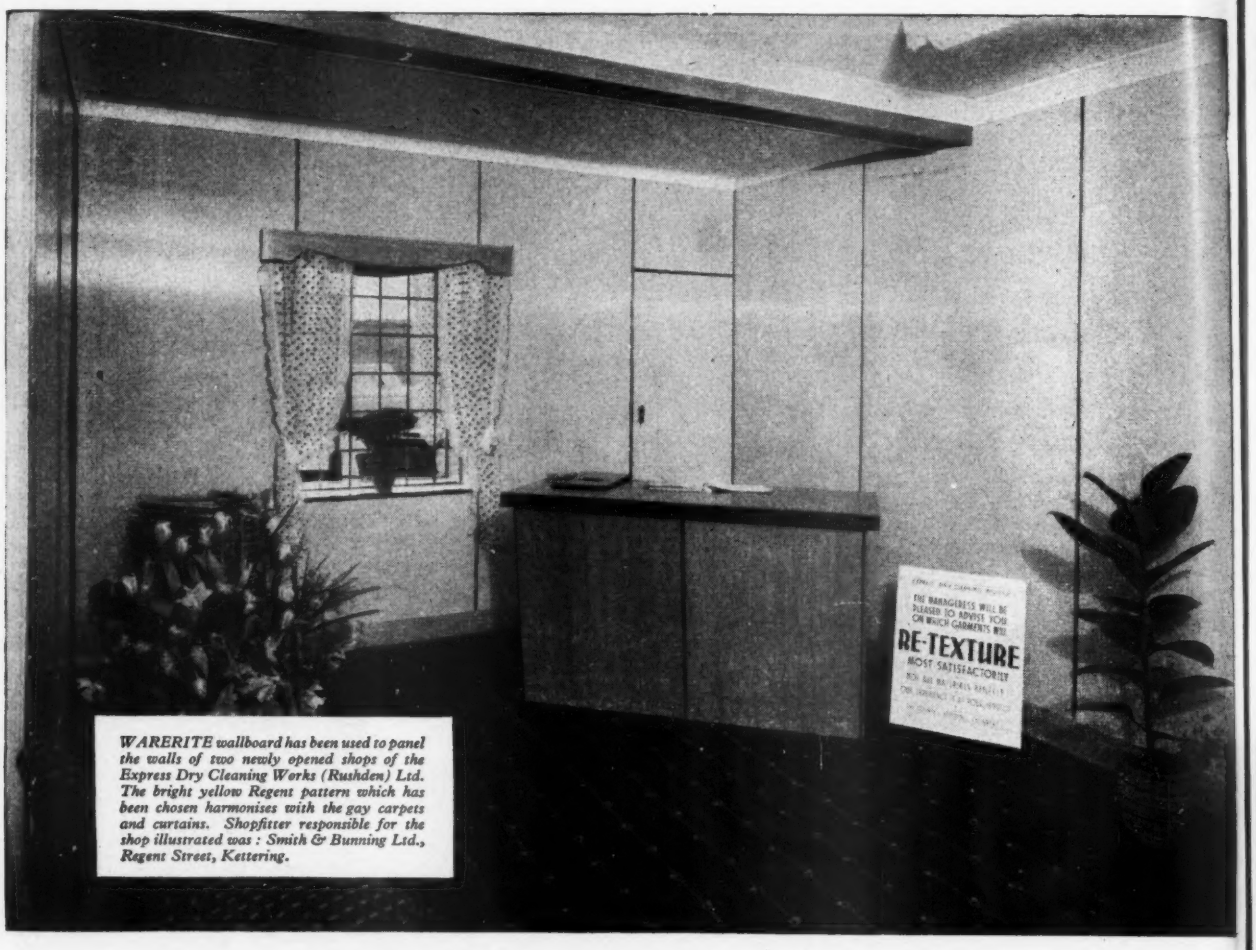
'CORVIC'

'Corvic' is the registered trade mark for the p.v.c. polymers manufactured by I.C.I.

ICI

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

PC.20



WARERITE wallboard has been used to panel the walls of two newly opened shops of the Express Dry Cleaning Works (Rushden) Ltd. The bright yellow Regent pattern which has been chosen harmonises with the gay carpets and curtains. Shopfitter responsible for the shop illustrated was : Smith & Bunning Ltd., Regent Street, Kettering.

For attractive, hardwearing vertical surfaces choose *New* WARERITE REGD. wallboard

Wherever decorative vertical or ceiling surfaces must be moisture-resisting, durable and easily cleaned, new WARERITE wallboard is the obvious and economical choice. Counter fronts, partitions, cupboard fronts and flush doors are typical applications. WARERITE wallboard can be screwed or pinned, or fitted into extruded jointing sections.

WARERITE *materials are supplied from stock in cities and towns throughout the country. Write for literature, samples and the name of your nearest distributor.*

WARERITE wallboard REGD.
IS IDEAL FOR VERTICAL SURFACES AND CEILINGS

• Wipes clean instantly • Easier construction at lower cost—no maintenance • Resistant to steam and moisture • Can be fixed with screws, or panel pins; cemented to wooden battens or fitted into frames • Standard boards 8 ft. x 4 ft. • Melamine-resin surfaced both sides

WARERITE wallboard **with the lovelier patterns!** REGD.

A product of BAKELITE LIMITED, 12-18 Grosvenor Gardens, London SW1. Tel: SLOane 0898
TGA WW1a

Power without vibration

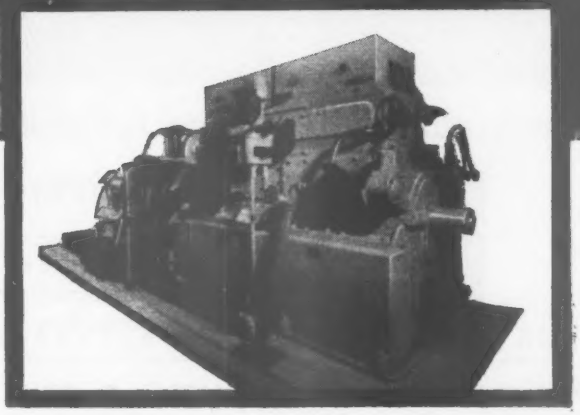
• *Essential at the B.B.C.*

• The huge electrical generator below is in the basement of the British Broadcasting Corporation's recording studios at Maida Vale.

No suggestion of vibration is felt in any part of the building because the generator is isolated on the Dunlop 'rubber-foundation-mounting' principle.

The installation has been running perfectly for several years while, in the studios above, recordings are made with complete accuracy.

As you switch on your set, bear in mind this tribute to Dunlop anti-vibration mountings.



For advice on any kind of vibration problem consult :

DUNLOP

DUNLOP RUBBER COMPANY LIMITED,
(ENGINEERING COMPONENTS DIVISION)
FORT DUNLOP, BIRMINGHAM, 24

New floor seals from Johnson's Wax

GYM-FINISH

— a seal and a finish!

Here's an extra tough oleo-resinous floor seal with excellent slip-retardant properties. It forms a rich, hard surface to stand up to wear and tear — the constant pounding of feet that a gymnasium floor receives.

Gym Finish gives a complete finish which retains its gloss indefinitely. Maintenance is very simple — sweeping, or occasional damp mopping with diluted Johnson's Emerel. Dries tack-free in 2 hours — ready to use in 6 hours.

IMPROVED TRAFFIC-COTE

penetrates and toughens!

A heavy-duty oleo-resinous seal which actually penetrates the surface of the floor and seals it against water, oil and dirt stains. And it gives floors the *toughest kind of protection* against abrasion and heavy traffic wear. Dries tack-free in 2 hours — ready to use in 6 hours.

Use Johnson's seals on the following surfaces: hard and soft wood, cork, wood composition, linoleum, concrete, terrazzo

J man service

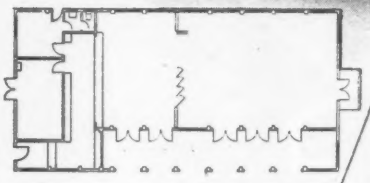
FREE ADVISORY SERVICE

Throughout the country Johnson's have a highly experienced team of floor experts — known as ' J-Men ' — readily available to assist architects and others concerned with floor problems. If you would like advice please telephone West Drayton 2244 or write to:

J-MAN SERVICE, S. C. JOHNSON & SON LIMITED, WEST DRAYTON, MIDDLESEX

CASE RECORDS FROM THORNS' FILES . . . I

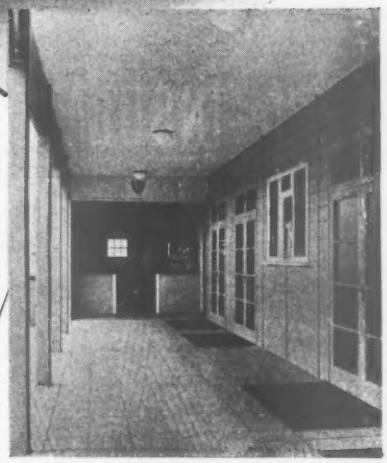
Jobs like this



SPECIFICATION

A building 80' x 40' x 10'9" to eaves, including verandah, plus porch at one end size 10' x 5', to Partitions and folding doors, lining, ceiling to verandah, tile flooring and granolithic flooring.

Clear site, excavate and prepare foundations, lay drains, install hot and cold water services, sinks and sanitary fittings, provide electrical installation from new main with all light fittings and electric heating, erect building, fit rain water goods, and decorate throughout.



Photographs by courtesy of Hart's Holiday Club, Leysdown, Isle of Sheppey

demand *versatility... speed... economy...*

This client wanted a club-house building erected at very short notice. THORNS were able to match his requirements closely from their range of standard designs.

Manufacture began at once from existing drawings. By the time the site was ready, an erection team was on hand with the prefabricated sections. Plumbing and electrical services were co-ordinated with the structural work.

In less than two months from the receipt of the order, the building was in use.

The approximate price is available to bona fide enquirers.

THORNS

THORNS' prefabricated buildings, as used at Hart's Holiday Club, are available in basic widths of 10ft., 12ft., 15ft., 20ft., 25ft., 30ft. and 40ft., in any length, and in traditional or modern designs.

THORNS will undertake the complete job, including all sitework; or will erect buildings on a prepared site; or, if desired, will supply the buildings for erection by the client's own labour, with or without Thorns' supervision.

Catalogue of designs and prices on request.

Ask THORNS to quote on *your* job.

J. THORN & SONS LTD., (Dept. 188) BRAMPTON ROAD, BEXLEYHEATH, KENT

D 300

The INSULATED ALUMINIUM ROOF

"MACDEK"

ROOF UNITS SPAN 12' 0"

'MACDEK' (Prov. Pat.) Aluminium Roof, designed by F. McNeill & Co. Ltd., is a complete lightweight insulated roof designed for flat, pitched or vertical construction. It is made up of strong Aluminium alloy deck units with a layer of insulation material sealed to the roof deck and waterproofed with McNeill's Lion " Combinite " Multi-layer bituminous roofing.

The deck units are pre-fabricated and manufactured from high grade Aluminium Alloy. Each unit, has an effective width of 2ft. and a maximum span of 12ft. from purlin to purlin.

All erection is carried out exclusively by McNeill's skilled craftsmen, thereby giving the highest standard of efficiency.

Technical Literature and further Information from

F. McNEILL & CO. LTD.,

10 LOWER GROSVENOR PLACE, LONDON, S.W.1

Telephone VICtoria 6022

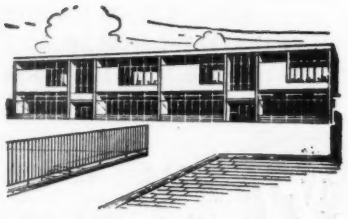
ONLY ONE COAT NEEDED

They're stove-enamelled as well as galvanised! Standard Maclean metal windows are thoroughly rust-proofed by galvanising, and then are stove-enamelled with Red Oxide and a second coat of Sandy Beige Paint, specially developed by Imperial Chemical Industries Ltd., for lasting protection. Just add final colour, if required:
You save time, materials and labour on site if you insist on specifying Standard Maclean metal windows. Standard Maclean make the full range under B.S.S. 990, or will tailor to your requirements.

In any case, Standard Maclean make a good Metal Window

Standard Maclean also make
Curtain Walling, Purpose made Metal Windows, Architectural Metalwork, Balconies, Cat Ladders, Doors of all types, Handrailings, Open Flooring, Partitioning, Internal Fire Escape Stairs.

Standard Maclean Limited



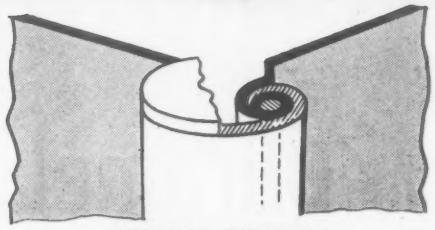
A Standard Maclean Metal Window installation; More Jun Primary School, Edinburgh.

STANDARD MACLEAN LIMITED CADZOW WORKS, LOW WATERS ROAD, HAMILTON, Lanarkshire
Hamilton 1410/4.

ABERDEEN : 13 Bridge Street, *Tel.: Aberdeen* 52331. **EDINBURGH :** 7 Albany Street, *Tel. : Waverley* 2190. **NEWCASTLE :** 14a Pilgrim Street, *Tel. : Newcastle* 27776. **BELFAST :** 32 Ann Street, *Tel. : Belfast* 32003. **LONDON, W.C.1 :** Ascog House, 46 Theobalds Road, *Tel. : Holborn* 2462. **MANCHESTER :** 11 Norfolk Street, *Tel. : Blackfriars* 4171. **OLDBURY WARWICKSHIRE:** 43 Birmingham Street *Tel.: Broadwell* 2191 **WORTHING :** 30 Manor Road, *Tel.: Worthing* 7495.
O.C.3

AHEAD IN DESIGN AND MATERIALS

Simplicity gives LONG LIFE!



HINGEING STRIPS IN BRONZE OR ALLOY

This detail shows the standard arrangement of the hingeing strip—in manganese bronze or other non-ferrous alloy—and the leaves of the door which are in sherardised steel plate or aluminium alloy as required. The hingeing strip has a top cap—shown cut-away. Nothing could be simpler and, nothing is more trouble-free!

Simplicity must be allied to craftsmanship and, in turn craftsmanship to good materials. You get them all in a BOLTON Gate whatever its size and that is why more BOLTON Gates are sold than any other!

BOLTON *The BIG name in doors*

Write for Catalogue AJ 270

BOLTON GATE COMPANY LIMITED · BOLTON · LANCASHIRE

BRANCHES AT : *Belfast, Birmingham, Bristol, Dublin, Liverpool, London, Manchester, Newcastle-on-Tyne.*

dmBG. 2701

The new Magic of Duramel

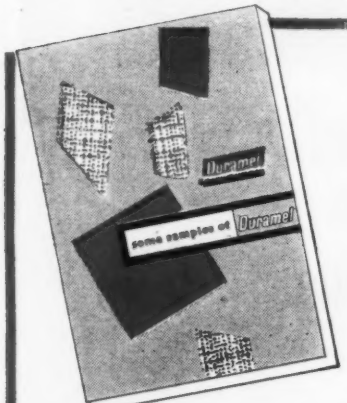
A colour transformation! Duramel 'Magic'! The new 'Magic' pattern now added to the Duramel range is available in four gay colours designed to blend with modern or traditional colour schemes. 'Gaiety'—another exciting addition to the Duramel range—provides a multi-coloured pattern with special contemporary appeal.

Duramel's versatility has long been recognised by its users, who include Municipal Authorities, Builders, Shopfitters and Coachbuilders. Wherever a need exists for tough, hygienic, heat and mild acid resistant surfaces, Duramel is the answer.

Duramel
THE PLASTIC-FACED PLYWOOD

The Melamine Plastic surface is bonded to first-grade hardwood plywood. It is waterproof, resistant to heat and mild acids, hygienic and wonderfully durable. Supplied in a range of colourful finishes, and plain white. In 3 standard thicknesses: ¼", ⅛" and ½".

SIZES: 72" x 48", 84" x 48", 96" x 48", 36" x 24", 48" x 24".

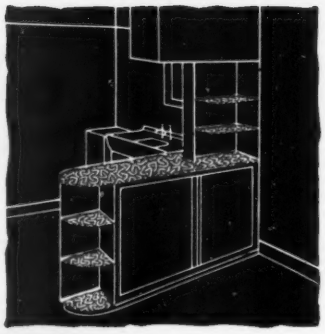


FREE— the new DURAMEL Sample Wallet

This handy wallet contains paper 'Linen' and 'Magic' patterns and an actual sample of Duramel. It is available on request.

For the name of your nearest distributor, write to the Sole Manufacturers:

F. HILLS & SONS LTD., NORTON ROAD, STOCKTON-ON-TEES.
TEL: STOCKTON 67141.



KITCHEN FURNITURE

Perfect for kitchen units, splash backs, sink units, Duramel is not easily marked or chipped.

WORKTOPS

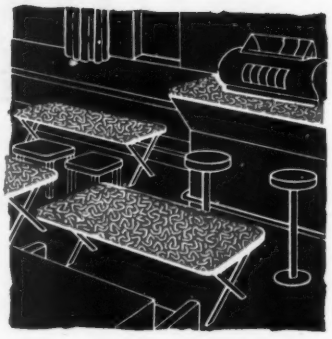
Hardwearing, mild acid resistant and easy-to-clean Duramel makes excellent worktops.

SHOP FITTING

Duramel makes wonderful counter tops and sides, partitions and display units.

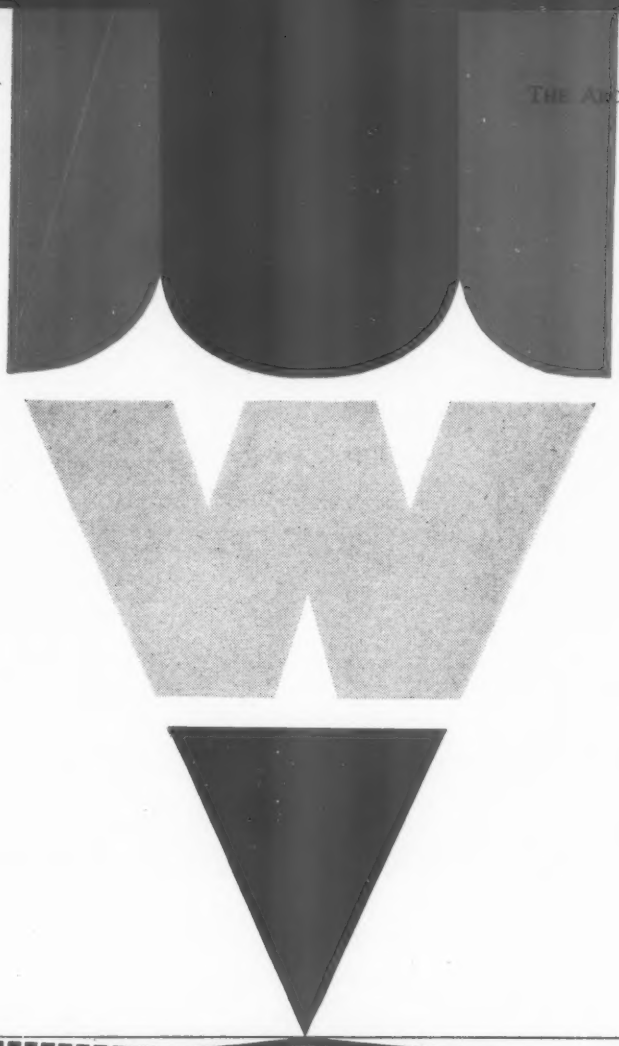
SHIPBUILDING

Duramel is now widely recognised as the ideal material for interior panelling, and furniture tops in ships.

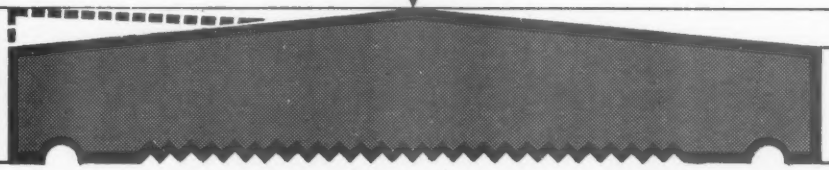


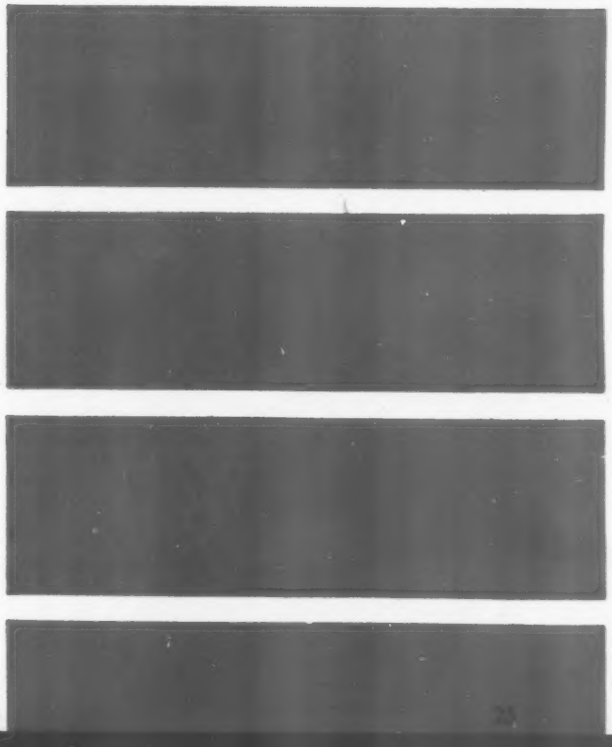
CATERING

Gay Duramel tabletops in cafes are unmarked by fruit juices, food stains and hot plates.



the finishing touch



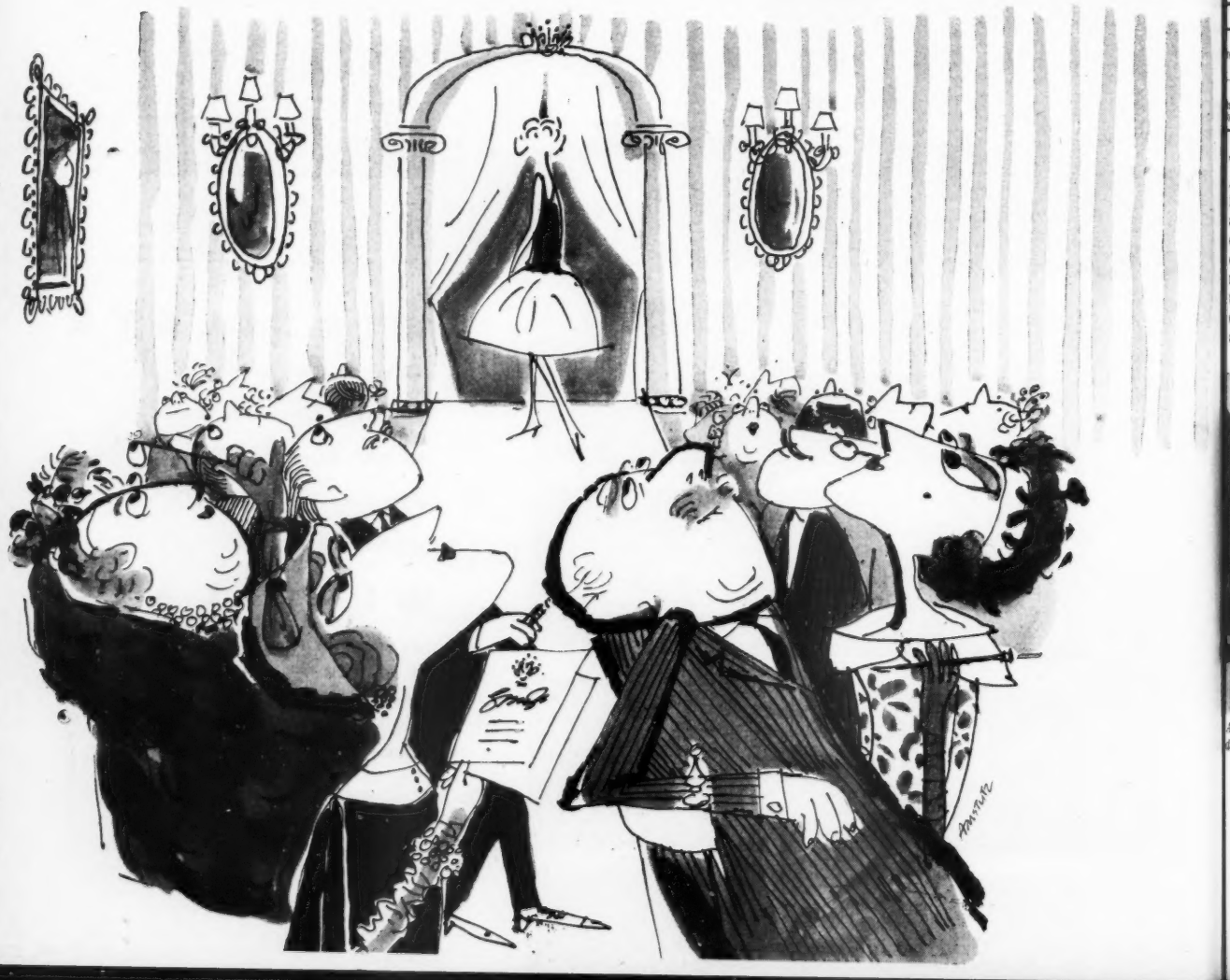


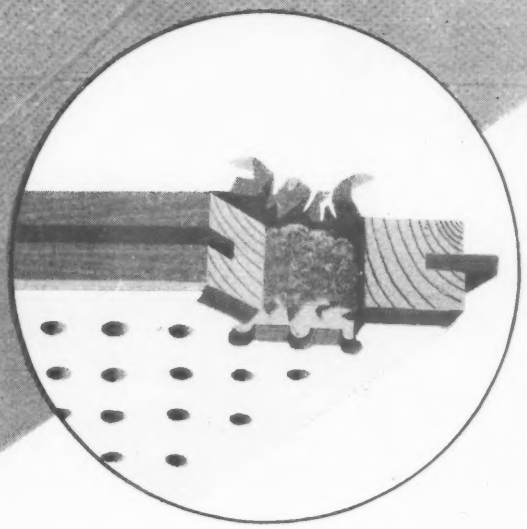
WINCILATE

slate copings
are non-porous, inert,
do not warp, shrink or rot
and ensure a crisp,
precise skyline

WINCILATE

THE BOW SLATE & ENAMEL CO., LTD
B.R. Depot, Old Ford Road, London, E.3
Telephone: ADVance 2203
(Proprietors of the Aberllefeni
Slate Quarries)





High fashion from Paris cannot compete with the latest creation from the house of Bowater—the Bowater T/A (Thermal/Acoustic) Panel. But smart appearance is only one of the attractions of this dual-purpose panel, which also has a very high thermal/acoustic efficiency and a remarkably low cost. It's well worth looking into for **your** next job—whatever it is. Here are some technical facts to start you thinking...

DUAL-PURPOSE EFFICIENCY —the vital statistics

Sound quency (c.p.s.)	250	320	400	500	640	800	1000	1250
Sound sorption efficient	·64	·59	·71	·77	·80	·87	·86	·87

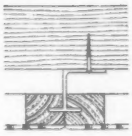
These figures clearly show that, in its *Acoustic* capacity, the new Bowater panel is way ahead of competition. Its performance is particularly good in the lower frequencies where noise in industry and in ordinary daily life is most common—and most dangerous. In *Thermal* insulation, too, the panel sets an exceptionally high standard—the thermal conductance (C value) is as low as 0.22. A dual-purpose panel indeed!

MADE LIKE A SANDWICH

Between the facing sheet of perforated hardboard and the kraft backing, there's a layer of incombustible mineral wool. This 'sandwich' is set in a perfectly square, jig-made timber frame which keeps it rigid and absolutely level with the other panels (hardboard splines are supplied to slot them together). A thin fibrous skin between the hardbcard and the mineral wool prevents any 'fall-out' thrcugh the holes. The entire panel weighs only 6¼ lb., measures 2 ft. square, and is 1 in. thick. It can be supplied in any colour from the I.C.I. "Dulite" range.

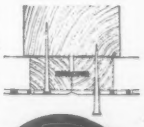
SO EASY TO FIX

1 By using Special Concealed Securing Clips (screwed to the existing structure) which hold the panels secure and leave an air-gap above to add to their already outstanding thermal efficiency. From 32/6d per sq. yd. FIXED.



2 For suspended ceilings, by using a specially designed Bowater Metal Fixing System. From 40/9d. per sq. yd. FIXED.

3 By using 2in. galvanized lost-head nails driven through the appropriate outer perforations. From only 29/- per sq. yd. FIXED.



Drop us a line for further information and the name of your nearest distributor.

YES-only 29/-!

A T/A ceiling quietly enhances the displays in this Edinburgh Store.

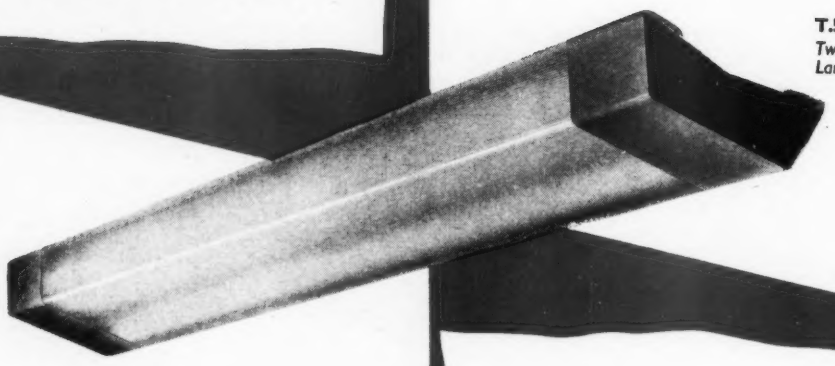
Services are easy to get at through a T/A access panel.

Bowater T/A Panels

BUILDING BOARDS DIVISION, BOWATERS SALES COMPANY LIMITED,
BOWATER HOUSE, KNIGHTSBRIDGE, S.W.1. Tel: KNIghtsbridge 7070

CRC TA

TUBALUX

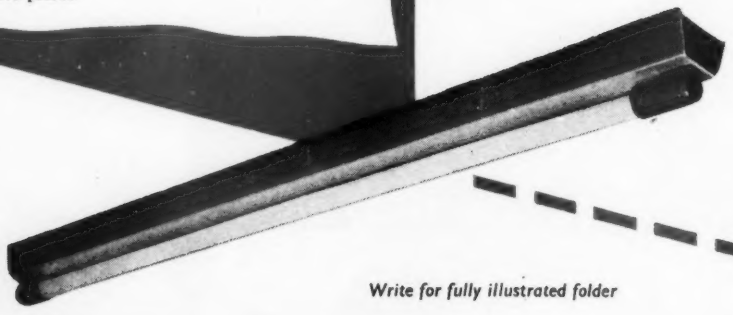


T.525.
Two 80 watt, 5 ft. Lamps.

FLUORESCENT LIGHTING

T.523/P2.
One 80 watt, 5 ft. Lamp. Good upward lighting.

TUBALUX fluorescent fittings have been designed for every type of interior lighting from Board Room to Factory.
There are many pleasing designs with or without suspensions from which to choose — all finished to the high standard of craftsmanship associated with the name of Troughton & Young, and at competitive prices

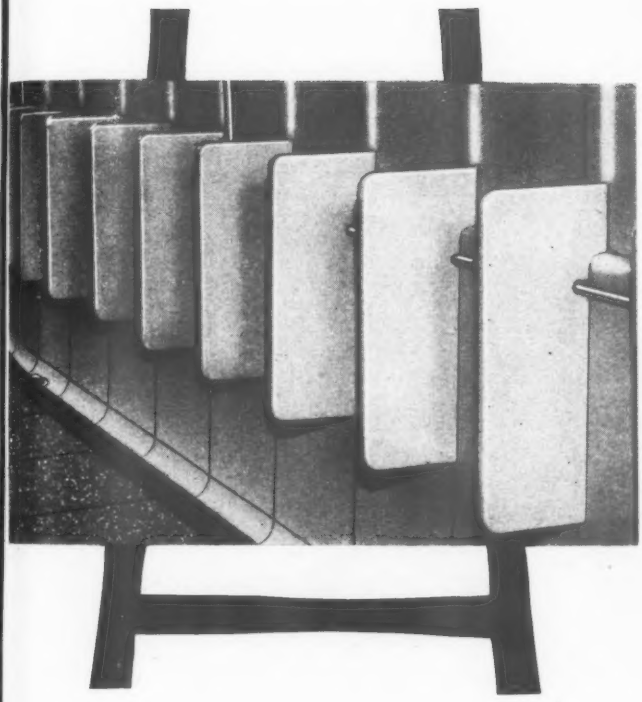


T.521.
One 80 watt, 5 ft. Lamp.

Write for fully illustrated folder

TROUGHTON & YOUNG

TROUGHTON & YOUNG (Lighting) LTD.,
The Lighting Centre, 143 Knightsbridge,
London, S.W.1 *'Phone: KENsington 3444*
And at 46 Rodney Street, Liverpool 1



specify ceramic glazed

fireclay

sanitary ware

in schools and colleges,
to ensure hygiene and good design
with low maintenance costs.
Fireclay lasts.

CLAY PRODUCTS TECHNICAL BUREAU · DRAYTON HOUSE 30 GORDON STREET LONDON WC1

NEW!
an unbeatable guarantee

If any CELMAC moulded plastic seat should prove defective under normal usage—it will be replaced without question.

This is a development which we have been seeking for many years. Now that we have absolute confidence in our new raw materials, we are proud to offer this warranty.

Celmac moulded plastic toilet seats have been leaders in their field for many years. This latest development puts them further ahead.

A Range of Forty Colours to Choose From

No. 170A
Double lightweight 4 buffer full size seat and domed cover, made from guaranteed material. The best value for money on the market. Available with full range of fittings.

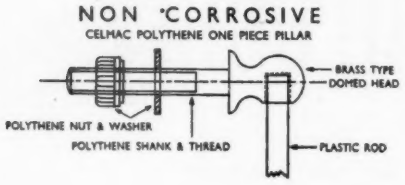
No. 23A
Double medium weight seat and cover for competitive work. Solid underbase, four buffers, manufactured from B.S.S. guaranteed material. Available with full range of fittings.

No. 25A
Double seat and cover, badged B.S.S. Four buffers. Manufactured from B.S.S. guaranteed material. This seat is unbeatable for value and quality.

Celmac—All Polythene Fittings

This ALL Polythene one-piece pillar is the latest development in the trade. Absolutely corrosion free, no metal at all—and cheaper than any other fitting. The flexibility of this fitting is an added safeguard against accidental breakage.

All Celmac seats are available with this fitting, or with moulded pillars, chromium pillars, all with various rods and spacers.

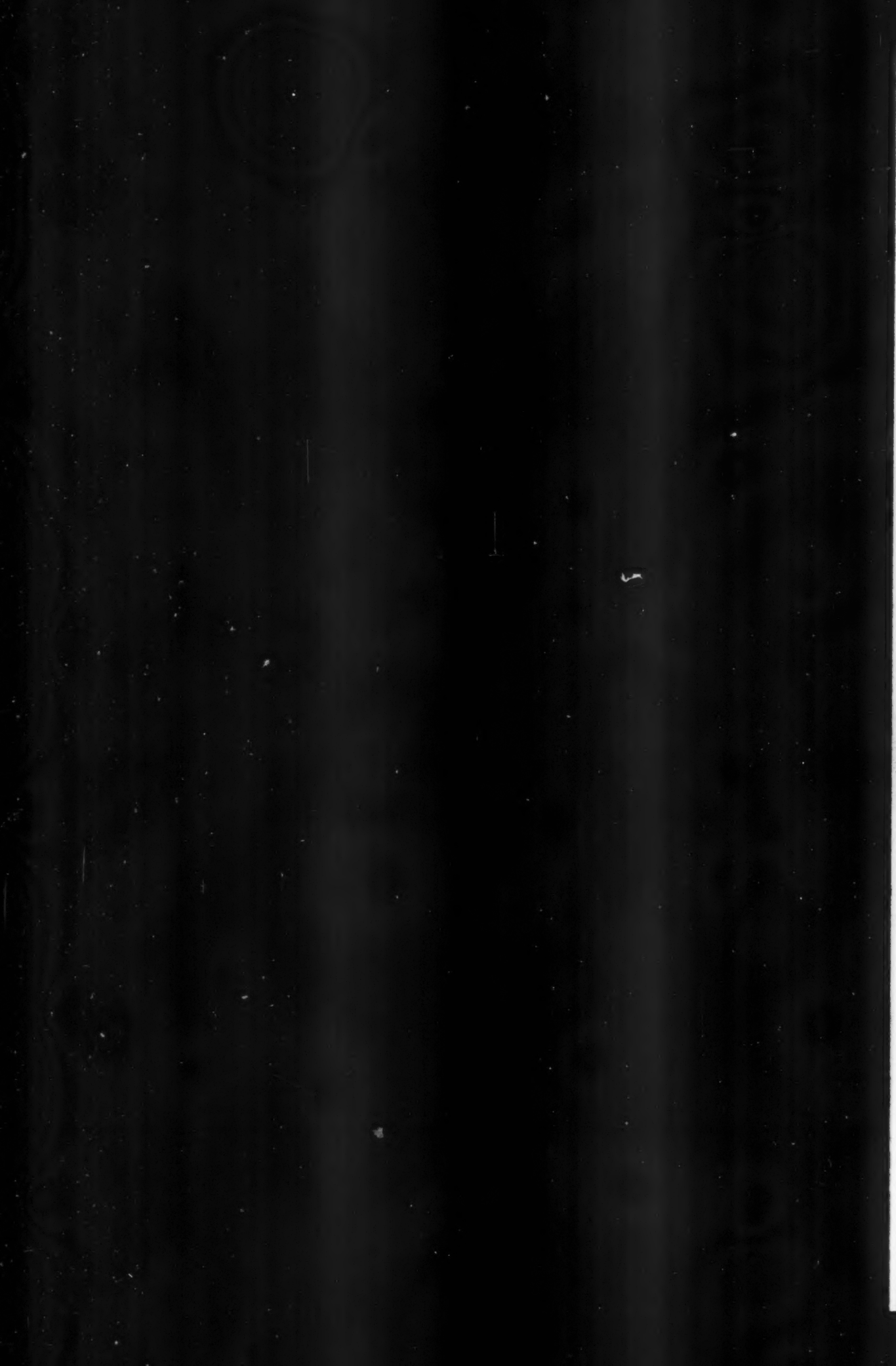


for an unbeatable product

CELMAC REG.

ROBERT McARD & COMPANY LIMITED
CROWN WORKS DENTON LANCASHIRE
Telephone : DENTON 3837/8/9

TS25



Ceilings by **BURGESS**

Radiant heating by **SULZER**

Detail of a BURGESS/SULZER Heated Acoustic Ceiling of some 40,000 sq. feet.

Burgess Products Company Ltd.
Acoustical Division,
Hinckley, Leicestershire.
Telephone : Hinckley 3701 (5 lines).

Sulzer Bros. (London) Ltd.,
Heating & Ventilation Division,
22-25 Portman Close, London, W.1.
Telephone : Welbeck 1671/5.

LEYLAND

SLIDING PLATE GLASS WINDOWS

SUN LOUNGE OVERLOOKING MENAI STRAITS, ANGLESEY, ARCHITECTS, B. H. LINGARD & WILLIAMS, F/A.R.I.B.A.

These full length sliding windows in $\frac{3}{8}$" polished plate glass bring the view into the room with maximum light, sunshine and ventilation unobtainable by any other kind of window.
The front set seen on the left is in 3 panels giving two thirds opening, and the return in 2 panels, half opening.

Our Sliding Windows are supplied in sizes to suit practically all types of buildings.

SEE OUR PERMANENT EXHIBIT AT THE BUILDING CENTRE, STORE STREET, LONDON, W.C.1

Full particulars on request from the Manufacturers :

LEYLAND & SONS LTD. TALBOT RD., STRETFORD MANCHESTER & YORK RD., COLWYN BAY, NORTH WALES
Phones : Longford 3211. Colwyn Bay 2075

COVE CODE

flash cove

. . . A swell

rum cove

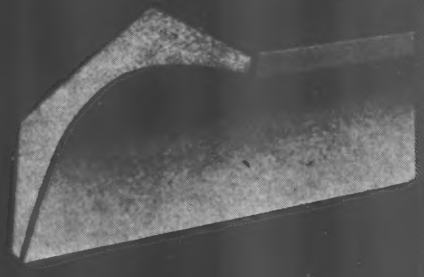
. . Bit of an oddity

gentry cove

. . A gentleman

downy cove

. . . A very knowing individual



'Paramount Cove'

A factory-made cornice that's easy to cut, simple to fix and low in cost. It's also a 'dry' product —that means decorating can be done without delay.

Dry Construction saves valuable time. For full particulars write to:—

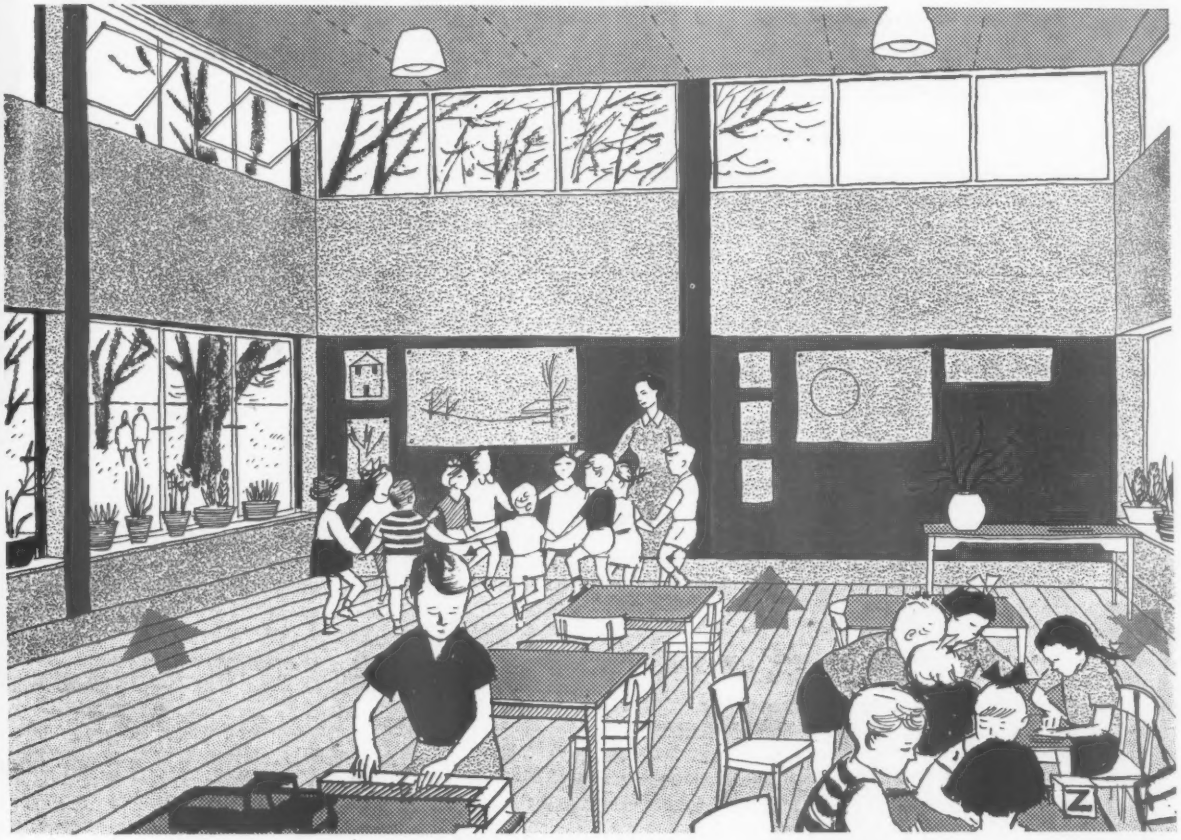
DRY CONSTRUCTION DIVISION
THE
BRITISH PLASTER BOARD
(Manufacturing) LTD

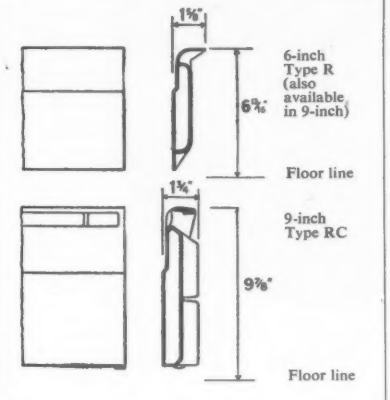
BATH HOUSE, 82 PICCADILLY, LONDON, W.1. TELEPHONE: GROSVENOR 8311.

BLUE HAWK PRODUCTS

AP 132

When warmth must be distributed fairly





Manual (No. 423) on Crane Skirting Heating may be had on application to

CRANE LTD., 15-16 RED LION COURT FLEET STREET, LONDON, E.C.4

London Showrooms:
118 Wigmore Street, London, W. 1 and Great West Road, Brentford, Middlesex

Branches:
BIRMINGHAM · BRENTFORD · BRISTOL GLASGOW · LONDON · MANCHESTER

Works: IPSWICH

Z10

ONE of the important factors in education being the primary comfort and well-being of the children, it is essential, amongst other things, that the schoolroom should be evenly and equably heated. The young occupants are normally well distributed throughout what is generally a large room: the warmth should be spread equally impartially. It was for just such a situation as this that the Crane Skirting Heating system was evolved.

Crane Skirting Heating is finding ever increasing favour among architects and heating engineers, and the reasons are clear. The system employs heating panels in place of the normal skirting boards. They are therefore unobtrusive; they avoid 'hot spots'; they are easy to clean; they permit freedom of arrangement and design; and—of special significance in this case—they offer no dangerous protuberances. In the illustration above the panels are indicated by arrows.

Crane Skirting Heating panels are made in two types. Used here is the 9-inch Type R (radiant) illustrated above which is also made in the 6-inch size for smaller heat requirements. Type RC (radiant-convector) is made only in the 9-inch size. All panels are in 2-ft. and 1-ft. lengths and are made of cast iron, which gives them considerable resistance to accidental damage. The operations of calculating heat requirements and designing the pipework are in principle no different from those for conventional radiator heating systems.

Wherever the architect needs greater freedom of expression than conventional heating systems allow him, and at the same time has to pay due consideration to costs, the answer is, undoubtedly,

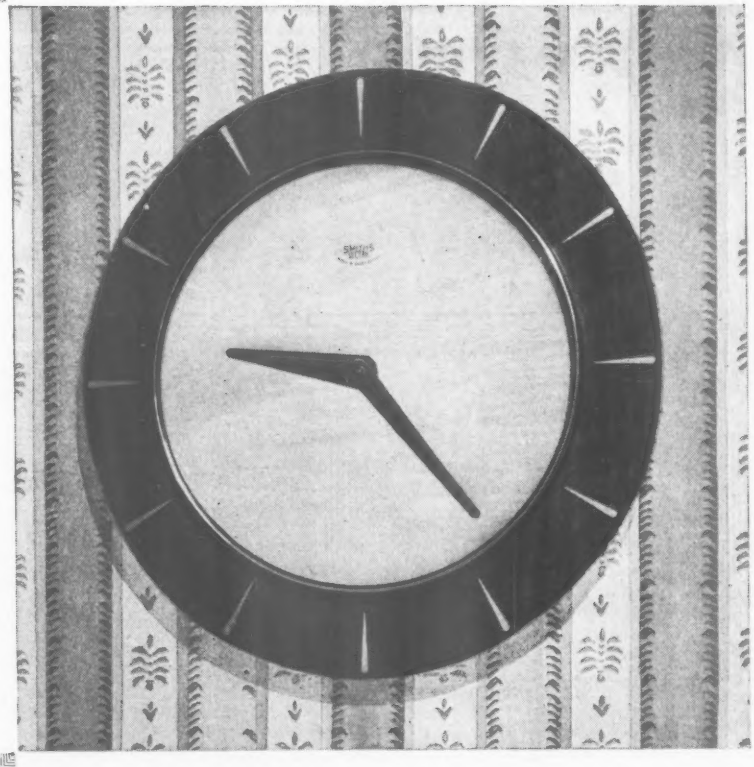
CRANE skirting heating

SMITHS

new service for the ARCHITECT & DESIGNER

Smiths Clocks and Watches Ltd. and English Clock Systems have combined to give a complete service to both Architect and Designer. All Wall Clocks in the new extensive Smiths and E.C.S. ranges together with 'specials' can now be ordered through the Architects' Service Department of English Clock Systems. Clocks can be either 'Sectric' or fitted with impulse movements for operation from E.C.S. Pendulum Master Clock.

Also available: the larger interior/exterior clocks, advertising clocks, time recorders, bell signal clocks, watchman's clocks, time switches and process timers etc. In fact, the new Architects' Service Department can supply the complete range of timekeeping equipment required for factory, school or office.



Worcester SURFACE MOUNTED OR FLUSH FITTING WALL CLOCK from the Smiths range. Beautifully veneered in Walnut and Sycamore. Black tapered hands, polished brass chaplets and bezel, convex cover-glass. In addition to Sectric or impulse operation this model can also be supplied with Smiths 8-day four jewel movement.

Dimensions: Overall diameter 9¼" Diameter of glass 7"

INFORMATION AND LEAFLETS FROM THE ARCHITECTS' SERVICE DEPT.

'SPECIALS' SERVICE

In case there is not a suitable clock for the particular requirements from the wide range available we can now produce to Architects' own specification from 6" Wall Clocks to the largest Tower Clock.

BRANCH OFFICE & SHOWROOMS
IN MANCHESTER, BIRMINGHAM
GLASGOW & BELFAST

ENGLISH CLOCK SYSTEMS*

Head Office and Showrooms
179-185 GT. PORTLAND STREET, LONDON, W.1
Telephone: LANgham 7226

* A BRANCH OF THE CLOCK AND WATCH DIVISION OF SMITHS S. SMITH & SONS (ENGLAND) LTD
G1390

When you order windows, external door frames, internal door frames or kitchen units, make sure you buy Rippers—the finest standard joinery obtainable.

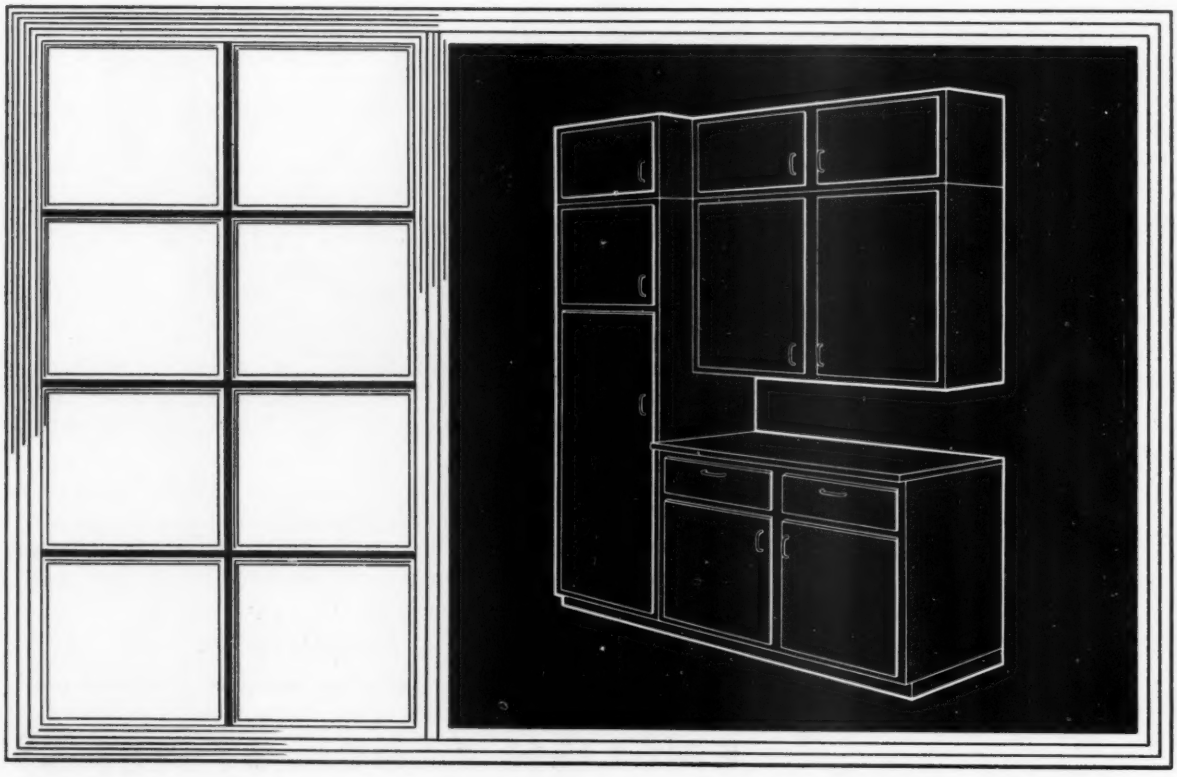
RIPPERS STANDARD WINDOWS

Over sixty years experience is behind Rippers quality—

'the best in the business'

Write to-day for our free Catalogue : it describes over three hundred designs from which endless window combinations can be arranged, and includes descriptions of all our products.

Apply for your free catalogue to Dept. A.J. 6/11.



RIPPER WOODWORK

"you'll be glad you chose WOOD windows"

RIPPERS LIMITED

CASTLE HEDINGHAM, HALSTEAD, ESSEX
TELEPHONE. 191 HEDINGHAM (4 lines). TELEGRAMS: RIPPERS, CASTLE HEDINGHAM

LONDON OFFICE :
9, SOUTHAMPTON PLACE, LONDON, W.C.1. TELEPHONE: CHANCERY 8306/7.

Photograph reproduced by courtesy of B.B. Chemical Co. Ltd.

EVERY BUILDING SHOULD BE AS SAFE AS THIS . . . . . .

The new B.B. Chemical Co. Ltd. factory at Leicester is really safe. They have the latest A.F.A. fire alarm system which, with its sensitive detectors in all parts of the building and the direct connection to the works fire station, will automatically call the brigade to the smallest outbreak *within minutes.*

The A.F.A. system, approved by Fire Officers and qualifying for valuable insurance rebates, is fully described in our book "If you had a fire tonight." Please send for your copy.

AFA

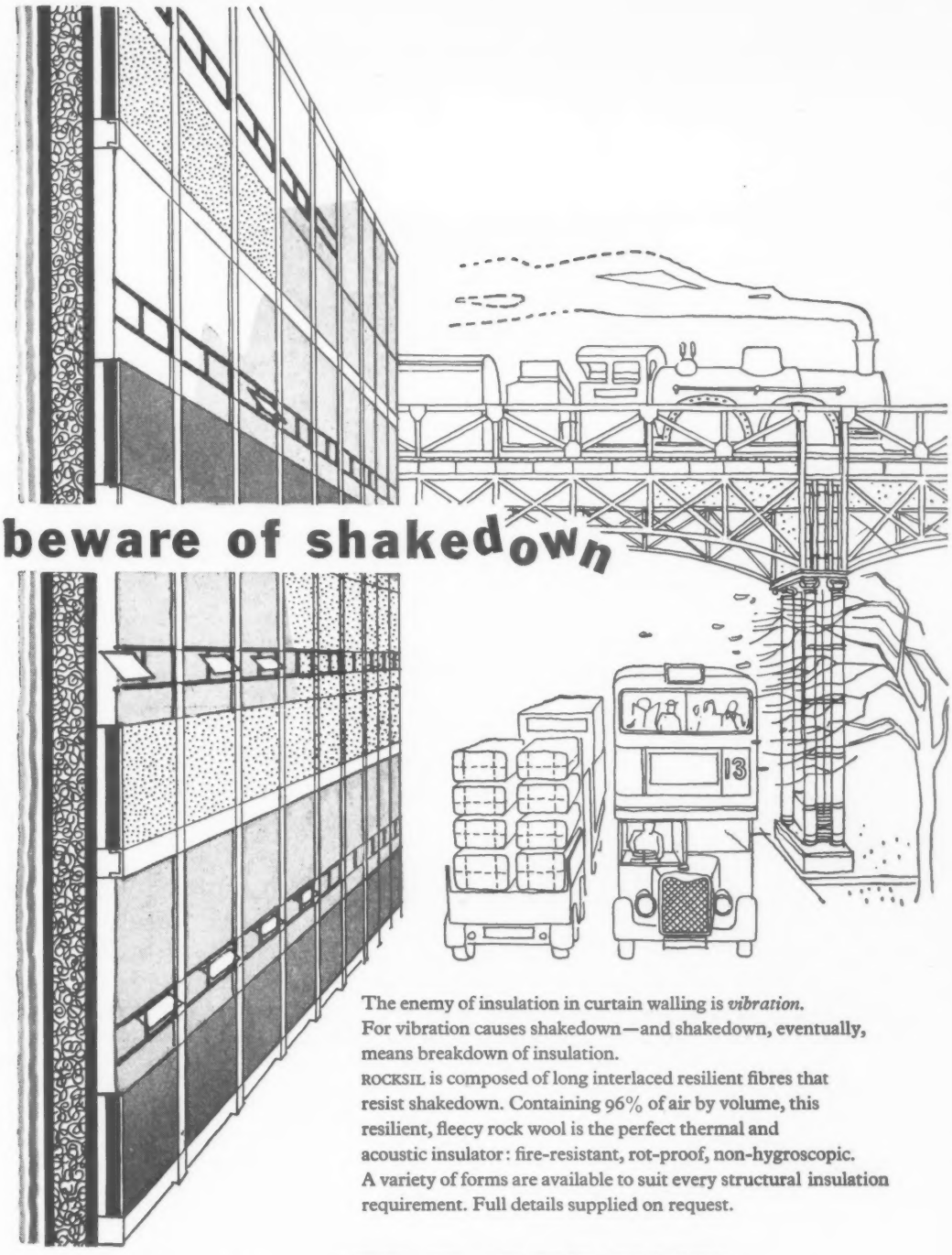
AUTOMATIC FIRE DETECTION

ASSOCIATED FIRE ALARMS LIMITED

Claremont Works, Claremont Road, London, E.17 Telephone: Larkswood 8373

Branches throughout Great Britain

TAS/AF 127



beware of shakedown

The enemy of insulation in curtain walling is *vibration.*
For vibration causes shakedown—and shakedown, eventually, means breakdown of insulation.
ROCKSIL is composed of long interlaced resilient fibres that resist shakedown. Containing 96% of air by volume, this resilient, fleecy rock wool is the perfect thermal and acoustic insulator: fire-resistant, rot-proof, non-hygroscopic.
A variety of forms are available to suit every structural insulation requirement. Full details supplied on request.

CAPE

Resilient ROCKSIL

ROCK WOOL INSULATION

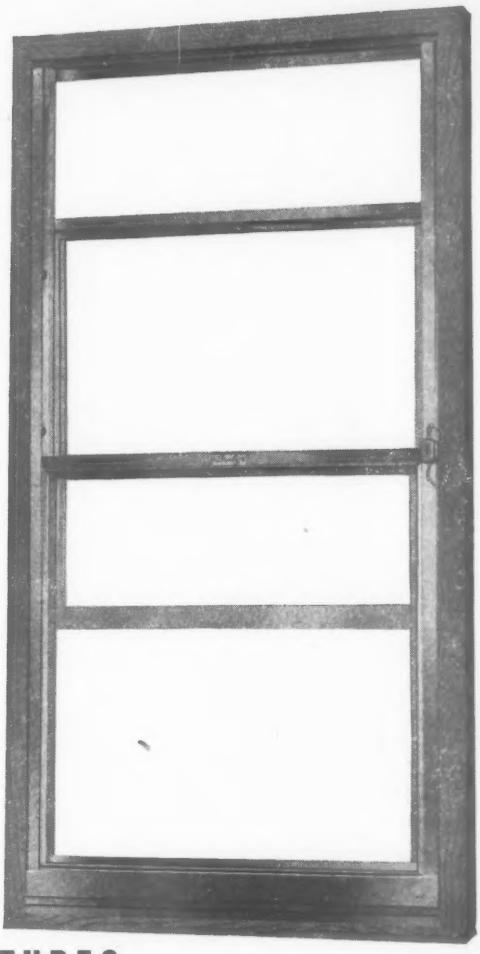
CAPE BUILDING PRODUCTS LIMITED Cowley Bridge Works, Uxbridge. Tel: Uxbridge 4313
Glasgow: Eagle Buildings, 217 Bothwell Street, Glasgow C.2. Tel: Central 2175
Manchester: Floor D, National Buildings, St. Mary's Parsonage, Manchester 3. Tel: Blackfriars 7757
Birmingham: 11 Waterloo Street, Birmingham 2. Tel: Midland 6565-6-7
Newcastle: 19 & 20 Exchange Buildings, Newcastle-upon-Tyne. Tel: Newcastle 20488
Also distributed in England & Wales by:
William Kenyon & Sons (MetaMica) Ltd., Chapel Field Works, Dukinfield, Cheshire. Tel: Ashton-under-Lyne 1614
and in Scotland by: William Kenyon & Sons Thermal Insulation (Scotland) Ltd., 140 West George Street, Glasgow C.2. Tel: Douglas 7233

TA457

Introducing

BRABY

Aluminium Alloy VERTICAL SLIDING SASH



This new addition to the wide range of efficient, economical BRABY products is the result of several years testing and development work.

SIZES — *Supplied in standard units as under—*
2 ft 0 in. x 4 ft 0 in. high,
2 ft 6 in. x 5 ft 0 in. high, and
3 ft 0 in. x 6 ft 0 in. high
or in sizes to suit special requirements.

IMPORTANT FEATURES

Adaptability
Can be inserted into timber frames, composite metal windows, pressed sub-frames, curtain walling.

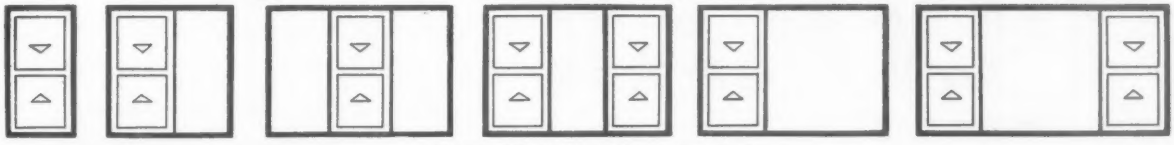
Simple, Positive Control
A foolproof device ensures suspension in required position. Balance weights are incorporated in units over 2 ft 6 in. x 5 ft 0 in. high.

New Glazing Technique
Glass inserted from the inside and easily replaced. Units supplied glazed if required.

Security
A device locks sliding sashes when in closed position.

Transom Ventilator
Ventilation at transom is obtained by specially-arranged sliding ventilator.

Some Suggestions for fitting **BRABY** *Vertical Sliding Sash*



WRITE FOR ILLUSTRATED LEAFLET

ONE OF THE WIDE RANGE OF
BRABY
PRODUCTS

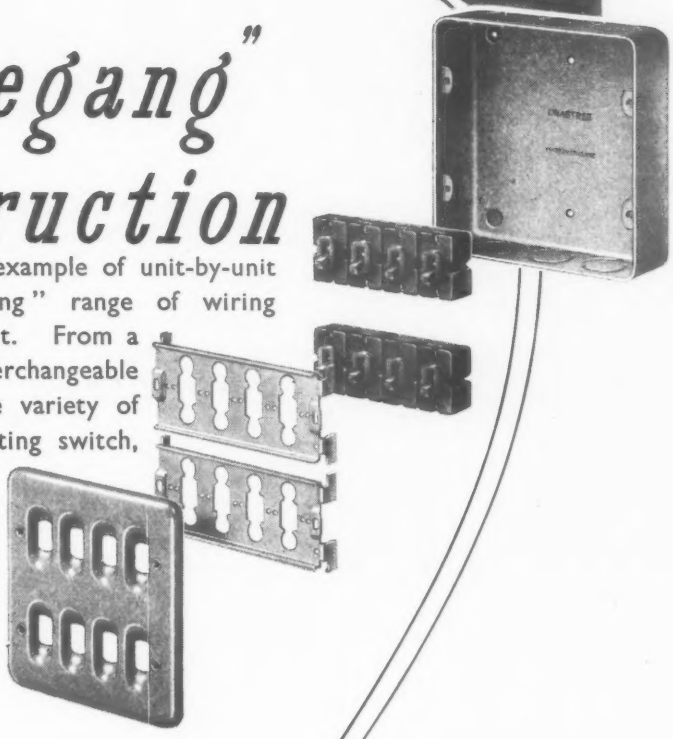
FREDERICK BRABY & COMPANY LIMITED
ECLIPSE WORKS, PETERSHILL ROAD, GLASGOW, N. TELEPHONE: SPRINGBURN 5151
OTHER FACTORIES AT: London Works, Thames Road Crayford, Kent. TELEPHONE: Bexleyheath 7777
Havelock Works, Aintree Liverpool, 10 TELEPHONE: Aintree 1721
Ashton Gate Works, Bristol, 3 TELEPHONE: Bristol 64041 And Falkirk
OTHER OFFICES: 352-364 Euston Road, London, N.W.1 (Head Office). TELEPHONE: EUSton 3456
110 Cannon Street, London, E.C.4 (Export) TELEPHONE: MANsion House 6034
Queen's Buildings 10 Royal Avenue, Belfast. TELEPHONE: 26509
Palace Street, Plymouth. TELEPHONE: 62261

AP 161

"Closegang" construction

Like the honeycomb—an outstanding example of unit-by-unit construction—the Crabtree "Closegang" range of wiring accessories is a remarkable achievement. From a small number of boxes, plates and interchangeable components can be assembled a wide variety of 1 to 12 gang flush and surface mounting switch, bell-push and indicator units.

Full details of the complete series of 5 and 15 amp. Type AC switches and accessories, as well as of the plates and boxes are contained in Publication No. 1197. Copies are freely available on application.



CRABTREE CLOSEGANG ASSEMBLIES

J. A. CRABTREE & CO LTD LINCOLN WORKS · WALSALL · STAFFS C.779

"Prithee, kind stranger, observe yonder steel chippings embedded in ye surface of ye concrete! That," our Sales Director proudly explained, "is what makes ye Stelcon Floors exceptionally toughe and harde-wearing . . . that's what saves ye mint of money on ye repairs!"

"*Jolly good, old man—but why the fancy dress?*"

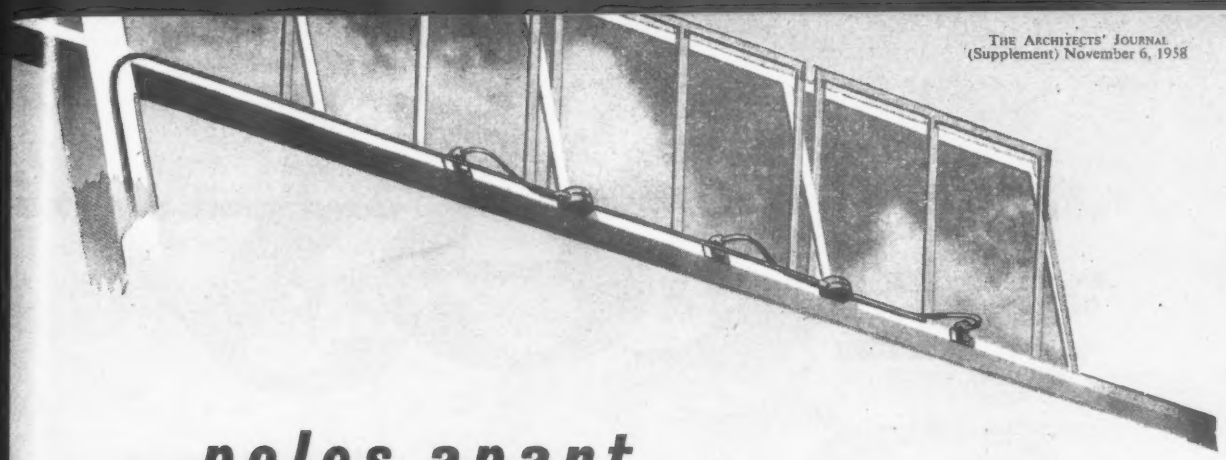
Our Sales Director slowly raised his portcullis, "Gadzooks, sir, they call me *Steel Clad* Stelcon!"

Stelcon

FLOORS GIVE INDUSTRY A FIRM FOUNDATION.

ANCHOR STEEL PLATES, STEEL CLAD FLAGS AND RAFTS.

STELCON (INDUSTRIAL FLOORS) LTD., DEPT. A, CLIFFORDS INN, LONDON, E.C.4. TEL: CHAncery 9541



poles apart

It may be that your windows and ventilators are a pole apart from the hand that opens them. But the modern way is the Teleflex way — easy remote control for out-of-reach windows. Designed for offices, factories, schools, etc. Teleflex is poles apart from any other system. *Write for details.*

these features show why —

Neat and unobtrusive

Simple, positive and efficient

For rotary or straight line motion

Simple installation

Easy, smooth operation

Teleflex

window and ventilator remote control

TELEFLEX PRODUCTS LIMITED BASILDON ESSEX

TELEPHONE: BASILDON 22861 (10 LINES) TELEGRAMS: TELEFLEX PHONE BASILDON

P238

Key Plan

TO CUT YOUR BUILDING COSTS

Outlay on pipes is only a fraction of the cost of a drainage installation. In winter one out of every five days is lost when putting in conventional pipes. With Key pipes, however, the job still goes ahead cutting out unproductive labour, keeping down overheads and therefore cutting costs.

Now you can keep to schedule Delays are negligible with Key pipes, because they can be laid and tested in almost any weather, even despite bad ground. Pre-planning with Key can be done accurately, so that operations are smoothly sequenced and closely dovetailed. Snags are avoided and schedules kept or bettered.

Urgency on large projects When your normal drainlaying team is too small for a big rush job, work can still go ahead successfully, by making up with semi-skilled men.

COST OF A DRAINAGE INSTALLATION

= COST OF LABOUR

+ COST OF OVERHEADS

+ COST OF HOLD-UPS

+ COST OF SITE DISRUPTIONS

+ COST OF MATERIALS

Use KEY and cut this total cost

BRITISH STANDARD KITE MARK

Key pipes comply with BS2760 1956. They are the first pitch fibre drainpipes to carry the British Standard 'Kite' Mark. This is a guarantee of quality and means that the Inspectors of the British Standards Institution have access to our pipe factory at any time.

THE JOB GOES AHEAD -against all odds

Rain? Driven taper joints give Key an immediate advantage over cement-jointed rigid pipes, which cannot normally be laid in waterlogged trenches. Runs can be prefabricated at ground level, lowered into prepared trenches and tested immediately.

Frost and Snow? Here again the taper joint means that work can still go ahead with Key. In fact frosty days are usually ideal for laying these modern drainpipes.

Bad Ground? Key pipes do not have to be laid in concrete, and haunched, on bad ground. Being resilient, they are better without concrete. The savings in skilled labour, time and cost are obviously considerable.

Site Congestion? Open trenches and pumping equipment normally cause hold-ups on site in wet weather. Immediate laying, testing and backfilling with Key pipes overcome this problem and keep traffic flowing.

Hot Sun and Drying Winds? Even good weather can be bad weather when pipes have to be mortar-jointed. This problem never arises with Key pipes.

More advantages of KEY PITCH FIBRE PIPES

No corrosion Remarkably resistant to acids and alkalis

No root growth The close fitting tapered joints are machined to close limits.

No cracking through settlement Natural resilience means that pipes will not crack through normal earth movement.

Faster laying—fewer breakages 500 ft. an hour is a modest average with semi-skilled labour. A trench can be excavated, the drain laid, tested and backfilled in a day Long lengths, toughness and resilience mean fewer breakages.

Widely approved Most public authorities and relevant professional bodies have given their approval.

Lower handling costs Your unloading and handling costs will be cut by 75% because Key Pitch Fibre pipe is only one quarter the weight of salt glaze ware. It is available in the same diameters, in convenient 8 ft. lengths.

Ask for a demonstration

A practical demonstration of the advantages of Key pipes can be arranged at any time through your merchant, who will also supply any quantity you require within a matter of hours.

SPEED THE JOB—CUT THE COST WITH

KEY

PITCH FIBRE PIPES

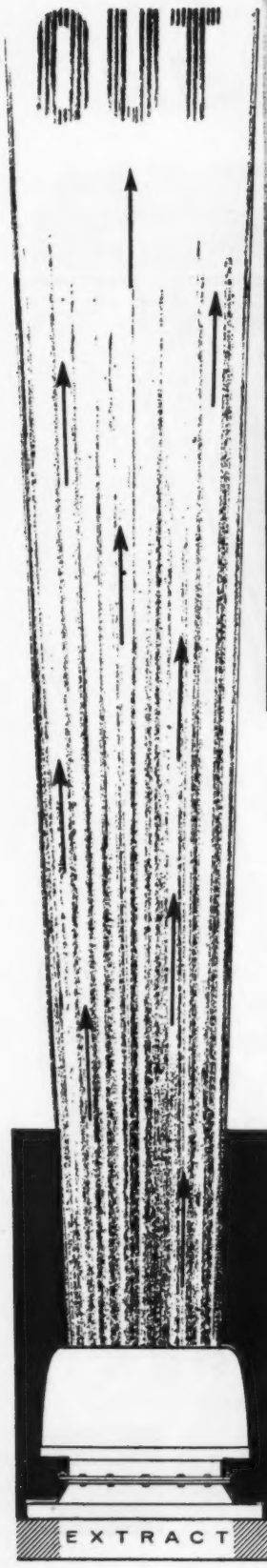
THE WORLD'S FINEST AND MOST MODERN DRAINAGE SYSTEM

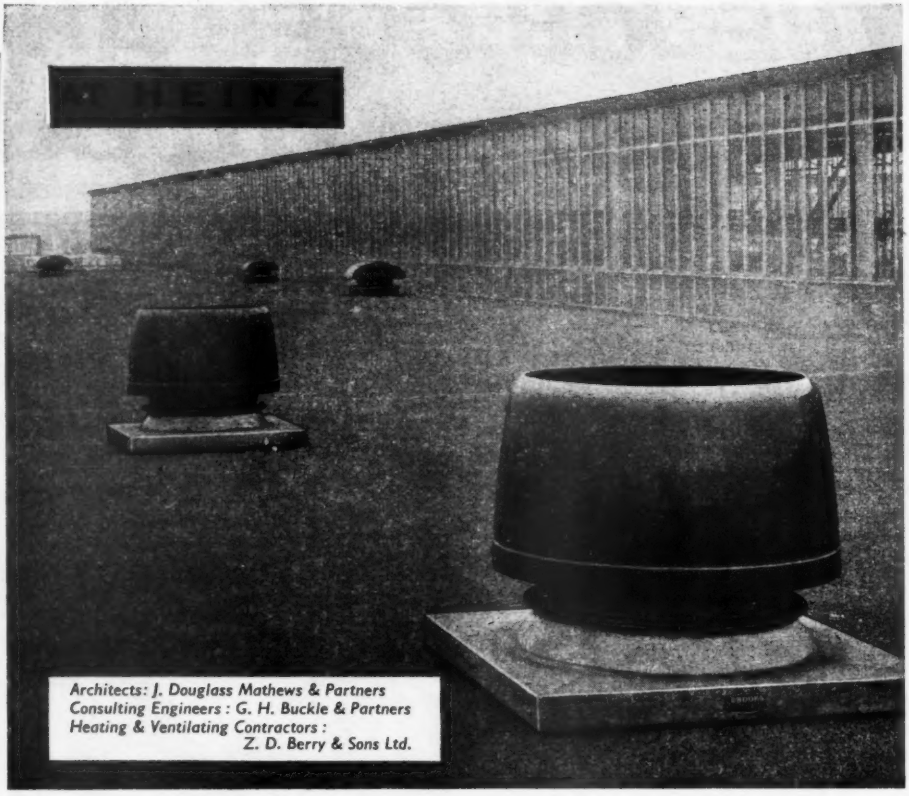
A PRODUCT OF **THE KEY ENGINEERING COMPANY LIMITED**

LARKFIELD, NR. MAIDSTONE, KENT. TELEPHONE: MAIDSTONE 7461 AND 7233

Reed PAPER GROUP

TGA KD17





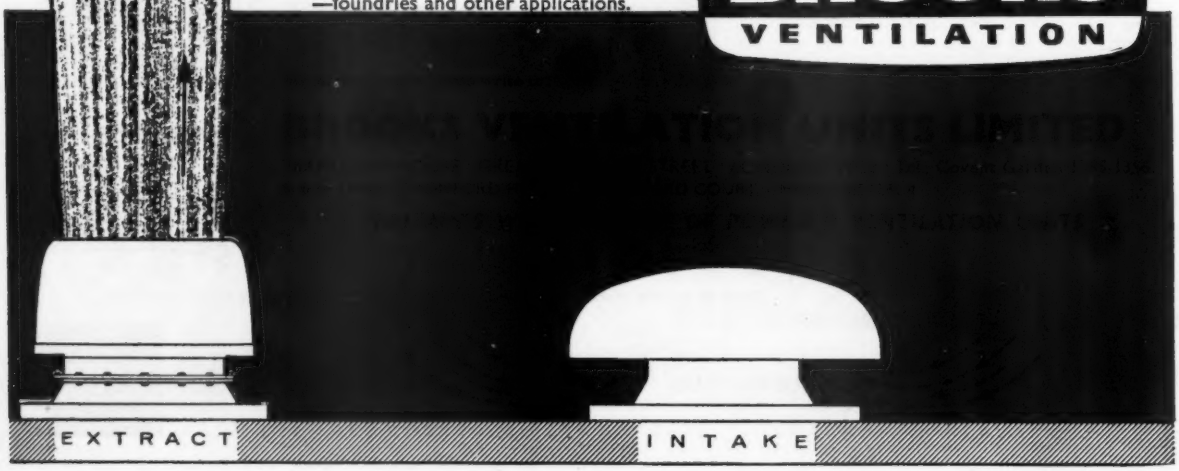
Architects: J. Douglass Mathews & Partners
Consulting Engineers: G. H. Buckle & Partners
Heating & Ventilating Contractors:
Z. D. Berry & Sons Ltd.

try this new IDEA on your factory

The vast new Heinz plant at Wigan, and other modern factories, have Brooks' Fan-powered 'Vertical Jet' roof extract units to discharge fumes and contaminated air high above building roof level. Standard Brooks' Fan-powered weathercap type Roof Units are used as fresh air intakes to unit heaters and input ventilation plants.

* Brooks **VERTICAL JET** roof extract units can also be used with great advantage for ventilation of kitchens —foundries and other applications.

BROOKS
VENTILATION



Walton-on-Thames, Hersham and Oatlands Hospital; Sidney Road, Walton-on-Thames.
Architects: Westwood Sons & Partners, F/F.R.I.B.A.

TOMO DOUBLE GLAZED WINDOWS

—BY TEST,† THE BEST!

The natural choice for this fine new hospital building in Walton-on-Thames was TOMO double-glazed WINDOWS. Shown here are horizontal-pivot-hung and hopper-type windows and double-glazed doors in Utile framing. The spandrel below the window is in vertical cedar boarding.

The excellent thermal-efficiency achievement of TOMO double-glazing (amply demonstrated in the report of the recent B.R.S. Tests quoted below) was one good reason why these superb windows and doors were chosen for Walton Hospital.

Noise is an enemy of hospital life and in this instance TOMO double-glazing was especially suitable because of its remarkable sound-reduction properties. (The amount of reduction in sound level depends, of course, on the thickness of glass and the space between panes—32-ounce glass spaced at $1\frac{7}{8}$ in. gives a reduction of approximately 40 decibels.)

TOMO double-glazed WINDOWS afford all the advantages of finely-controlled ventilation and total indoor window-cleaning. They are suitable for inward or outward opening and can be top-hung, bottom-hung, side-hung or pivot-hung.

† BUILDING RESEARCH STATION TESTS

When a standard-production TOMO WINDOW Wall-Unit (8 ft. × 8 ft.) was tested at the Building Research Station, Garston, the mean thermal transmittance of the complete unit was found to be 0·31 B.Th.U. sq. ft. h/°F. This is equal to the thermal transmittance of a traditional 11-in. cavity brick wall! This impressive result was further improved to 0·29 when the TOMO pleated blinds, fitted between the panes, were lowered.

The U-value of the window-area only was found to be 0·38 which, with TOMO pleated blinds down, became 0·35. At 0·38, TOMO double-glazed WINDOWS are substantially (29%) better than the U-value of 0·47 quoted for conventional double windows in the I.H.V.E. Guide to Current Practice, 1955.

FOR UTMOST EFFICIENCY IN THERMAL INSULATION AND SOUND REDUCTION

—*SPECIFY*

TOMO DOUBLE GLAZED WINDOWS

—purpose-made in finest timbers to Architect's size, style and finish

To: TOMO TRADING CO. LTD., COWLEY PEACHEY, UXBRIDGE, MIDDLESEX (Phone: West Drayton 3751)
Please send me your 24pp. TOMO double-glazed WINDOWS brochure.

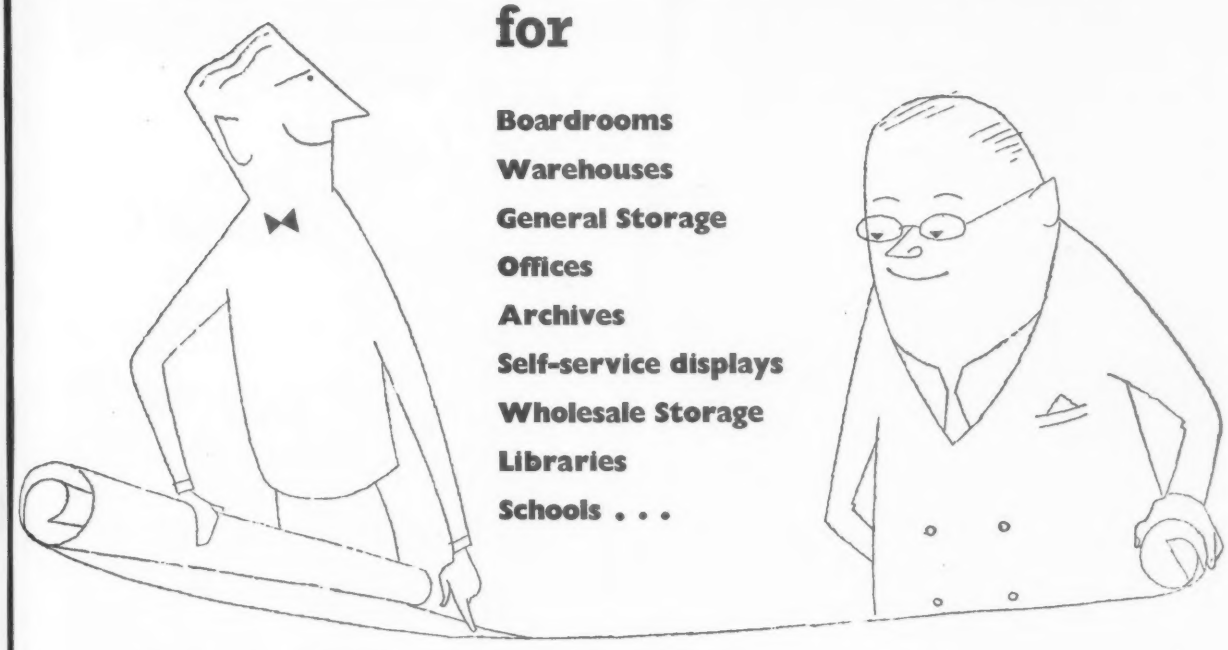
Name .....

Address .....

.....

For the attention of A1 11

In your STORAGE or DISPLAY plan for



Boardrooms
Warehouses
General Storage
Offices
Archives
Self-service displays
Wholesale Storage
Libraries
Schools . . .

in fact wherever a shelving plan is required

.it is to your client's benefit to specify this..

Remploy Lundia

PREFABRICATED SHELVING

The only system of its kind in the country obtainable IN WOOD OR STEEL

Easy to assemble and dismantle. Shelves secured without nuts and bolts.

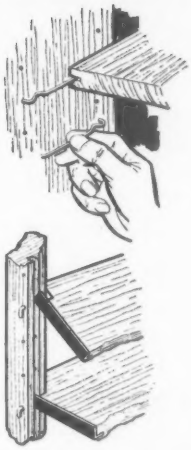
Fits any wall space to within six inches.

Easily adapted to other positions and shelf spaces.

No protrusions to damage goods. Firm and rigid, and capable of carrying heavy loads.

TECHNICAL DATA

Write for Library Information Sheets Nos. 596 and 597 and for full sales information on this unique system.



EMPLOY LTD., OXGATE LANE, CRICKLEWOOD, LONDON, N.W.2. Telephone: GLAdstone 8020.

Branches at Cardiff, Bristol, Birmingham, Oldham, Newcastle-on-Tyne, Glasgow.

Save time and labour

Reduce ultimate costs

Cut out fire risks

Eliminate Maintenance

PROV. PATENTS Nos. 32555, 36279

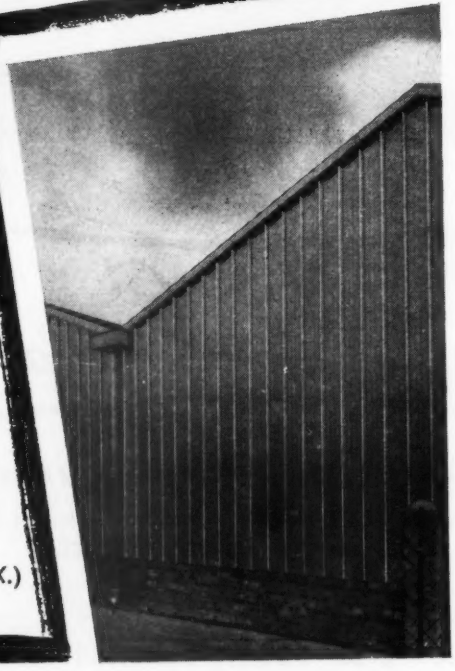
Regd. Trade Mark

SNAPDEK

Insulated Aluminium Roof Decking

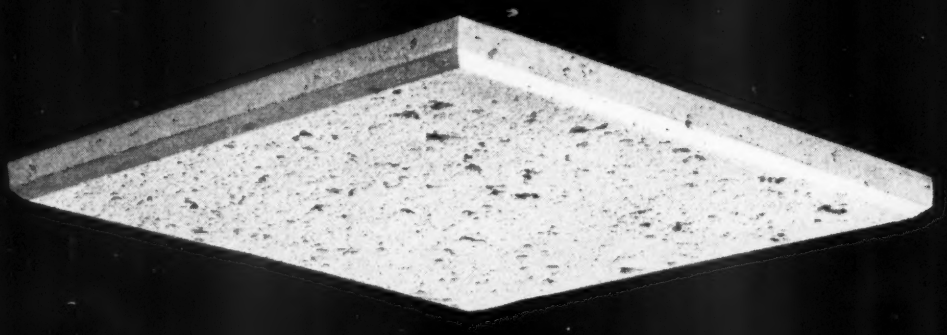
This new ***safe*** form of decking meets every demand. With its durable weather-resistant 'Sandwich' construction, it is laid completely dry and, weighing only 14½-lbs. per square yard, it is easily and quickly fitted. No Bitumastic material is used and fire risk is virtually ruled out. No fittings are exposed and it is entirely leakproof.

Further technical information is available from SNAPDEK LTD. or from our accredited fixing contractors. List supplied on request.



SNAPDEK LIMITED · CHESTER ST · BIRMINGHAM 6 *ASTon Cross 3071 (P.B.X.)*

GYPTONE



acoustic tile

. . . so light it can be stuck

HIGH SOUND ABSORPTION	Sound Absorption Coefficients at frequencies (c.p.s.)					
	125	250	500	1000	2000	4000
GYPTONE Acoustic Tiles fixed to 2" x 1" battens at 12" centres	0.15	0.40	0.70	0.80	0.85	0.90
GYPTONE Acoustic Tiles stuck to concrete	0.05	0.15	0.45	0.85	0.85	0.75
FIRE PROTECTION	TOTALLY INCOMBUSTIBLE: Surface Spread of Flame CLASS 1					
THERMAL INSULATION	Thermal conductivity k - 0.53					
SIZE	12" square ¾" thick with square or bevelled edges; weight about 1½ lbs each tile					

GYPROC PRODUCTS LIMITED

Head Office: Singlewell Road, Gravesend, Kent. *Gravesend 4251 4.*
Glasgow Office: Gyproc Wharf, Shieldhall, Glasgow, S.W.1. *Govan 2141 3.*
Midland Sales Office: 11 Musters Road, West Bridgford, Nottingham. *Nottingham 82101.*
London Office: Bath House, 82 Piccadilly, London, W.1. *Grosvenor 4617 9.*

TH

HD, I

3 stories high IN TIMBER

Elements of the problem

SEVENTY NUCLEAR SCIENTISTS urgently require permanent accommodation (bed-sitters) in a part of the country where labour and building materials are both in very short supply.
How would *you* solve this particular problem?

Talk to Simms Sons & Cooke Ltd

Why?
Because they know the answer

and the answer is . . .
Simms Sons & Cooke Ltd's C-DA System of Permanent All-timber Construction.

The photographs are of The United Kingdom Atomic Energy Authority's hostel extension, Ormlie Lodge, Thurso.

Architects:
T. L. Viney, FRIBA (Deputy Director), [Works]
R. S. Brocklesby, ARIBA (Chief Architect)

Builders and Manufacturers of Pre-fabricated Structures:
W. J. Simms Sons & Cooke Ltd

built by **Simms Sons & Cooke Ltd**

Head Office & Works: Haydn Road, Sherwood, Nottingham
***also at* Birmingham, Manchester, Leeds and London**

Simms **C-DA** system of permanent timber panel construction

BOOTH STEELWORK for the reconstruction of St. Clement Danes

Restoration of the world-famous Church of St. Clement Danes in the Strand is now completed.
The photograph shows the intricate network of the roof principals, designed to carry the lead-covered roof, and the moulded fibrous plaster of the white and gold ceiling.

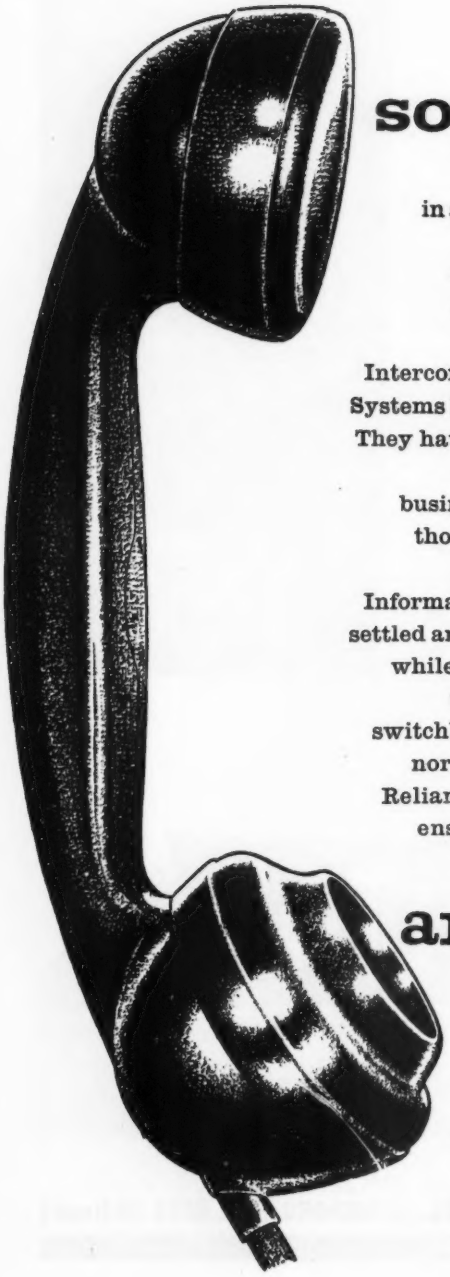
The irregular curves of the original walls made it necessary to make some sections by trial and error. The whole East end steelwork was pre-erected at our works so that the crucial Apse section could be made and fitted by hand.

BOOTH

Architects: Messrs W. Curtis Green, R.A., Son & Lloyd.
Consulting Engineers: Messrs. Hurst, Peirce & Malcolm, M.M.I.C.E., M.M.I. Struct. E.

JOHN BOOTH & SONS (BOLTON) LTD., HULTON STEELWORKS, BOLTON
Telephone: BOLTON 1195. LONDON: 26, VICTORIA STREET, WESTMINSTER, S.W.1. *Tel:* ABBey 7162

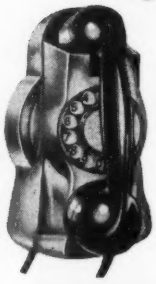
The Reliance Loudspeaking Automatic Master Station especially designed for use by the busy executive.



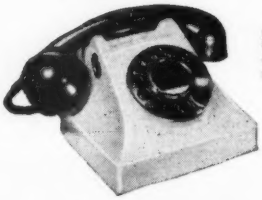
sound sense...

in any type of organisation means the fullest co-operation between staff and the co-ordination of effort. The Reliance Intercommunication Telephone Systems help to provide just that. They have long been established as an essential factor in business efficiency and many thousands of daily users are evidence of their value. Information is obtained, queries settled and even conferences held while all concerned remain at their desks—and the P.O. switchboard is free to deal with normal traffic. The choice of Reliance reflects sound sense—ensuring reliable efficiency

The Reliance push-button intercommunication set suitable for 3 to 21 stations.



The Muraphone 'K' for wall mounting. In black, ivory, red and green bakelite.



Reliance '1000' telephone. The most recent design which harmonises with all modern schemes of decorati

and intercommunication

The Reliance Rental Service saves capital outlay, gives free maintenance and an all-time guarantee. Please write for full detail

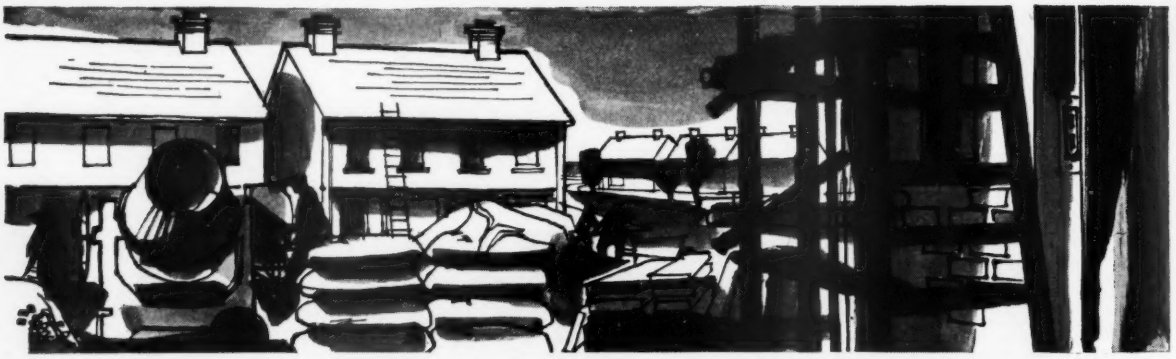
THE RELIANCE TELEPHONE COMPANY LIMITED

(A Subsidiary of the General Electric Company Limited)

43-47 PARKER STREET, KINGSWAY, LONDON, W.C.2

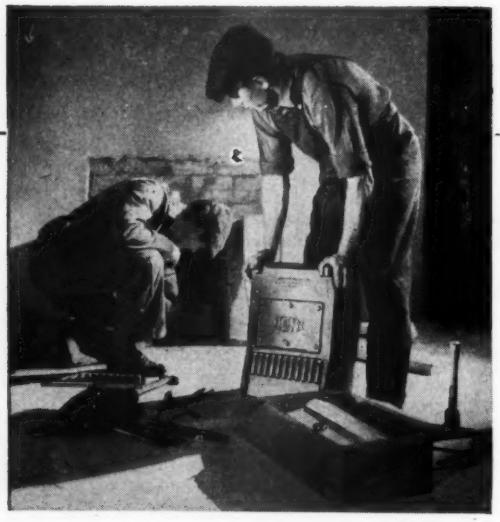
Telephone: CHAncery 5341 (P.B.X.) Branches throughout the United Kingdom

INTERNAL TELEPHONES STAFF LOCATION MUSIC FOR INDUSTRY



Redfyre Bacboilers provide low-cost water heating in new housing schemes at Aycliffe, Peterlee and Stevenage

A Redfyre Bacboiler supplies ample domestic hot water, and heats one or two radiators as well. (Or it will heat up to four radiators if hot water isn't needed.) Installation is simple and quick and maintenance costs low. Two new Ministry approved Redfyre grates with Bacboilers are now available — the new Hearth Redfyre with sunken grate and underfloor draught; and the Redfyre 60, a new low-cost controlled-burning fire with exceptionally clean modern lines. All Redfyre fires are fitted with 30% chrome, semi-steel bottom grates for longer life.



Bacboilers like this are being installed in new homes at Aycliffe.
Chief Architect: G. A. Goldstraw, O.B.E., B.A. (ARCH.), A.R.I.B.A.

REDFYRE

Full technical information from

NEWTON CHAMBERS & COMPANY LIMITED
REDFYRE PRODUCTS, THORNCLIFFE, SHEFFIELD

Brush off the fear of FIRE!

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

OXYLENE BORAM can be over-painted or applied to painted surfaces without loss of fire retarding qualities. It gives real fire protection and is approved by Local and Fire Authorities.

"Used in every Industry"

Write for particulars.

we draw the line at fire!

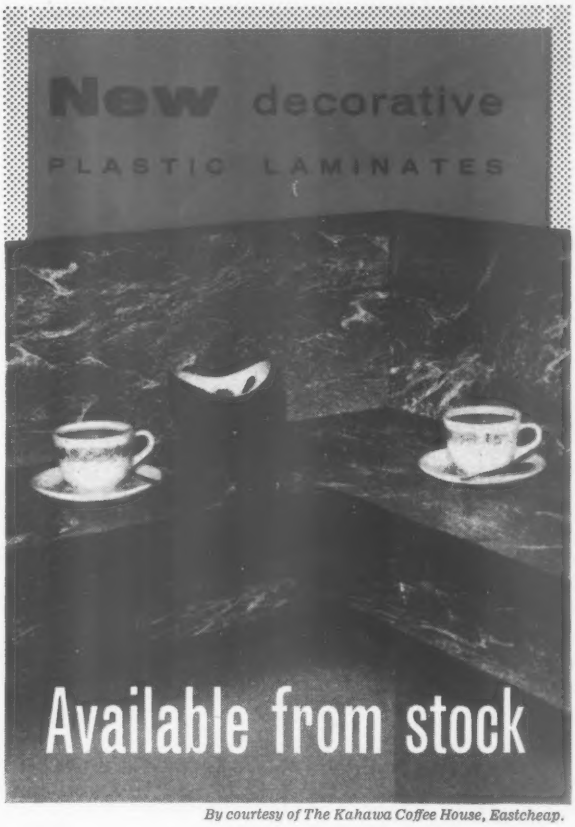
OXYLENE BORAM

Use TRANSPARENT for Veneers and Fabric RINSE for Textiles

FIRE RETARDANT COATING

THE TIMBER FIREPROOFING CO. LTD.,
13a Old Burlington Street, LONDON, W.1.
Tels.: Regent 2489 (2 lines)
Works at:— Market Bosworth, Nuneaton
Queen Elizabeth Avenue, Hillington, Glasgow, S.W.2.

DHB/2376 B



By courtesy of The Kahawa Coffee House, Eastcheap.

NEW plain and pastel colours

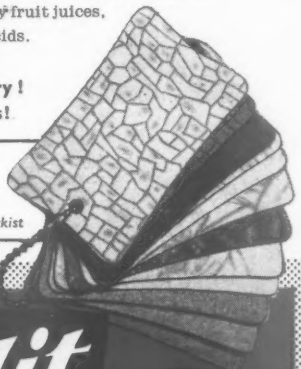
NEW exotic patterns
over 32 designs including marbles, mosaics, linens, cottons, onyx, etc. In either matt or high gloss finish.

NEW large size panel
Standard sizes: 9′ 8″ x 4′ 3″ also 8′ x 4″ (cut ¼″ over size) both 1/20″ thick (PURE white 1/16″)

Note these features: Fast colours. Exceptionally hard and durable melamine surface. Hygienic. Non-absorbent. Heat resistant (stands short-period contact with cigarettes). Unaffected by fruit juices, household acids.

and remember
immediate delivery!
competitive prices!

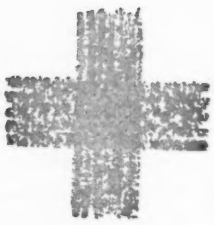
SEND FOR THIS SWATCH
and name of nearest stockist



Getalit

RIGIDEX

the polyethylene plus



RIGIDEX—the **new** polyethylene . . . the rigid polyethylene—can bring its advantages to every building. Now introduced by **BRP**, it surpasses materials previously available in many essential properties and range of architectural applications.

RIGIDEX is stronger, tougher, more rigid. Makes thinner sections possible. Brings lightness, durability and impact resistance to all fabrications.

RIGIDEX has higher softening temperature. Does not melt in boiling water. Can be sterilised.

RIGIDEX looks cleaner, feels fresher. Mouldings possess exceptional surface finish . . . can be produced in wide range of colours . . . are pleasant to the touch.

RIGIDEX is easier to fabricate. Extruded material is easily machined—easily assembled.

RIGIDEX is made by a process developed by the Phillips Petroleum Company who have licensed the manufacturing rights to **British Hydrocarbon Chemicals Ltd.**

BRP

Write for Booklet 301 giving information about **RIGIDEX**

RIGIDEX
Reg'd Trade Mark

Sole Selling Agents

BRITISH RESIN PRODUCTS LTD

A Member of the Distillers Plastics Group

SALES AND TECHNICAL SERVICE DEVONSHIRE HOUSE PICCADILLY LONDON W1 HYDE PARK 0151

Boots Restaurant, Liverpool (By permission of C. St. C. Oakes, Esq., Chief Architect, Boots Pure Drug Co, Ltd.)

The versatility of RYDURA is amply demonstrated in this illustration of the new Boots Restaurant, Liverpool. Conceived as an integral part of the overall design, RYDURA creates close harmony between walls, chairs and fittings. It is used on all of these to good effect, and satisfies the need for a fabric which can reflect contemporary design and will stand up to hard everyday use.

ATTRACTIVE, COLOURFUL DESIGNS

HARDWEARING, WASHABLE FINISH

DIRT AND STAIN RESISTING

HYGIENIC. EASY TO KEEP CLEAN

FOR chair upholstery, bench seating, cabinet furniture, walls, partitions etc.

FOR homes, hospitals, offices, restaurants, ships, stores, public buildings etc.

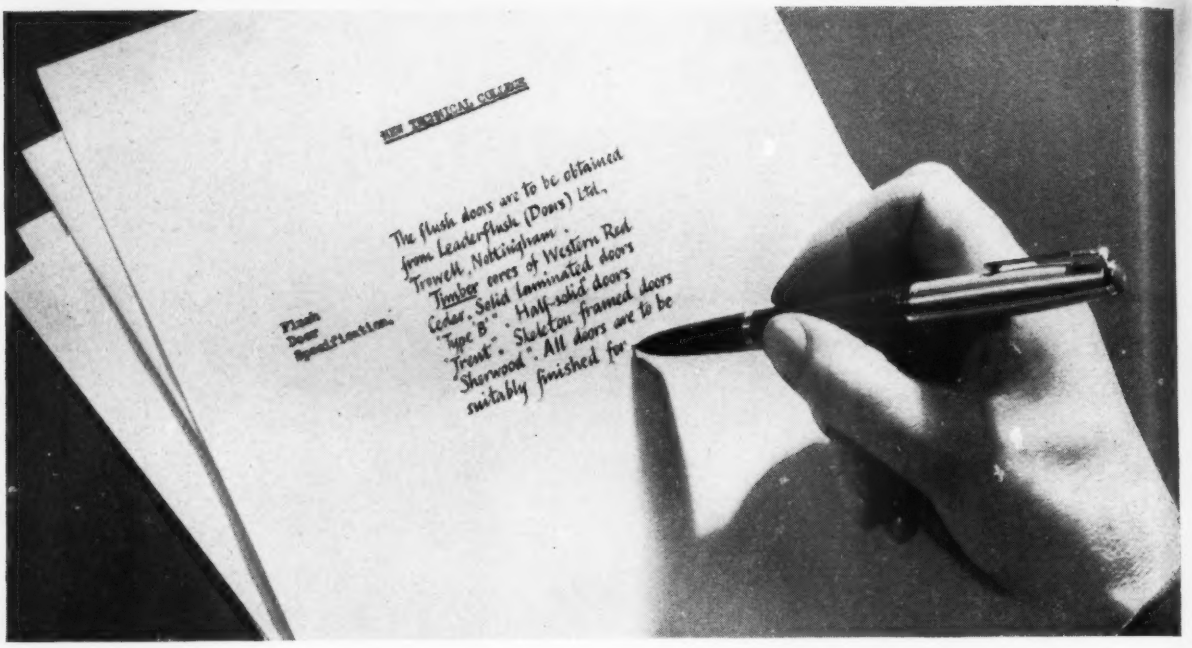
For full details write or phone:

RYJACK PRODUCTIONS LIMITED (PROP. THE CALICO PRINTERS' ASSOC. LTD.) 89 OXFORD ST. MANCHESTER 1
TEL: MANCHESTER CENTRAL 0020

relaxing friendly atmosphere created by

Rydura

THE VERSATILE FABRIC
WITH THE 'PROFILM' FINISH



Specify Leaderflush

BRITAIN'S FINEST FLUSH DOORS

for the quality which endures.

The quality of Leaderflush doors is the reason for their endurance. It is not just skin deep, it goes right through to the core, through the first quality resin-bonded and weatherproofed plywood faces to the carefully stressed core of CANADIAN WESTERN RED CEDAR, a timber which is recognised as one of the most reliable in the world for immunity to movement, resistance to decay, insect attack and weather conditions. All the timber is scientifically kiln-dried to meet every atmospheric condition. THAT IS WHY LEADERFLUSH DOORS LOOK, AND REMAIN, SO GOOD FOR SO LONG.

The three best-known Leaderflush Doors

The "SHERWOOD"
Skeleton-framed, sturdy. Supplied in internal and external qualities. For public and private housing schemes.

The "TRENT"
Genuine half-solid door, very strong and stable. Ideal for schools, etc.

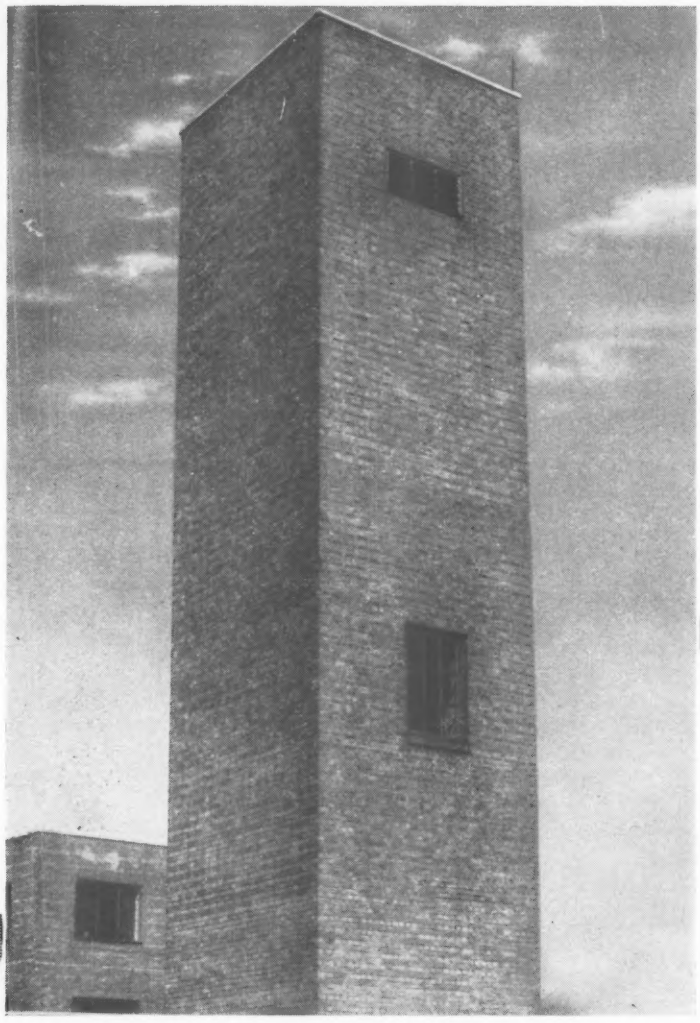
"TYPE B"
Laminated solid timber core. Everlasting durability. Sound-proof and fire check qualities. For hospitals, public buildings, etc.

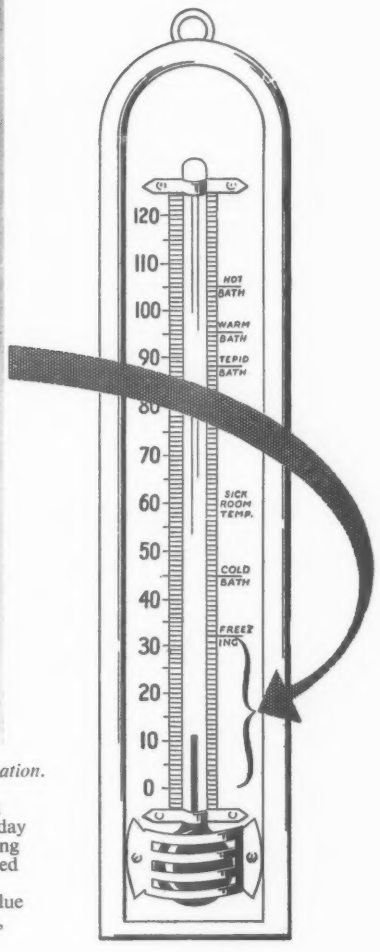
LEADERFLUSH (DOORS) LIMITED · TROWELL · NOTTINGHAM

Telephone: Ilkeston 623 (5 lines) *Telegrams: Leadaflush, Ilkeston, Nottingham*

ARCHITECTS ARE INVITED TO MAKE USE OF OUR ARCHITECTS' ADVISORY SERVICE

TOWERING ABOVE ALL





Architect: Mr. H. C. Bishop, A.R.I.B.A., Chief Architect to the Sunderland Corporation. Contractors: Messrs. R. Mathews Ltd., 25, Villiers Street, Sunderland.
The 63-ft. high Fire Observation and Practice Tower illustrated above was erected during the winter of 1955/56 (the coldest winter for ten years.) During erection, day temperatures varied from 55 deg. F. to 19 deg. F., with bricklaying work continuing without a break. Despite the repeated cycles of freezing and thawing that occurred throughout the erection period, the Tower is today sound, the mortar in perfect condition and the brickwork absolutely impervious. That this was possible was due to the careful supervision of the Contractors' Agent and the use of Febspeed Plus, the cement frost-proofing compound that towers above all others.

FEBSPEED PLUS

The cement Anti-Freeze Compound that also Plasticises, Waterproofs and Rapid Hardens.

FEB **(GREAT BRITAIN) LTD.**

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

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

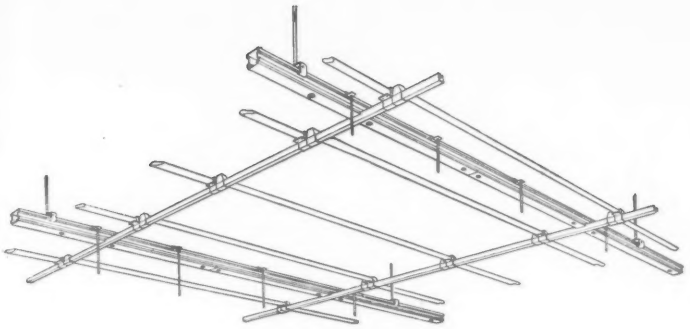
DHB/7904

atlas sylvalume

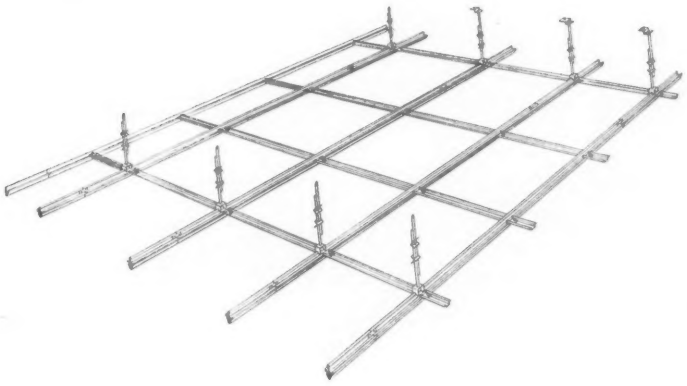
—a new wall-to-wall lighting system with unlimited design possibilities

Atlas Sylvalume is a new system of ceiling lighting, using a variety of inter-changeable plastic panels and acoustic baffles on a 3 ft. modular grid. With these elements the designer is able to explore pattern, colour, texture, mood and style with complete freedom. Each lighted ceiling can be a unique creation, completely in harmony with the architectural design of the premises in which it is located: yet each effect is obtained by using a minimum number of standard components.

Based on the Sylvalume system developed by Sylvania Electric Products, Inc., in the U.S.A.

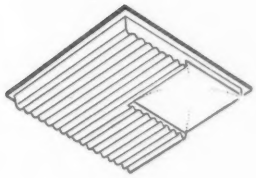


Trunking and unistrut assembly to support tubes and Sylvalume grid

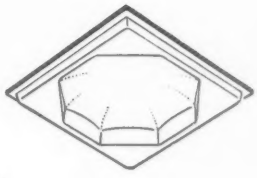


Appearance of Sylvalume grid from above

Plain dish diffuser



'L' Shape diffuse



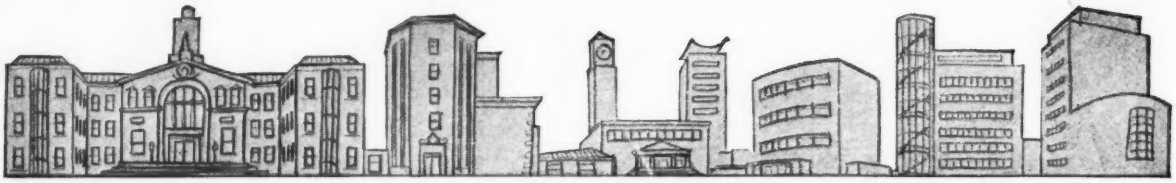
Octagonal diffuser

atlas sylvalume

—quick, easy and economical to install

In the Atlas Sylvalume system the lighting equipment comprises a modified form of Atlas trunking, accommodating the control gear for the required number of Atlas 8 ft. 125 watt fluorescent tubes. The tubes are supported on cross-beams, and from the trunking is suspended an aluminium grid on a 3 ft. module. Within the grid square vinyl plastic diffusers of differing textures, colours and form can be arranged in almost limitless variety. Acoustic baffles available in different colours and finishes can be clipped to the grid. These provide effective acoustic treatment, and assist in accenting or modifying the appearance of the ceiling. The use of 8 ft. tubes and fittings ensures the utmost economy in installation and use.

ATLAS LIGHTING LIMITED (A SUBSIDIARY COMPANY OF THORN ELECTRICAL INDUSTRIES LTD.) 233 SHAFTESBURY AVENUE LONDON WC2



For public buildings

and private houses

COPPER ROOFS NOW COST LESS

Much less! Three years ago, virgin copper cost £400 a ton — now it is only about £200 a ton.

This fact, together with the availability of new, cheaper laying techniques, makes copper roofs a practical proposition for a much wider range of buildings.

And that is not the whole story. A copper roof can be pitched as low as $2\frac{1}{2}°$ (compared with the commonly used 40° for slate or tile), so reducing roof area and erection costs. It requires much less massive supporting beams than other materials and costs nothing to maintain.

Look at the figures. Take into account the durability and the attractive appearance of this ideal roofing material. *Then write to I.C.I. Metals Division for the latest information about I.C.I. copper roofing strip* — the practical long-lasting roofing material which offers you greater freedom of design.

COMPARATIVE COSTING

In October, 1957, a sub-committee of the International Wrought Non-ferrous Metals Council issued some figures on the comparative cost of roofing a private house with tiles, slates or copper, on the basis of copper at £200 a ton.

General construction was double pitch roof with timber rafters, spars and tile battens for slate or tile coverings, suitable under-decking for copper.

Copper at 20° pitch, 720 sq. ft. 24 s.w.g. at 5/- per sq. ft. Suitable under-decking at average 9d. per sq. ft. and 150 cu. ft. of timber framing at 18/6 per cu. ft.
Cost including labour **£345 . 15 . 0**

Slates at 40° pitch, 900 sq. ft. Best quality Welsh slates at 3/4 per sq. ft. and timber framing and felt at $1\frac{1}{2}$d. per sq. foot.
Cost including labour **£322 . 2 . 6**

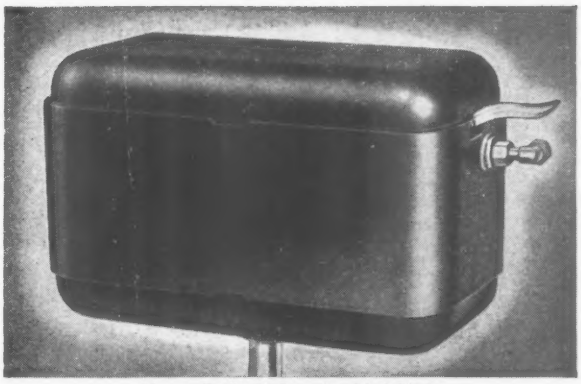
Tiles at 40° pitch, 900 sq. ft. Tiles at 2/6d. per sq. ft. and timber framing and felt.
Cost including labour **£293 . 17 . 6**

ICI METALS DIVISION

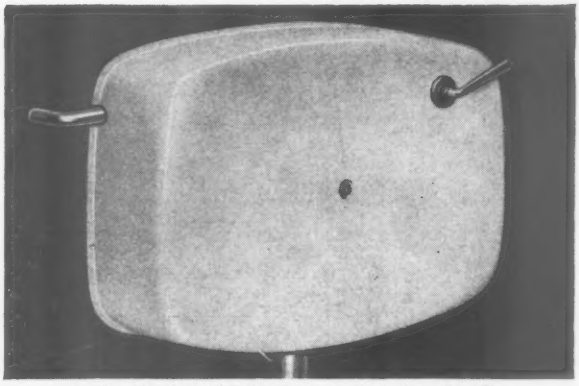
COPPER STRIP FOR ROOFING

IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON S.W.I

C.128



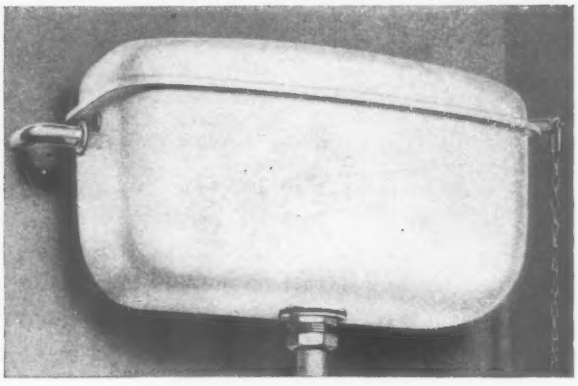
The new Fordham "Raven" in Black Plastic.



Fordham Panel Model "O". Projects only 6in. from the wall.

Fordham

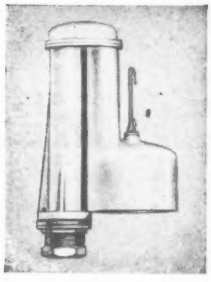
first and foremost for all SANITARY EQUIPMENT

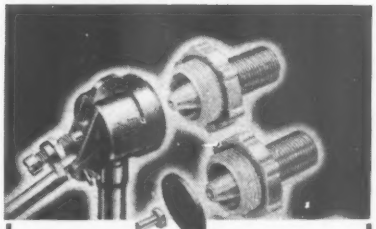


Fordham "Cleanline" high level cistern.

Look to Fordham for leadership in the design and development of Sanitary Equipment. The new range of Fordham "Cleanline" Cisterns—accepted by the Council of Industrial Design for "Design Review"—are the most handsome and least expensive cisterns obtainable today. In White or coloured vitreous finishes to match any scheme of decoration, they are available in Ivory, Primrose or Green at the cost of White. The recent addition to the Fordham range is the "Raven" in Black Plastic—superbly efficient, beautifully finished, and at an unrivalled low price. All models are fitted as standard with the incorrodible Fordham All Polythene Syphon and Ball Float and are available with the revolutionary new "Acquasave" non-stick toughened plastic ball valve. Illustrated literature will be sent on request.

Above: *Fordham Polythene Ball Float.*
Below: *The Fordham All-Polythene Syphon.*





THE FORDHAM 'ACQUASAVE'

long life, non-stick, trouble-free Ball Valves in hard Polythene. Cannot corrode and is unbreakable and quiet in operation. An "Acquasave" is still functioning satisfactorily after being subjected to 10,000,000 consecutive operations at 100 p.s.i. water pressure by a leading water authority.

FORDHAM PRESSINGS LIMITED HEAD OFFICE & WORKS : DUDLEY ROAD, WOLVERHAMPTON TELEPHONE : 23861/2

Other Factories at Earlsfield (London), Hinckley (Leics.), Sedgley (Staffs.)

AJ

THE ARCHITECTS' JOURNAL

No. 3323 Vol. 128 November 6, 1958

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

Subscription rates: post paid, inland £2 15s. 0d. per annum; abroad, £3 10s. 0d. per annum. 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 10s. 0d.; carriage 2s. extra.

NOT QUITE ARCHITECTURE

THE PEOPLE-BENDER

The man who can squelch culturemanship ploys about the eighteen-nineties with "I knew Oscar's mother," is rather old and rather rare these days—one of the last of them died a fortnight ago at the good round age of eighty: Nugent Monck, creator of the Maddermarket Theatre in Norwich, and my first *Lieber Meister*. The top paper will have given you all the top facts about his career, or at any rate the early part of it when he helped pioneer Shakespearian-type productions of Shakespeare on a Shakespearian-type stage, but there was another side to him that to me, and to a lot more people who may not know it, was just as important or even more.

*

He was what every provincial city needs: a bender. He spent most of his Norwich years bending people who might otherwise have grown up into chintzy suburban housewives or rugger-playing solicitors or plain East-Anglian slobs, bending them out of their provincial normality. He didn't do this for kicks, of course—he did it because an all-amateur repertory company needs an enormous reservoir of talent on which to draw if it is to put on a crack-hot programme of first-class productions month after month, year after year. So he populated Norfolk and parts of Suffolk with bent men, ever ready to come running and dovetail their unconformable personalities into the one place where they fitted, a Maddermarket production.

*

Some he needed only once in a decade, digging them out of their obscurity to roar and whimper as, say, Othello, opposite a Desdemona who had never acted before, but had been purpose-bent for the occasion to such effect that at the end of the Willow-song even us backstage tech-men

The New Unesco Headquarters in Paris

The Unesco headquarters in Paris were officially opened this week. The picture shows one wing of the three-armed secretariat building, taken from the entrance forecourt. The presence of the Eiffel Tower at the edge of the picture serves to identify the site—almost on the monumental axis formed by the Palais de Chaillot, the Eiffel Tower and the Ecole Militaire. The photograph was taken before the Henry Moore sculpture, which adorns the forecourt, was in place. Its pedestal can be seen on the extreme left. It is one of several major works of art commissioned for the building, others being by Picasso, Miro, Calder and Arp. This picture, incidentally, is an official one issued by Unesco itself with an architectural description on the back which omits to mention the names of the architects. They are Marcel Breuer (American), Bernard Zehrfuss (French) and Pier Luigi Nervi (Italian). The entrance porch seen in the photograph is a typical Nervi design, emphasizing the plasticity of which reinforced concrete is capable. The all-glass facade in two planes gives a fascinating example of sky-scape reflection. The building will be illustrated in the AJ shortly.

were reduced to wet-eyed, breath-bated silence. Others were bent for continual use in show after show, thespian zombies without private lives who seemed to live only as the dramatic *personæ* for whom he cast them.

*

He bent them by a variety of means, by blarney (he was Liverpool Irish) by hospitality that verged on blackmail, and kindness that verged on masochism; as an unprintable raconteur of theatrical gossip and an unrivalled dispenser of tales from the crypt; by flattering fools and out-smarting knaves; by offering the use of a library that left me, personally, bent for good . . . by offering, all round, an unique personal relationship that you soon came to need like dope.

*

The victims bent different ways, of course; some into egomaniac stuffed shirts, some into intolerably gay girlies; some got bent out of careers that might have taken them to the top, others into careers where their talents were insufficient for survival, some got bent back on to themselves and became long-service adolescents, hardly any got bent into commercially successful actors, practically all got bent into exhibitionists of various sorts.

*

But the bend, in practically every case, facilitated the flowering of personality traits that might otherwise have been smothered in Checkovian provincialism. The total product, viewed in bulk, was the leaven of local life, a fifth column of culture-quislings who did not all believe that Crome was the greatest artist who ever lived, did not all believe that Norwich Cathedral was the most beautiful building in England, nor R. H. Mottram its greatest novelist. Some of them even thought that Jeckyll's cast-iron Japonnaiserie pavilion in Chapelfield was the sort of building that ought not to be pulled down. . . .

*

In other words, Nugent Monck performed, as a solo act, the sort of function that is supposed to need a whole university—in fact he did it better; no Lucky Jim noisily acting up Less-provincial-than-thou; no defeated career-academic misquoting Proust over bootstrap sherry; no heavy collegiate brass burying the timeless value of western culture under a pile of ill-timed platitudes; he was a straight tech-man who got right on with the job of producing the best possible theatrical product with the highest possible finish on it. The man-bending was incidental; he may have done it consciously, but not self-consciously; he took little pride in the result but was often appalled by it. His local influence will pass, but it has now reached well beyond its point of origin—at little old Harlow new town, for a start, I can think of two genuine Monck-bents already well placed to influence the life of the citizens, and these, of course, are bent words that you are reading now.

REYNER BANHAM

The Editors

NOT QUITE ARCHITECTS

IN the course of his Presidential address, given at the AA last Wednesday, Denis Clarke Hall raised the question which has been much canvassed lately of whether we ought not to break down the profession into two categories: architects properly so-called and architectural technicians, each with a different system of training and different qualifications. The full text of the part of his speech dealing with this subject is printed on page 664. His main arguments are as follows: Architectural practice is characterized by the increase in the amount of specialist knowledge which the office must possess and in the amount of routine work it must carry out. This knowledge and work are different in kind from those associated with architecture as traditionally understood, requiring men capable of " interpretation rather than inspiration; a capacity for long periods of routine work rather than the capacity for quick and sure decisions on a multiple of subjects." Again, under the present system, a qualified architect expects to spend five or six years as an assistant and then to be given senior responsibilities which he will continue to hold for some 35 years before he retires. This means that at any given time the proportion of seniors to assistants in the profession is about 7 : 1. In reality, however, the present day requirements in the office dictate a small number of seniors and a large number of assistants, with the natural result that offices today are filled with disappointed people. Would it not be better to re-organize the profession to accord with the actual opportunities it offers and to convert today's " architectural assistants " into a distinct professional group with its own standards of success?

At first sight this seems a plausible answer to a real problem. It is open, however, to fundamental objection. Can the activity of architecture really be broken down in this way? Is it really wise to divide the technical aspects of architecture from its managerial and aesthetic aspects? Can we accept the concept of the " modern architect " who has been formally absolved from understanding the technicalia of his building and thence presumably from any real responsibility for its functional performance? Also do not let us forget that such real harmony as exists in architects' offices derives from the fact that all have a common educational background. Having

this, functions can be divided within the office without lessening mutual understanding and members can accept greater responsibilities without any sense that they are superior beings. If this common background were lost there is no telling of the ugly and inconvenient rifts which might appear.

To deny this solution is not to deny the existence of a problem. We have the impression, however, that the despair which architects feel about the accretion of specialist knowledge is much exaggerated, due to the fact that we are passing through a period of exceptional technical change; and that when our knowledge is consolidated it will be easier for the architect to grasp. We are also convinced that a large proportion of the routine work done by architects is unnecessary and is due to lack of organization, both in the office and in the industry. We prefer, therefore, to aim at a solution which will raise the status of all architects, which will ensure that all are honourably and economically employed, while still maintaining the unity and integrity of the profession.

ALL EYES ON HOOK

There may be a new town at Hook, in Hampshire. That, we are told at last, is where the LCC would like to build. It's a pity, of course, that the government won't go into the new town business, or at least establish regional planning authorities that would do so. But as they won't, there couldn't be a better authority to tackle the job than the LCC.

*

The LCC hasn't yet got the site. Even if it does get it there is no certainty that it can build without the government's financial support. And without that support the new town might swallow up capital resources needed for central London reconstruction. But assuming that the scheme does go ahead, how will the LCC tackle this immense project? Will the town be for only 50,000 to 60,000 people—a figure the LCC is said to have in mind, but which many critics consider to be too small? Will lessons learned from existing new towns be applied, and will there be an administrative and design set-up that is capable of applying them efficiently?

To make the new town a success it is essential that the LCC sets up a special new town committee and a new town department of architects and planners responsible to it. This is too big a subject to be dealt with under the existing organization. But a special department under the Architect to the LCC, given time to study other new towns, and a certain amount of autonomy (obviously, the executive and development section would have to work on the site at Hook) and profiting from the LCC's great architectural and planning experience could improve on Cumbernauld—our first breakaway from the garden city—and even on Brasilia, . . .

BRASILIA PRE-VISITED

My colleague, J. M. Richards, has just come back from Brazil, where he was invited to speak at a city-planning conference at Rio and then to join the first party of town-planners, architects and critics to see the work in progress at Brasilia, the new capital city, which is being constructed 600 miles inland. He was deeply impressed at the Brasilia site by the general air of determination—the kind of determination, he says, which brings success to a project even when it is handicapped by practical weaknesses—of which there are certainly a number in the Brasilia plan—and has to overcome such administrative difficulties.

*

Enormous difficulties have to be faced because the site is remote and unpopulated. The first building materials had to be taken in by air; now there is a single-line railway and a good metalled road. All labour had to be brought in; now there are about 20,000 building and engineering workers on the site, and they have to be fed and looked after—by people who also have to be fed and looked after. And so the problem grows. But the city is growing too, as you will see in the progress report on page 668.

HE WHO LASTS LAUGHS

Twenty-one years ago the secretary of a Hampstead preservation society, Henry Brooke, objected to houses designed by Erno Goldfinger for Willow Road, Hampstead. He said that the buildings would " irretrievably damage " the approach to Downshire Hill, and that an " angular concrete building " would be " disastrously out of keeping." Next week Mr. Brooke has to decide, as Minister of Housing, whether he will permit Mr. Goldfinger's designs for a small residential block (see pictures) to be built at the Vale of Health, Hampstead. There is to be a public enquiry, and Mr. Brooke has taken the somewhat unusual course of calling the application in, which means he will make the decision about it personally.

*

Twenty one years ago Mr. Brooke was wrong. The Willow Road houses provide one of the most interesting of Hampstead's contributions to modern architecture. Will Mr. Brooke be wrong again? Will he agree with the Hampstead Borough Council, who dislike both the facade and the density proposed? Or will he feel, as the LCC

planning authority would have done, that it is better not to stick to arbitrary density figures if it means lopping one storey off the building and failing to line up with the adjoining terrace.

*

If Mr. Goldfinger runs true to form the enquiry should be worth hearing. John Summerson is appearing too.

AN ALARMING PRECEDENT

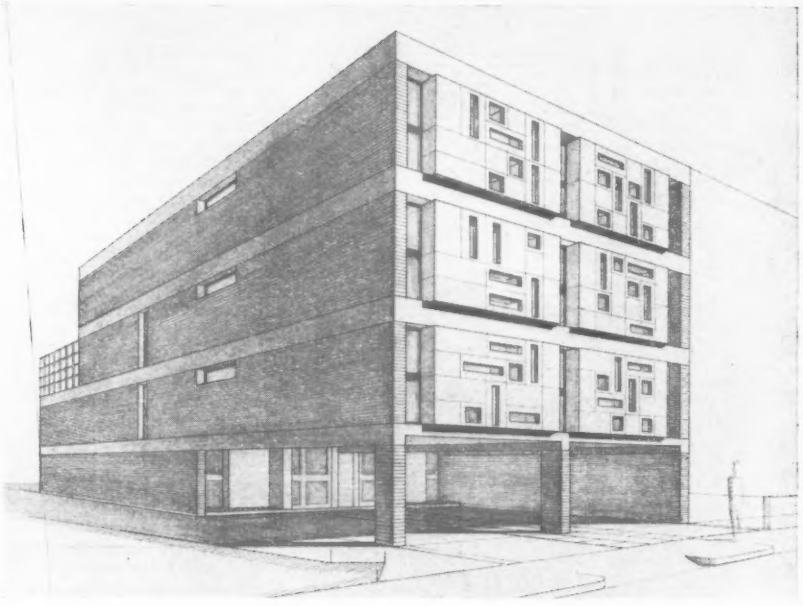
Aesthetic control, as Basil Spence said in his presidential address to the RIBA, is frustrating and harmful to many young architects. But does he really mean what he suggested—that planning committees should be abolished for a trial period? If aesthetic control were abolished or restricted, there would still be a lot for planning committees to do. Indeed, they would have time to get on with the job of positive planning that is being neglected. To propose the abolition of planning committees is to propose the end of planning itself. We know Basil Spence is a staunch defender of planning, but how does he propose to make it work without a planning committee?

HEATING DISCUSSION

Congratulations to Douglas Jones, whose heating seminar at the Birmingham School of Architecture was a great success, and to the RIBA, who backed it. This was the first of a series of meetings at which experts and teachers will meet. Each will be held at a different school. At Birmingham about twenty-five people from various schools listened and talked, under Bill Allen's chairmanship, about the thermal mass of buildings and its relationship to intermittent heating. A full report of the meeting, at which J. B. Dick (of BRS) and L. J. Fowler (of Weatherfoil) had some interesting things to say about the implications of American developments, will appear in a later issue of the JOURNAL.

NO HEDGING IN KENT

Kent continues its indefatigable fight for good planning. The planning officer, J. W. R. Adams, has just complained about the Forestry Commission's policy of planting conifers, to the neglect of hardwoods, and its practice of clear felling of woodland. Kent CC favours the group selection felling system, which allows more scope for landscape design, and it wants more hardwoods. All power to the sensible fellers of Kent. Trees, as Lionel Brett has pointed out, are the panacea for bad design, subtopia and the rest—the perfect green veil to draw over man's ineptitude.



Above, perspective of the four-storey block, consisting of a maisonette and two flats, designed by Erno Goldfinger for the site now occupied by the Athenæum, the former Old Vic workshop in the Vale of Health, Hampstead. The new building is to be considerably smaller than the existing one, and set back some 10 ft. to line up with the neighbouring terrace. The side elevation above is partly screened by the adjoining house. Right, the Athenæum and the attached terrace. Will the Minister of Housing allow the flats to be built? See "He who lasts laughs."

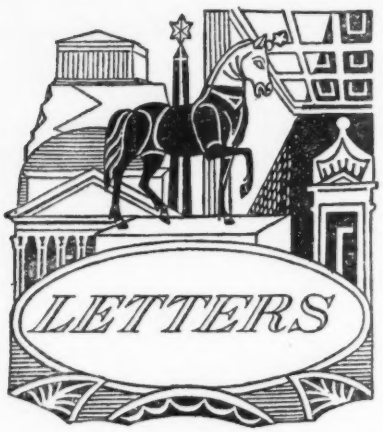
ENTIRELY IMAGINARY

The effects of the new compensation proposals in the Town and Country Planning Bill, which are briefly summarized on page 663, will be the subject of editorial comment next week. ASTRAGAL, having thumbed his way through the Bill and the Explanatory Memorandum, predicts that planning authorities will have to set up Imaginary Applications Departments. For planning authorities are obliged to issue certificates, for the purpose of assessing "market value," stating for what uses planning permission might reasonably expect to have been granted had the land not been compulsorily acquired. The authority has to say what conditions and standards would have been attached to the permission, and there is even provision for an appeal to the Minister and for an enquiry—all on an entirely imaginary town planning application. If, as the pessimists fear, there isn't going to be much town planning anyway, will the height of the town planner's ambition be to achieve the grade of Chief Imaginary Town Planning Officer?

A SINGULAR ERROR

A friend of mine swears he will have his television set put to sleep before his new-born son is old enough to watch ITV's educational programmes. Last week he tuned in to watch a piece about architecture and was just in time to hear the commentator say: "And here is some work by that eminent architect, Les Corbusier." This will be liked by those who feel that Day has the edge on Dimbleby. Ah well, ooh les les!

ASTRAGAL



L. A. H.

H. Owen Luder, A.R.I.B.A.

W. E. Chamberlain,
Chairman, Chamberlain Group of Companies

Dennis Berry, A.R.I.B.A.

Ralph W. Adams,
Command Architect, Far East Land Forces

The Supplanting Developer

SIR,—In the past few years the local authority for which I am the architect has, in common with many others, received approaches from several firms of building contractors seeking to do work on an "all in" basis, their consulting architects to do the site survey and subsequent architectural work in the usual manner.

The advantages and disadvantages of this system have been debated at great length, but as Peter G. Elphick points out (AJ, October 23) there remains the indisputable fact that these architects are obtaining work by a method which is a direct violation of Clause 6 of the Code of Professional Conduct.

Admittedly it is done by an agent, namely the building contractor, but it gives to those architects who have formed a liaison with a contracting firm an enormous advantage over their independent colleagues who are complying with Clause 6.

One cannot agree however with Mr. Elphick that this practice should be banned by the RIBA. The technical part of the all-in building contract must be provided by someone; if the architect does not do it someone else will be only too eager to do so.

The obvious answer seems to be that some Clauses in the Code of Professional Conduct are due for revision in the light of changing conditions. While nobody would advocate the introduction of anything even remotely resembling commercial type practices into our profession, something must be done about Clause 6 to enable the independent private architect to meet on equal terms the challenge of the building contractor-architect combination, and also that of the increasing number of unqualified "architectural designers" who have no Code of Conduct.

Comments by your readers on this point could be most enlightening.

L.A.H.

Need for Control

SIR,—As another architect in private practice recently in a similar position to Mr. Elphick, I can well understand his feelings on this rather vexed subject.

The points he makes with regard to the developers architect in relation to the Code of Conduct are very valid, and deserve the immediate attention of the Architects' Registration Council, for clearly this is a difficult matter to deal with as it skirts around the existing Code which, when drafted, did not envisage "all-in services," and therefore may not be fitted to deal with such situations.

However, it is presumably open in similar circumstances to those described for the private architect to make a formal complaint to the ARCUK regarding the conduct of the developer's architects for the very reasons Mr. Elphick has so carefully detailed. The resulting enquiry and decision would make very interesting reading.

Personally, however, I feel the RIBA comment that "the problem is one of direct competition to be frankly faced" is a fair one, but I do feel the present control—or lack of it—over the activities of the developer's architect are such that some effective control should be incorporated into the Code of Conduct, or, alternatively, a clear direction be issued by ARCUK on the subject.

After all, Mr. Elphick's valid plea is really that the developer's architects have an unfair advantage over him, and that competition with him is very much in the nature of shadow boxing. I feel if my suggestion were adopted, fair competition would be re-established and could be frankly faced and combated.

The alternative is for private architects to resort to the old motto of "Do unto others as is done to thyself!"

H. OWEN LUDER.

London.

A Developer Replies

SIR,—Mr. Elphick's letter (October 23) will no doubt excite justifiable consternation. It is therefore incumbent upon me as the chairman of a group of companies concerned among other things with development, to answer at least on behalf of my own organization.

Such a manœuvre to supplant an architect already engaged by the client cannot be condoned on any grounds. If, however, the architect has failed to satisfy his client, he can only expect to be supplanted in favour of another. In respect of my group of companies, the people who seek our service are at perfect liberty to use their own architects or those of our own Architects' Department. In many instances despite the existence of the latter we have frequently employed architects in private practice even for our own developments.

The problem of Clause 13 of the Code of Conduct raised by Mr. Elphick is obviated by two principles to which we adhere when we use our own architects: (1) that it is made clear in the contract that the architect is employed by the developer and not by the client, and (2) that the client is therefore recommended to appoint his own representative in case of dispute.

It would seem that the moral to be learned from Mr. Elphick's sad story is that architects should first ensure that their clients are in a position to proceed with the project for which they are engaged, and secondly, to find for themselves tame developers or financiers whom they can recommend to their clients if it is necessary.

W. E. CHAMBERLAIN.

London.

"Boycott The Competition"

SIR,—So we are worried about the low standard of much speculative building? And what do you think is the answer? Encourage the employment of more architects; influence the standards of Local Authorities, who approve such designs; investigate the whole system of aesthetic control; agitate for the replacement of Borough Engineers by architects; form committees of architects to sit in judgment on shameful developments and to publicise their findings in every way possible; buy space in the local press to stir public opinion, and so on . . . ? Not on your life! The R.I.B.A. have considered the problem and have decided to issue a book of designs, selected in competition by three divine members of our profession.

This idea is so appalling that it is difficult to take it seriously. But it is so symptomatic of a state of mind that it really must be considered. It shows the incredible lack of understanding of the principles involved. If you have ever had the experience of seeing one of your designs built without supervision, and to ¼ in. scale only, mark you, you will know of the dangers. The standards about which we are so concerned are not only those visual ones, surely. A good-looking house can still be built from shoddy materials, be badly sited, totally unsuited to its surroundings, and an offence to good taste. The idea, at best, can only achieve a semblance of design, in place of the builder's too familiar version and without the advantage of competitive tendering.

The client will be fooled into thinking that he is getting the service of an architect at cost price, and the rest can safely be left to the builder. He wouldn't know that 5 per cent. of the architect's time spent in building a house is devoted to the design, and the remaining 95 per cent. is spent in seeing that it gets built that way. The idea is really quite unethical. It cannot in any way improve standards. The speculative builder will not be encouraged to build in any way other than that which he knows, and the people who are misguided enough to buy a design, are being dissuaded thereby from consulting an architect, for really, how can it be seriously suggested that they would then seek professional advice upon siting, supervision and so on? If they were prepared to do this they would not bother about the book of plans.

The profession can build better than the speculative builder and by virtue of our impartiality, we should be able to build cheaper. This is a field of study which the R.I.B.A. should encourage, and not the suggested capitulation to the speculative builder. It smells of—if you can't beat the racket, join it!

I suggest that the profession should boycott this competition and in this way shame our governing council into a more realistic approach to the whole problem.

Incidentally, I cannot help recalling the winning designs in the Tretol House Competition, which were selected by one of the proposed assessors for this competition.

DENNIS BERRY

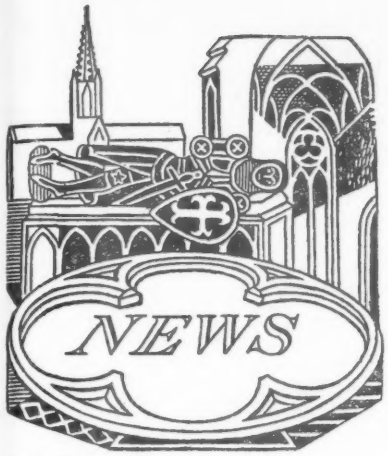
London.

War Office Architecture

SIR,—It is to be regretted that ASTRAGAL (September 18) has such a poor opinion of War Office architecture. If he cares to take a trip to the Far East I shall be happy to show him projects already built, being built, and on the drawing board which compare favourably with buildings designed by the few enlightened organizations in the UK and which are infinitely superior to many new buildings going up in the City, for instance (see advertisement pages of the same issue), designed, presumably, by firms for which young architects are happy to work!!

RALPH W. ADAMS.

Singapore.



PLANNING

New Compensation Bill

The Town and Country Planning Bill, published last week, provides that in future public authorities will pay present-day market values when they buy land under compulsory powers. For any such transaction where notice to treat is served on the owner after October 29, 1958, he will get, in the normal case, the price he could have got in the open market if he had been offering his land for sale. It will be the first time since the war that this has been so.

Under the present law (which this Bill will alter) an owner receives a payment consisting of two elements:

1. The current market value of the land for its existing use (in the case of farmland, for instance, its value as farmland, even though it may have additional value as a possible building site); *plus*
2. whatever potential value the land had for development in 1947 (in the case above, the difference between its agricultural value in 1947 and its building value in 1947).

Where a notice to treat (which is the step preliminary to the action of purchase) is served after October 29, the owner will receive the full value which at the date of purchase he could expect to get in the open market. Market value will take into account the use allowed by the planning authorities (which is very often not clearly defined), and the use to which the purchasing authority intend to put the land (for example, an authority which buys land for housing will pay the price that a private builder would pay; if it buys land for some industrial purpose, it will pay the price which the land would fetch in the open market for industrial use.) To assess market value in these circumstances is, however, extremely complicated, and 20 pages of the Bill are required to frame a code for this purpose.

The question which these clauses seek to answer is: "with what planning permission could this land be sold, if it were not being sold compulsorily?" If the Development Plan gives no precise indication, the owner or the acquiring authority must apply to the planning authority for a certificate saying what development, if any, might reasonably have been expected to be permitted. The applicant has to suggest what types of development he thinks would be appropriate to the land, and the certificate has to specify what planning standards or limitations would have been applied to the permission that would have been granted. There is even provision for an appeal to the Minister and an inquiry for those entirely hypothetical applications. In a comprehensive development area the land is to be valued on the assumptions (*a*) that the new uses envisaged for the area are taken into account, but (*b*) that the scheme and the proposed distribution of uses are ignored; the circumstances are deemed to be the existing circumstances, and the layout is deemed to be the old layout and the redevelopment scheme is not brought into the picture at all.

The Bill provides, too, that the owner can claim additional compensation if land is compulsorily bought from him for one purpose and is later (within five years) used for a different purpose which makes it more valuable.

The Bill also gives redress to the owner-occupier of a house who wants to move but finds he cannot sell it, or cannot sell at a reasonable price, because a threat of future acquisition by a public authority (perhaps for a new road) hangs over it. He will in future be able to call upon the public authority concerned to buy it forthwith. (In the case of other property similarly affected, the authority has discretion to buy in advance, and if it does so the Bill enables any relevant Government grant to be paid to it forthwith.)

The Lands Tribunal will settle compensation disputes. The Bill does not alter the compensation payable when planning permissions are refused.

Basil Spence's presidential address, which took as its theme the democratic foundation for Britain's distinctive contribution to architecture, called for more propaganda to educate the public (and particularly the client). He concluded with an appeal to the Minister of Housing and Local Government to abolish planning committees ("the lowest common denominator of ignorance and bad architecture"), at least for a trial period.

RIBA PRESIDENT'S ADDRESS

"Abolish The Planning Committees"

Basil Spence opened with a glance at the architectural scene within the Institute, the troubles which came to a head at the last AGM and the present lack of unity: "the older generation looking with mistrust at the younger, with the plain knowledge that the young generation of architects is revolting." The young generation he found remarkable in many ways—"self-critical, critical of others, serious, thoughtful, hardworking, impatient of the lack of progress, misunderstood, completely lacking in respect for its elders, and devastatingly aware of what is happening in other parts of the world. It is in their hands that the future of British architecture rests."

Britain's contribution to world architecture had seldom been spectacular. But he was certain that it was deeper, more fundamental, and in the end a greater gift to the human race than was generally recognized, as architecture must be a servant of humanity and not the other way round. The dictator with slaves at his command had indulged in the spectacular and showy, from the Pharaohs to Hitler and Mussolini. But we were a freedom-loving people, the world's truest democracy; from our insistence on the rights of the individual sprang our fundamental attitude to architecture and our greatest contribution.

Traditionally we were masters of scale. It would be a great pity if in chasing the spectacular, we lost or dissipated the feeling of rightness in building to the human stature and needs, that all-important facet of all great architecture.

Secondly, we were masters of quality of material and workmanship. Traditionally the words "British Made" stood for just that. It was absolutely essential that architects must consider materials and their ability to weather and look right, even beautiful, in the great range of climatic conditions enjoyed in Britain. The older generation of architects with their vast experience had this knowledge. The common brick was perhaps the most successful prefabricated building component ever invented, and stone, wood, bronze, copper and glass were all capable of contemporary interpretation. But new materials and methods of building must be tried out, and he regretted the tendency to turn our backs on the national exhibition, like the Festival of Britain, which consolidated modern British architectural thought. Exhibitions were like hot-houses, where new seeds were planted and forced.

Thirdly, we dedicated our buildings to the service of humans, and this was our most fundamental and important contribution. "Our attitude to building is truly democratic, which has its pitfalls as well as many positive advantages." Citing Oxford and Cambridge as examples of the organic growth of architecture under democratic conditions, Mr. Spence said: "one can only hope that this tradition of building for the individual, and in the contemporary architectural language, will be preserved and that copyism (dipping willy-nilly into past styles) which is so alien to the original Oxford and Cambridge will be allowed to die quietly—which after all is its due. For Oxford and Cambridge are vital and living because they were given life through original thought: copyism is, in my opinion, the shortest cut to stillborn architecture."

The answer, Mr. Spence continued, to the question whether architecture had ever in history grown out of the seed of democracy was Greece. After showing slides of photographs taken in Greece this year Mr. Spence asked why we were so apologetic about our architecture. As a nation we were falling over backwards to be liked by the rest of the world. Our attitude appeared to be that if it was British, how could it possibly be good? "I am not saying," he said, "that our work now is world shattering. What I am saying is that we have the potential and we should recognize value, and use what God has given us."

Mr. Spence then turned to the "many formidable obstacles to good architecture appearing after the drawing board stage." Not the least was the fact that architects had to build for someone else with specific needs.

The level of knowledge and appreciation of the client was vital. "The menace of a client who knows a little and insists on telling the architect how to do his job is known to us all. The ideal client is the man of knowledge and sympathy who encourages the architect to do his job, is clear in his requirements, and then is capable of criticizing tactfully and constructively:

"This ideal client, so essential to good

architecture, can only come from a pretty high grade knowledge of architecture. I believe we must use every means possible to let the public know what architecture is about. We must step up our propaganda."

After praising the work of the CoID and the Civic Trust, Mr. Spence declared that the Institute must not rely on others: a battle had to be fought against public ignorance and apathy, and sometimes aggressive retrogression. An architect with talent, knowledge and even a good budget could have his efforts negated by an unsympathetic and ignorant client.

Then Mr. Spence turned to "profound errors" in the democratic set-up of planning control: "The young architect with his integrity completely intact is launched into the architectural jungle. Invariably he starts, as I did, with a part-time teaching appointment, and a job to build a small house. He will usually get his first commission because his client is a personal friend, and admires his work, and would like to help him. He does an interesting modern design, which is enthusiastically received all round. He then applies for planning permission, and is turned down flat. He then has to appeal, and it is remarkable how many judgments have been reversed after appeal, and I know you will like me to thank the Minister of Housing and his staff for rescuing many good designs off the scrap heap.

"If ever an objective of the lowest common denominator of ignorance and bad architecture had to be achieved, the planning committee precisely fits the bill. That is my own personal conviction. They have the power to be destructive, but I need hardly add that some committees use their power well, but it nearly always results in delays, anguish and friction, and adds enormously to the architect's work when things should be made easier, not harder. I have yet to hear of a case when the planning committee improved a design. It is hard for the highly trained professional to submit to the untrained lay judgment. It is as if a trained and talented chef produces on request a *Pain d'Ecrevisse Sauce Cardinal* and is told by a third party—a third party, mark you—to take it away and produce instead fish and chips. We are left with both chef and consumer (who pays) violently protesting. The chef may not be so upset if he was told to recook by a world-famous cookery expert, but instead he may be told to restart by someone who does not know what *Pain d'Ecrevisse Sauce Cardinal* is at all.

"Every young architect knows that the best way to get over the planning committee hurdle is to do a mediocre design that is completely commonplace, and therefore up to the average lay committee's level of appreciation and he will get it accepted first go. The country is strewn with such houses. This does not help good architecture and furthermore it tends to destroy the young architect's most precious asset, his integrity, long before he can consolidate his ideas and become a really useful and tough member of the architectural profession.

"We are in an adventurous new period of architectural development, and architects must be helped, not hindered, by this form of bureaucracy if we are to allow our native genius to flourish in the future. I sincerely appeal, and this is purely a personal appeal, to the Minister to consider abolishing the Planning Committee for a trial period.

"I am certain that this will result in a lively experimental era, full of vitality and movement. No one would deny that mistakes will be made. Of course they will, but what a small price for vitality. It is true that in nature there is great wastage to ensure the survival of a species. Was it not Henry Ford who said 'the man who is afraid to make a mistake never made anything'? What is most important, it will be a great encouragement to the young architect, and he will not be penalized when he requires support, but with a feeling of confidence can design and build with vitality and integrity."

In his Presidential Address to the Architectural Association last week, Denis Clarke Hall discussed the implications, for the architectural schools, of the resolutions passed by the Oxford Conference. He suggested the training of a separate class of architectural technician, and the extension of the final professional examination to include two or more advanced subjects to be studied during the student's office training.

AA PRESIDENT SPEAKS ON EDUCATION

Urges Training of "Architectural Technicians"

Mr. Clarke Hall said in part:

The AA is primarily a school of architecture, and its first concern is the selection and training of the architects of the future. It has accepted in principle the resolutions of the Oxford Conference, but what of its implications? One of the most important problems that the AA is always faced with is the selection of the students for training. Its methods are continuously under review, continuously being developed. Our methods have met with a great measure of success, we are proud of our achievements and pride ourselves in the large number of eminent men in the profession who have been trained at this School, and yet we have never made a high examination standard the basis of entry.

Now a minimum standard of two advanced levels in the General Certificate of Education is being proposed. To achieve two advanced levels a pupil at school must spend long periods in specialization, concentrating on two or more subjects; concentration and specialization at the most formulative period of his life. Would not a greater number of ordinary levels of General Certificate be a better minimum requirement than two advanced levels or even two advanced levels with a few ordinary levels? The architect requiring a broad knowledge on a wide diversity of subjects must have a background of general education and high intellectual capacity. These are far more important than any specialized knowledge.

The intermediate examination should not only be a test to ascertain whether the student has absorbed the required standard of knowledge, but should be the final test of whether or not he can benefit by a continued training, a test for graduation as a student member of the Institute.

If we are to raise the standard of entry we must also raise the standard of training, and before qualifying the architect should not only have school training but also practical experience. Before qualifying he should show that he can not only pass examinations and carry out a few testimonies of study, but also show that he is capable of acting as an architect. These should be the minimum requirements for graduation.

By raising their standard we introduce the most difficult question of all. Are we to use highly and expensively trained post-graduate architects for the more routine office work or are we to introduce another class of architectural technician? If these requirements are accepted, the student on becoming qualified is an architect capable of practising as such and therefore must be in a position to act as an architect, whether in a junior or senior capacity, and should demand an appropriate remuneration. Could then the profession as a whole, within its scale of fees, afford to be staffed entirely by highly qualified operatives earning salaries in proportion, supported only by a few part-time students?

The answer is clearly, no. If an architect is to carry out adequately his duties as an architect, whether in a junior or senior position, he must be free to a very great extent from the more routine work in the office. He must be supported by an efficient team, capable of translating his wishes into drawings and design, carrying out the routine checking and co-ordinating, writing specifications, making the preliminary selection of materials and reporting on those materials and their function, and keeping him fully briefed on all matters.

To carry out this work requires a totally different personality, one capable of interpretation rather than inspiration; a capacity for long periods of routine work rather than the capacity for quick and sure decisions on a multiple of subjects. If any such division is made in the structure of the profession three points must be established. Firstly, the training for methods in which the assistant or technician will work must be under the control of the Institute. Secondly, those entering training for assistants and technicians must enter a profession with its own qualifications and degrees, a profession playing a vitally important part in architecture. Thirdly, some means must be found for those who enter and train as assistants to become architects, if their qualifications and standards are later found to be suitable. They must never be the failures of the architectural course. If such a division is brought about the questions of entry, training and the schools in which they are trained, arises. Are they to be trained in the 600 odd technical institutions, colleges of further education and national colleges that have grown up mostly in response to local needs, or are they to be trained in special schools?

The present system is one of the causes of the very great increase in numbers of architects, an increase which has more than doubled the numbers since just before the war, and which it is estimated will be nearly doubled again in 10 years time. An architect after training and working in an office expects to be given a responsible position after a few years. Thus in the office structure there are only approximately five or six years during which the qualified architect should act as an assistant. After this the architect should and does demand a position of responsibility which he will hold until he retires, a period of about 35 years.

So we have seven seniors to one junior. Once he has received a position of responsibility he expects assistants to help him, and additional juniors and students are brought in, nearly all of whom work for qualifying examinations. As soon as these are attained

the cycle starts again. An excellent example of Parkinson's Law. The failure to achieve a leading position in the profession after a reasonable period for a qualified man can only lead to disillusion and frustration.

The suggestion that all students of architecture should be trained in recognized schools is one that will inevitably lead to major problems in the architectural schools. Are the present recognized schools sufficient in number and scope? Will they have to increase or decrease their roll? How are we to find the staff?

There are many gaps in the school training today and many subjects are not adequately covered, some not even touched upon. Courses are required in the principle of office management, designing within the economics of site organization and designing the balanced building within cost limits, designing within the principles and techniques of production, designing in close and continuous contact with quantity surveyors, consultants and specialists and an understanding of consultants' work and problems to ensure the highest degree of co-operation and co-ordination; designing in different drawing techniques to meet different methods developed for contemporary conditions and an increased range of technical knowledge in a wide variety of new subjects. How are we to fit all these things in to an already overcrowded five-year course? It is often felt that such curricula should not form part of the architect's training, and that he should learn them from experience in the office after qualification. No training or qualification can ever be complete.

However, all these principles should be known and understood before a man can call himself an architect, and must therefore be understood and known before qualification. These subjects play little or no part in the early phases of training and only become important in later years, which are already full with the routine subjects. Thus, they can only be taught after leaving the school and the present system in which the last part of the final examination, professional practice, can only be taken after a period of office work, will not suffice.

A school's responsibility for the student after leaving at the end of his five-year course should not be limited to the training in professional practice only. The school should be answerable for guiding the student until he is qualified and should take the responsibility for selecting offices whose principals are prepared to give the student experience in clearly defined subjects and allow him time off to attend special courses run by the school. The final qualifying examination should be extended and become an examination in professional practice and two or more advanced subjects of the student's choice studied during his period of office training.

Such a training may be high, but it cannot be too high. We must never lose sight of our importance, for civilizations are recorded by their buildings, and architecture cannot be attained by technique alone. We as architects must never join the race for technical knowledge as an end in itself; instead we must be observers of form and apply what we see to achieve our building. We must be specialists only in architecture. We must not be dominated by the commercial aspects of society, but we must use commerce to build; nor must we live in the rarified atmosphere of pure art, philosophy and culture. We will only be brought down by guided missiles. Instead we must take commerce as our client, philosophy as our guide and take all these complex, interwoven and often conflicting subjects, all these stresses and strains, control and bend them to our wills, bend them to meet at a point where they become resolved into one single force, a point where building becomes architecture—a point of contraflexure.

NEED FOR A PLANNING MINISTER

TPI President's Call for Co-ordination

Mr. Aylmer Coates, in his presidential address to the Town Planning Institute last night, criticized the present division of high-level responsibility for planning, charged Ministries with pursuing contradictory policies, and urged the co-ordination of land use planning by a single Minister.

He advanced a number of reasons, in addition to the immediate problems of high interest rates and borrowing restrictions, for the slow pace being made with dispersal from the big cities. One of these was that the Minister of Housing and Local Government endeavoured to disperse population and industry, while the Board of Trade was charged with control over industrial distribution. The present high-level divisions of responsibility tended to produce confusion, mitigated by improved lay-outs and detail planning. There was still only a vague awareness of more fundamental considerations.

Mr. Coates asked whether control over the distribution of industry should continue to be linked to the relief of unemployment; should it not be on a broader basis? In some areas the policies of the Ministry of Housing and the Board of Trade actually ran into diametric opposition as, for example, in Merseyside or Clydeside where the Board was encouraging new industries—bringing with them new housing demands—while the local planning authorities, supported by the Ministry of Housing, were trying to shed industry and population to relieve congestion.

While the Board's policy of influencing the distribution of industry might have retarded the grotesque spread of the 1930's, the congested London and South-East region had received an increasing amount of industrial development in recent years. In the first six months of 1958 it received over 20 per cent. of the industrial space approved throughout the country, while the Midland and North Midland regions between them had also received over 20 per cent. Since the war, out of a total of 655 million sq. ft. of industrial space approved throughout the country, London and the south-east had received over 100 million, more than two-thirds of that approved in all the eight development areas. The new Distribution of Industry Act empowered the Treasury to make grants and loans outside the Development Areas, but they must still be for the reduction of unemployment. Wider criteria must be used, said Mr. Coates, for making financial aid available to industry.

He also urged using the new flexibility in the location of industry, arising from the growth of transport systems and electric power, to assist planned movements of population. If the expansion of small towns, the rehabilitation of declining areas and securing a genuine industrial balance throughout the country were to be achieved, action would be necessary, not only investment in industrial buildings, but in the creation of improved facilities, especially of accessibility.

Since the war, a series of transport plans had been prepared—for roads, railways and inland waterways—each unrelated to the other and none apparently co-ordinated within an overall planning policy or even within a limited Development Area policy. With each form of transport seeking to pay its way, and initiating proposals most likely to attract additional traffic, it was inevitable that new routes and improved services would tend to link places where industrial and commercial traffic was already greatest, and that little regard would be paid to the effect of those routes on the economy and land routes of other districts. Planning was thus posed with the problem of guiding and controlling the growth of industry and settlements without the essential prerequisite of a national policy and in face of the strong locational attractions which the improved and new routes would create.

"I do not overlook that short-term decisions must sometimes take precedence over and even conflict with the long-term solutions which town and country planning seeks," said Mr. Coates. "Even so, the policies of the Board of Trade and the Ministries of Transport and Housing should march more closely together, and this could best be achieved by ensuring that advice to Government on major land use issues is co-ordinated by one Minister."

LCC

Proposed New Town

The LCC Housing Committee has reached the tentative conclusion, after investigating some 70 sites, that a site in the vicinity of Hook on either side of the Whitewater Valley in the north-east Hampshire probably presents the most favourable features for the location of a proposed LCC New Town to relieve congestion in the County of London. An approach has been made to the Hampshire County Council and the Hartley Wintney RDC inviting them, jointly with the LCC, to investigate the suitability of the site and all other technical questions which arise.

The 70 sites investigated included all sizeable areas of marginal land in the area south and east of a line from the Solent to the Wash. The Housing Committee in their report to the Council say:

"The site seems to conform to the basic requirements of a good location for a New Town. It is at a convenient distance from London, has good transport facilities and seems likely to be attractive to industry. The site appears to be one on which development should be possible without major difficulties. This is not to say that the site presents no problems; it is near to a major airport and there are uncertainties which need to be resolved, such as the timing of the construction of at least part of the projected Exeter trunk road to bypass the existing A30 route, and further thought must be given to the source and adequacy of water supplies. But no site in such a crowded country as England can be expected to prove perfect in every respect and the present site is the best of those examined in the light of the information available.

"It should be stressed, therefore, that the conclusion reached is only a tentative one, since there may be many factors concerned with planning aspects and the physical nature of the site which are not yet within the knowledge of the Council, and which require more detailed examination with authorities in the area."

Parsonage Houses

The Church Commissioners have arranged an exhibition, open to all who are interested, of plans of parsonage houses which have been built or approved during the last two years or so. The plans will be on view in the board room of No. 1, Millbank, Westminster, S.W.1, from midday, Monday, November 10, and each day that week from 10 a.m. to 5 p.m. until Friday, November 14.

SYMPOSIUM

Recent Developments in Precast Concrete

A symposium on precast concrete sponsored by Concrete Limited was held at the Building Centre on October 21. It was presided over by F. T. Samuely, a very happy choice, as this versatile engineer has probably contributed more than any other to precast concrete in this country.

W. E. Tatton Brown, of Hertfordshire, spoke first, confining his remarks to finishes of precast concrete. He received considerable help from some colour slides which had the effect of making the horrors of bad *in situ* work even more horrible and the excellent patterned precast work quite delightful. However, precast or *in situ*, the problem always becomes one of joints, in fact most of the evening was devoted to joints from both the architectural and structural aspects. For weathering it is essential to produce members with overlapping joints rather like a fish's scales. If this can be achieved as a dry joint then the cost of dealing with the joint during erection should be reduced. The joint must be expressed definitely or lost completely. The latter is the only solution where a fine pattern or bush hammered surface is employed. The former requires a very definite or heavy or deeper pattern. Again this strength of pattern is also a help in overcoming the effects of weathering.

Mr. Tatton Brown was followed by K. W. Wood, of Concrete Limited, who spoke of the trend in the precast concrete structure. The most significant feature has been the advent of the tower crane or, where the size of job cannot afford such a tool, the long-jib highly manœuvrable mobile crane. The introduction of prestressed concrete has produced lighter loads, longer spans. The introduction of wide units, up to seven feet or so in width, has cut down erection times and at the same time allowed holes, previously framed in *in situ* work, to be cast into the wide unit. Concrete Limited are now producing precast wall units which can be incorporated in multi-storey structures and a precast structural panel system which provides the complete outer wall of a building with the textured finish incorporated. Mr. Wood considered that insufficient effort has been made hitherto in attempts to bury services in precast work and in one of his precast buildings has experimented to this end with some success.

The ensuing discussion was quite lively and interesting. Apart from a diversion about why Nervi's ferro-ciment units do not rust which crept in on account of Samuely's recent discussions with the great man in Rome, everyone seemed very concerned about joints, particularly how to form a good structural joint allowing maximum tolerances and at least cost. Every point of view was represented and there was considerable divergence of opinion. Unfortunately, as in all discussions on costs, everyone talked in terms of first costs, neglecting the long term economics of maintenance and the initial speed of delivery related to the clients' earlier production.

FURNITURE

Italian Competition

The conditions for the third International Furniture Competition at Cantu, Italy have been announced. First prizes of up to Lire 500,000 are offered for designs in nine classes. The last date for entering is December 31, 1958, and for submitting designs is February 28, 1959. Furniture made from the winning designs will be exhibited in September 1959. Detailed information is obtainable from Terza Mostra Selettiva e Concorso Internazionale del Mobile, Cantu, Italy.

COST CONTROL AND MANAGEMENT TECHNIQUE

Their Place in Architectural Education

In the Spring of 1957 the JOURNAL organized, in collaboration with the Regent Street Polytechnic School of Architecture, a course of six weekly lectures on Cost Control of Building.

One consequence of this was that the Architectural Association decided to set up its own Costs Committee which, by agreement with the RIBA Cost Research Committee and the AJ's own Study Group was to concentrate on educational possibilities of the subject. The AA Committee's first venture was an all-day course on October 17 intended mainly for students, attended by about 90 people, most of whom seemed in fact to be practising architects or surveyors.

The object of the course, at which the RIBA Secretary-elect, Gordon Ricketts, spoke and which became quite exciting once or twice, was to see whether and how cost control and management techniques might be taught in the school or at post graduate stage.

The president, Denis Clarke Hall, was in the chair. He briefly reminded the gathering of the origin of the AA Costs Committee in the AJ-Poly course (which had attracted an attendance of over 300) and said that the main problem of the day was how to teach cost control and management.

GORDON REDFERN opened with the challenging theme: "We architects must improve ourselves to *prove* ourselves." With stern idealism he pointed out that architects have no contractual obligation to adhere to the cost limits set them—"though they may have to in future" and that clients may not readily accept the yearly increases in building cost. This and our inability to control costs could only emphasize the merits of the all-in service—the "packaged deal" which guaranteed both time and cost to the clients.

E. R. PARRINDER, a quantity surveyor who teaches part time at the AA school, then described two methods of cost control. The first was the MOE method of setting cost targets for each functional element in a design *before* any detailed constructional design is done. Although he spoke approvingly of the system as one which ensures control from an early stage—he described the use of cost analyses of previous buildings for setting the targets as "a splendid oversimplification." He felt—as many quantity surveyors still do—that this would only work where the previous building was very similar to the one being cost planned. Yet we needed cost planning most for just those building types that were unfamiliar to us. (Later on in the day this drew a very determined disclaimer from James Nisbet of the MOE.)

The second method he described was that advocated by the RICS Cost Research Panel —although it was not referred to as such. It is that of preparing approximate quantity estimates of alternative methods of construction for the various parts (not necessarily elements) of the building at a stage when such methods have been designed by the architect. It is therefore not in the strict sense a system of *planning* the expenditure of money in advance, and it may, as Parrinder pointed out, show that time has been wasted on some of the constructional design work. But, he said, it had the advantage that the prices relate to the actual job.

GORDON REDFERN, having got his second wind, spoke on the "Effect on architectural practice." He thought that information for the MOE method of cost planning could come from many sources—not only a previous analysis—that analyses published by the JOURNAL were mainly useful as a check and for the unfamiliar building type for which no other information existed. In time an architect could build up a cost library.

He gave two reasons why people who cost plan their buildings advocate negotiated contracts. With competitive tendering there is no assurance of what the price is going to be and with negotiation the builder can advise the architect on plant, methods and materials. The snag was that negotiation usually produced higher prices. He seemed to offer no answer to this, but he went on to say that although competitive tenders rarely exceeded the cost plan laid down for them, if they did, the architect knew (presumably by analysing the bill) where the excess cost lay among the elements—and he could amend his design and specification accordingly.

Finally, Redfern mentioned the need for builders to price the *building* rather than merely the bill for quantities, especially where the architect had striven for economy in his design, and referred with approval to the elemental bill of quantities and elemental drawings—although he had not used them himself.

His conclusions were that we needed more time (for cost planning), tighter drawing office supervision and explanatory drawings with the bill.

E. R. PARRINDER then took the floor again; on "Architect-Quantity Surveyor Co-operation." He said that the higher fees which cost planning should merit must be saved by lower job costs but did not say whether he had found this to be the case. He pleaded for uniformity in drawings—apparently surveyors suffer a bewildering variety of scales, sizes, styles and degrees of detail; and for better co-operation from consultants—whose work might cover 25 to 40 per cent. of the cost and who are very bad at estimating.

Cost planning skill only came with experience, he said, and early tender/cost plan discrepancies should not discourage the architect and surveyor. He affirmed his belief in competitive tendering, said that architects should not need the advice of builders and suggested that knowledge of plant and site methods would be better acquired from post-graduate study. He gave no reasons for this curious view—unless it were to preserve competitive tendering—nor did he explain how development work might be designed in the builder's absence. His answer to Redfern's query was that the q.s. could

describe or measure the architect's design economies in the bill. On revisions to the Standard Method of measurement he was more cautious, suggesting that the trade bill should be left as the builders say they like it.

The question time that followed was dominated by exchanges between the AA school principal, Michael Pattrick, and speakers.

The object of the course was to see whether and how cost control could be taught to students, so one assumed that no one yet taught it, but Michael Pattrick started by saying that students found it the least interesting aspect of architecture. After asking whether the cube method of estimating was so wildly inaccurate he suggested that because "students were fairly cute" they would see that cost planning was not yet an accepted technique in regular practice and would thus refuse to be taught it. This view—that techniques must be established in practice before they can be taught—evoked from Redfern the question "What are AA students taught at the moment?", to which Mr. Pattrick replied that he himself gave a lecture on costs on the student's second day in the school, that it was "part of every school programme" and that students learn about economy in buying materials for their model-making. Later in the day a fifth-year student diffidently suggested that the second day was a bit soon.

To quell the excitement, the chairman called on James Nisbet of the MOE who drew diagrams on the chalkboard to show why cost planning must come *before* the constructional design and to explain that the "second method" of cost control described by Parrinder was not really an alternative to the first but complementary to it. This also seemed to answer a remark of John Brandon-Jones who had said he did not realize that the second method "counted" as cost planning.

FRANK WARNER, a management consultant, was the first lecturer after lunch. He explained six principles of management:

1. Forecasting. Decide the objectives and policy of operation.
2. Planning. To make effective use of labour and materials.
3. Organizing. The means of delegating tasks—which appeared to mean principally that each man should have only one boss.
4. Leadership. To select, develop, promote or dismiss; to provide the driving force.
5. Control. Without which, Planning and Organizing are ineffective.
6. Co-ordination. Keeping the organization moving towards its objective.

Mr. Warner said that three of these principles were of particular importance for architects' offices—organization, planning and control, the first because clarity of instructions and defined responsibility were necessary, the second because the fluctuating volume of work made the meeting of dates particularly difficult and the third because the expenditure of the office must be related to its income.

He concluded by suggesting that bills of quantities should be made more useful to the builder—partly to reduce the number of times a particular piece of work is measured by draughtsman, by quantity surveyor, and by builder (several times).

J. M. AUSTIN SMITH under the title "Application of management within architect's office" then gave a military style account of his own office organization. First the forecast of annual expenditure is divided by the number of man days which gives the cost per day per assistant as £9. The fees expected from a job (less 25 per cent. for partners' profit and reserve) are then divided by £9, to give the total number of man days that can be spent on the job. This is then split into four target figures: Investigation ($\frac{1}{8}$); Constructional design and working drawings ($\frac{3}{8}$); and Supervision ($\frac{2}{8}$). A percentage is allowed for time lost and from these figures the programmed dates and number of assistants required to meet them can be decided. Work load charts are then prepared for each job which show—to the nearest half day—what each assistant will be doing on every day of every week. These charts also show salient dates such as meetings with sub-contractors. When a new job comes in these charts show (at a glance) whether and what re-arrangements can be made to release the necessary manpower.

Austin-Smith described all this in such detail (with handouts and charts on the wall) and at such speed that applause burst out when he at last drew breath and sat down.

The rest of the time was occupied with questions and discussions, which at first concentrated on how much office time it took to do this kind of planning (it was clear that Austin-Smith already had some potential converts).

Replies seemed contradictory. Austin-Smith said about one morning or one day per week; Frank Warner thought it could be less than this and that most of the time would be taken by the loading charts. Peter Lord said five minutes per job or one and a half hours for 20 jobs. R. B. Hellard (chairman of the RIBA Cost Research Committee) said that from four years' experience of such programming in his office they found that the non-productive (administrative) time varied from 14 to 34 per cent. of every man hour (assistants, secretaries and partners) with an average of 20 per cent. But the time was well spent because jobs had become cheaper to carry out because of programming and progressing.

Michael Pattrick asked how one could teach management in a school of architecture when it had not yet become a firm academic discipline and there were no examinations for it. In any case, he said, programming would only work where all the specialists and architects were together in one organization. The answer (from those who appeared to have tried it) was that specialists and quantity surveyors were only too glad to work in with a programme.

After tea, a student, a member of staff and a member were invited to speak:

MR. SIDDONS (the student) admitted that it was embarrassing to reach the fifth year without cost knowledge but protested against further additions to an already crowded curriculum. He was "intrigued" by office programming but felt that since it would be years (if ever) before he got into a controlling position, costs and management ought to be post-graduate studies.

JOHN DENYS (AA teaching staff) revealed that the AA had just redesigned its whole curriculum—which has perhaps a "defence mechanism." The intellectual fringe of the profession saw and urged a closing of the gap between architect and builder which might render the cost control methods discussed, irrelevant. He thought that "economy" rather than the techniques of £.s.d. should be taught.

P. BOSANQUET (member) said it was unrealistic to bring cost control and management into the curriculum. "Awareness" of these aspects only was needed. Detailed study belonged to the post-graduate phase. He asked for a centralized library which could collect the essential facts about executed jobs for use by the profession.

GORDON RICKETTS (Secretary-elect, RIBA) reminded us of the Oxford Conference which had emphasized the need to deeper academic study, rather than "cluttering" present courses with techniques. He put forward the suggestion of architectural offices which would be "recognized" by the RIBA as the only ones capable of training students—perhaps as part of "sandwich" courses. In the engineering world, universities and employers arranged with each other to share a student's training by a "thick sandwich" course of alternate periods with each. This arrangement corresponds to a much clearer distinction between the fundamental knowledge—engineering science—and practical knowledge (which is learned in the workshop and the drawing office) than is obtained in architectural training at present. Other speakers agreed—mainly it seemed because present training courses are too full—that cost control and management training should be delayed until after qualification.

In his concluding address, the president remarked that cost control and management seemed to go hand in hand, reminded the meeting of the importance of deciding whether and how they should take their place in training and expressed his own view that it should be in the post-graduate phase.

JOHN CARTER.

DIARY

Building Contracts Today. A course of six weekly lectures by Donald Keating, B.A. Organized by the Brixton School of Building in collaboration with the Building Centre. At the BC, 26, Store Street, W.C.1. 6 p.m. Fee for the course, £1. Applications to the Secretary, Brixton School of Building, Ferndale Road, S.W.4.

THIRD LECTURE NOVEMBER 12

Modular Assembly. Modular Society Exhibition at 27-28, Albert Embankment, S.E.11. Monday to Friday, 10.30 a.m.-6.30 p.m.

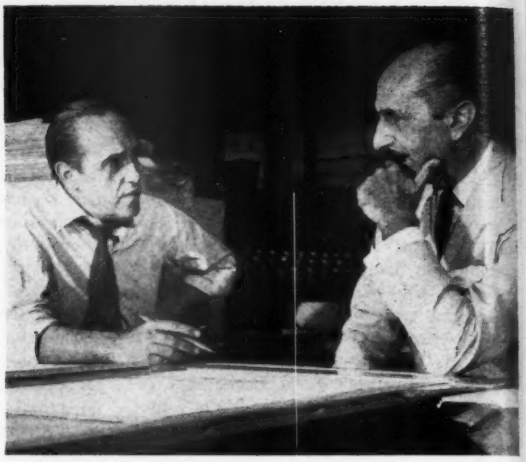
UNTIL SHORTLY BEFORE CHRISTMAS

Out in the Mid-day Sun. Two illustrated Christmas holiday lectures for boys and girls. By L. M. De Syllas. At the RIBA, 66, Portland Place, W.1. 3 p.m.

DECEMBER 31 AND JANUARY 2

Brasilia

A PROGRESS REPORT



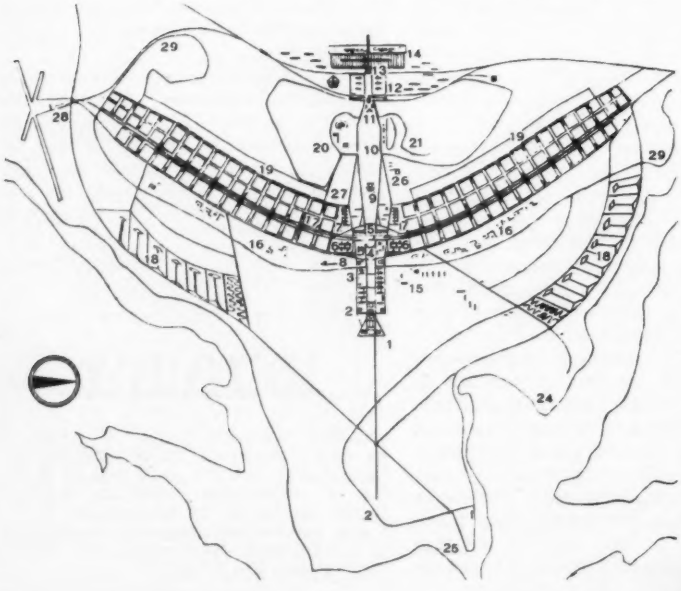
The architect and the town-planner: Oscar Niemeyer (left) and Lucio Costa discuss the progress of Brasilia over the drawing-board.

It was in March, 1957, that the competition for the master-plan of Brasilia (the new Brazilian capital city 600 miles north-west of Rio) was won by Lucio Costa. Work was started immediately on two buildings, the president's palace and a hotel, both sited a little distance away from the built-up area of the future town. They are near the junction of two arms of the lake that will shortly enclose the triangle of ground on which the city is laid out.

Both these buildings are now occupied. They were designed by Oscar Niemeyer, who is architectural director of Novacap, the organization—resembling our new town development corporations—responsible for building Brasilia. Niemeyer is personally designing all the public buildings. The palace was formally opened in June. The hotel was ready for its first visitors in September.

Work was also started, in the summer of 1957, on laying the foundations of the city itself, in the shape of roads, drainage, water and electricity supply, the clearing and levelling of sites, and so on. By now work on the roads has gone far enough for the outline of the Costa plan to be distinguishable—at least from the air. At the beginning, too, communications were the most urgent need, for the site of Brasilia is far removed from any existing development. A full-size airport was soon brought into use, a single-line railway line has been extended from the nearest railhead at Anapolis, 75 miles away (the main line from Sao Paulo is to be extended as far as Brasilia later on) and there is now a good metalled road linking the site with the big centres of population on the coast.

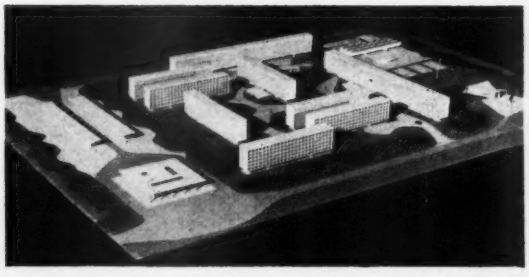
There is now only one small electric power-station, which will be reinforced by hydro-electric stations when the lake has been formed and provides a head of water. This will be done by damming a couple of small existing rivers. The dam will be built by



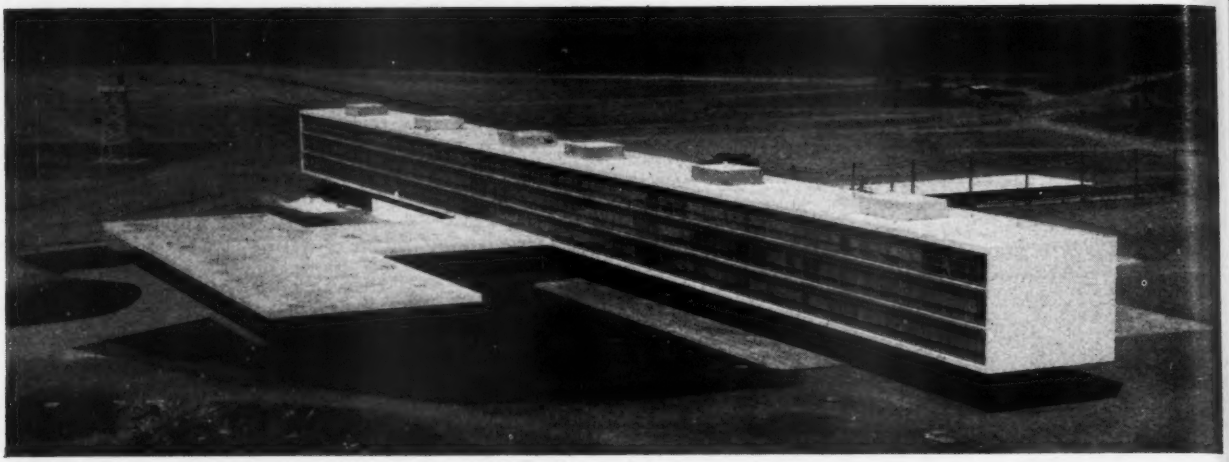
KEY

1. Parliament Buildings
2. Ministries
3. Cathedral
4. Cultural area
5. Recreation centre
6. Banks and offices
7. Commercial area
8. Hotels
9. Radio and television
10. Stadium
11. Municipal square
12. Barracks
13. Railway station
14. Storage and small industries
15. University city
16. Embassies and legations
17. Residential zone
18. Detached houses
19. Horticulture
20. Botanical garden
21. Zoo
22. Golf club
23. Bus station
24. Yacht club
25. Presidential palace
26. Riding club
27. Site for fairs, circuses, etc.
28. Airport
29. Cemetery

Below, model of one of the squares of which the residential zone of the city is composed (they occupy the wide curved belt at right angles to the main axis in the plan alongside). This square is one of eleven in various stages of construction and will be the first completed. Work in progress is shown opposite.



Housing under construction—a photograph taken two months ago, showing the state of progress in one of the housing areas; see model opposite. The picture above also gives an idea of the empty landscape, covered with small-scale vegetation, in which Brasilia is being built. Below, close-up of a typical block of flats in this area.



The Palace Hotel, one of the two buildings at Brasilia already complete and occupied. It is sited near the extreme eastern end of the main axis of the city (see plan on page 668) on the edge of the future lake. The long 3-storey block, raised on columns, contains the bedrooms—all facing east, with a corridor on the far side. The low T-shaped block contains the public rooms. Architect: Oscar Niemeyer.

1960 but it will take a whole rainy season (December to March) after that to fill the lake.

At present there is a labour force of about 20,000 on the site. This means (with all the people needed to feed and look after them, plus workers at the airport, power-station and hotel, the transport workers and so on) a population of 45,000. They are housed for the most part in temporary camps, hidden in folds of the ground, some distance away from the site, and there is also a "free town" for shopping, recreation and services of various kinds, so called because traders have been allowed to establish themselves there freely, on the understanding that it will all be cleared away in a few years' time. The "free town"—mostly composed of wooden shacks—is also well removed from the site of the permanent city, west of the airport (see plan).

There is a fair quantity of temporary timber housing for workers with families, and a small number of experimental permanent houses, near where the southern arm of the lake will eventually lie. Building work at the moment, however, is concentrated on two points in the future city: on the parliament buildings, which occupy the eastern end of the main axis running right through the city, and on one of the housing neighbourhoods in the residential zone that sweeps in a curve at right angles to the main axis.

Temporary housing, in concrete and timber, for workers with families.

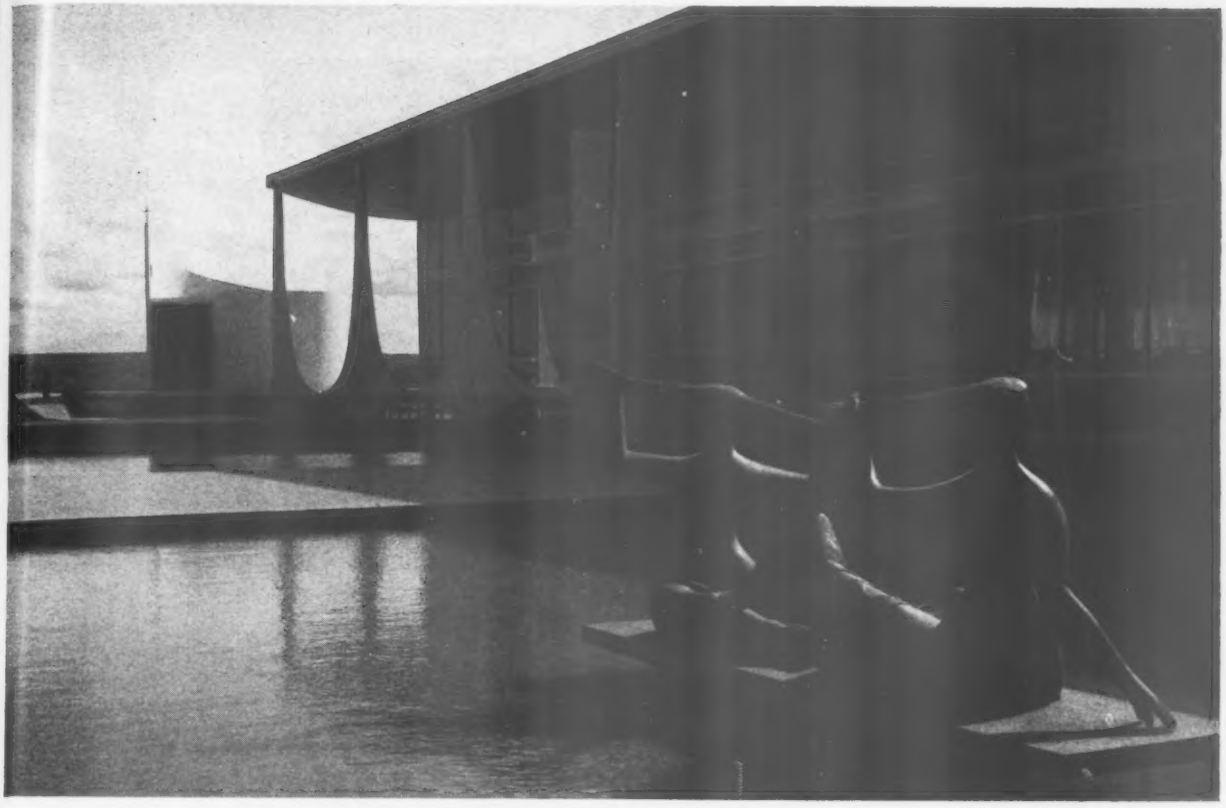
The parliament buildings stand on a wide level platform and consists of three elements: a tower of offices in the form of a double slab, the chamber of deputies and the senate. The two last are circular buildings, one with a shallow dome and the other with a bowl-shaped auditorium. These two buildings are under construction, with their eventual shapes just becoming visible under the mass of scaffolding and timber formwork.

A great deal of housing is under construction, mostly in the form of seven or eight-storey flats. The residential neighbourhoods are subdivided into large squares, separated by belts of trees. Eleven of these squares are being built on now, and more will start soon. Between them they will accommodate 15,000 people. About 170 flats in this and adjoining areas are expected to be ready for occupation by the end of this year, 2,800 by the end of 1959 and nearly 4,000 by the end of 1960.

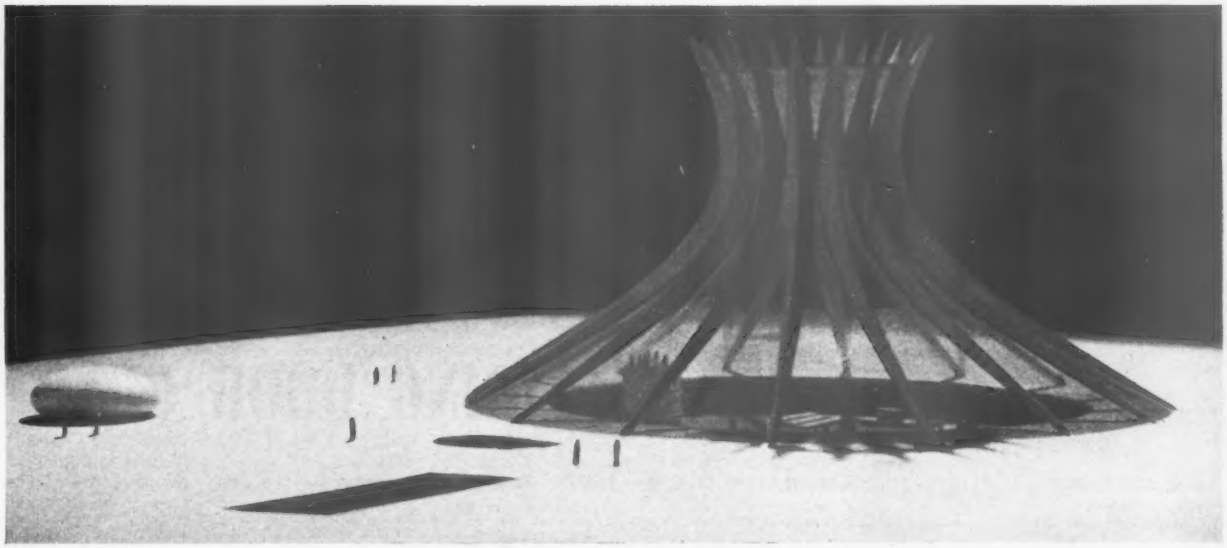
The next public buildings to be started, very shortly, will be the group of ministerial offices (ten of them, to a standard design) immediately west of the parliament buildings and likewise on the main axis. Niemeyer has also designed the supreme tribunal building and the president's offices, which will share the same platform as the parliament buildings, and a conical cathedral with an underground entrance, but the starting date for these has not yet been fixed.

On the main sites they are about to start a system of 24-hour shift work, using floodlights at night to make as much progress as possible before work is slowed down by the summer rains. Work on the ministerial offices, certain essential services like the first shopping centres, schools and a hospital (just about to begin) is especially urgent because the Brazilian government has committed itself to making the move to the new capital in April, 1960.

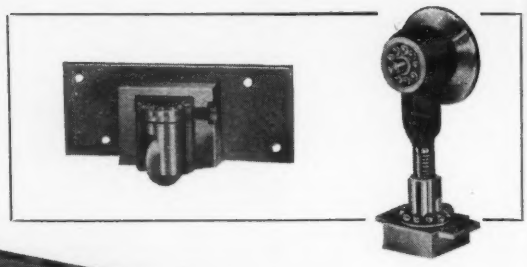
J. M. RICHARDS



The other already completed building, also by Niemeyer, is the president's palace. Like the hotel, it is situated east of the city beside the future lake. Above, the entrance: a paved pathway crossing pools of water. The curved marble-faced pillars support the edge of the raised veranda and throw patches of shade on to it. The circular building beyond is a chapel. Left, from above, with chapel on the left. Below, Niemeyer's design for the cathedral, to be built near the central point of the plan, west of the government buildings. The ribs are concrete, glazed between, and it is entered through a dark underground chamber, reached by descending into the black rectangle, centre left. The egg on the extreme left is the baptistry.



● *Catalogue 55 (184 pages) is available. A large range of standard F|S details ensure accurate joinery and fixing.*



County High School, Ickenham, Middx. County Architect. Builders: A.E.A. Prowting Ltd.

'COLLEGE' & 'COUNCIL'

FOLDING PARTITION GEAR

Made for both End-folding or Centre-folding Leaves

- JOINERY and fixing is readily and economically done by the general contractor with a competent joinery shop. Eminent authorities everywhere specify Henderson Partition Gear with confidence. There is a range of over 25 types for all conditions whether interior or exterior.
- 'COLLEGE' Rollers take the weight on floor. Suitable for screens up to 17 ft. high and openings of any width. Neat B.M.A. or matt chrome finish. Quiet precision bearings. Floor Rail can be danced over.
- 'COUNCIL' Ball Bearing Hangers. Carry the weight from a top beam. Ten track sizes take care of small domestic up to largest assembly hall partitions.
- QUALIFIED TECHNICAL REPRESENTATIVES readily wait upon Architects and Builders everywhere, backed by a full Drawing Office service.
- STANDARD F/S DETAILS readily available ensure accurate joinery and fixing.
- GENERAL CATALOGUE 55 (184 pages). A copy should be in every room in every Architect's office.

Henderson **SLIDING DOOR GEAR**

P. C. HENDERSON LIMITED · HAROLD HILL · ROMFORD · ESSEX *Telephone: INGrebourne* 41111. *London Calls dial IL4*-41111

Sole makers of
'Ultra', 'Tangent', 'Marathon', 'College', 'Council', 'Phantom', 'Mansion', 'Loretto', 'Zed' and 'Sterling' Gear for any door, partition or window that slides or folds.

HIII

THE INDUSTRY

From the industry this week Brian Grant describes coloured aluminium for external use, improved fluorescent lamps, a new bath and a boiler, a hasp and staple and a convector fire.

Exterior aluminium in colour

Readers may remember that at the last Building Exhibition Northern Aluminium were showing colour anodized aluminium sheet for external use. At the beginning of this month ADA arranged at the Building Centre a display of the various colours which have so far stood up to exposure tests of not less than seven years. The samples were shown made up into curtain wall panels showing different types of construction, and including cladding systems, spandrels and windows, and the Association issued a colour chart to show the range at present available. While some people may consider the green and the yellow a little too strident, some of the darker colours, particularly those on the silicon alloys, are quite pleasant and could be used with some success as long as adequate pains are taken over colour matching. At the moment there is no red available, but with the other colours it seems very advisable to go to a good firm of anodizers and listen to their advice. *(The Aluminium Development Association, 33, Grosvenor Street, London, W.1.)*

Improved fluorescent lamps

Philips Electrical are now producing fluorescent lamps with a light output which is from 10 to 15 per cent. greater than in previous types. This improvement is due to a new method of producing and applying the phosphor coating to the inside of the tube. The colour of the light remains unchanged, and the output of the 4-ft. daylight lamp is now 2,800 lumens, an efficiency of 70 lumens per watt. Comparable increases are made in the other sizes. *(Philips Electrical Ltd., Century House, Shaftesbury Avenue, London, W.C.2.)*

New fittings from Ideal

Ideal-Standard have just announced a new bath and a new boiler. The bath is known as the Lowline, and is 5 ft. 6 in. long: it has an anti-splash rim at the sides and head, and can be drilled for taps at the centre or in either corner. Price in white is £18 16s., or £27 2s. 3d. in any of Standards five colours.

The boiler is an open fire domestic type with an hourly output of 30,000 B.Th.U. and is suitable for use with tanks from 30 to 45 gallons, plus a radiator and a towel rail. Finish is grey or cream mottle at £26 and £28. *(Ideal Boilers & Radiators Ltd., Ideal Works, Hull.)*

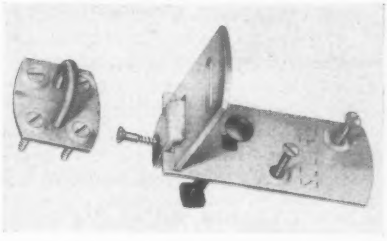
Hasp and staple

The Clam is a new type of hasp and staple which sells for the low price of 3s. 6d. Part of the fixing plate is screwed to the door edge and is therefore inaccessible, and the hinge is pinless, as the hasp floats to allow for any sag in the door. There is thus no hinge pin to be knocked out, and the hasp covers all the staple screws. There is also a coach bolt fixing which goes right through the door, and for a device which is so inexpensive quite a lot of trouble has been taken to make it as thiefproof as possible. *(Henry Squire & Sons Ltd., New Invention, Willenhall, Staffs.)*

Convector fire

The Kleenair fire, recently introduced for smoke control areas, is now being produced in a convector version. It is a single cast iron unit and is easy to install in 16-in. openings with any height from 19½ to 24 in. The convected air is controlled by the ash pit cover and the damper fitted in the throat is also adjustable. Gas lighting is available for only 5s. extra. Cost is £10 in vitreous enamel and the appliance is suitable for heating rooms up to 2,000 cu. ft. *(Bilston Foundries Ltd., Highfields, Bilston, Staffs.)*

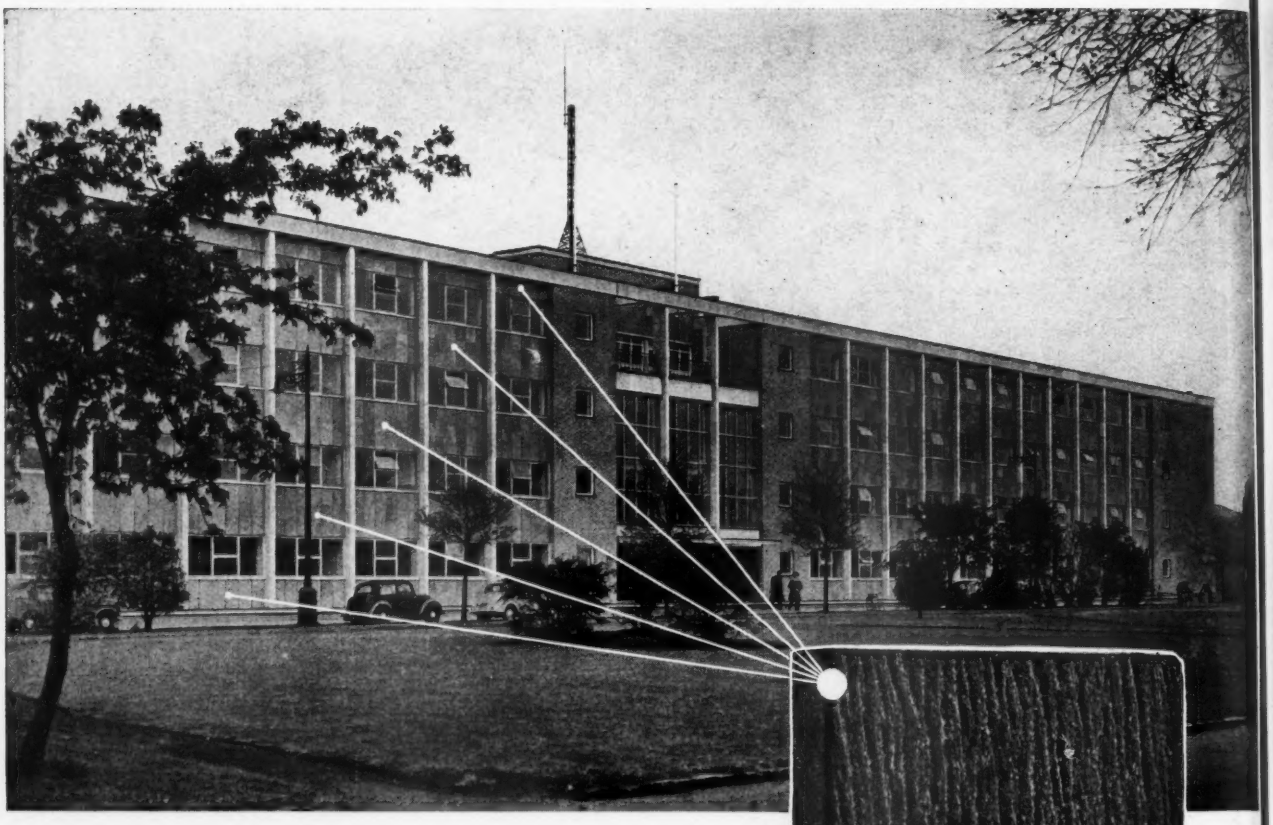
Above, the Ideal-Standard domestic boiler. Below, the Clam hasp and staple.



Below, the Kleenair convector fire.

BROUGHTON MOOR LIGHT SEA GREEN STONE

FRAME-SAWN FINISH



at the new Central Police Headquarters, Hull.
(*Architects: Messrs. Priestman & Lazenby.*)

Broughton Moor Green Stone is ideally suited for use both as internal and external facing, and remains sound for centuries. It can be supplied in a variety of beautiful finishes, including frame sawn, sanded, fine rubbed or naturally riven. It was these characteristics which caused it to be chosen for the facing of this impressive building. Fixing is normally effected by means of non-ferrous cramps and dowels, grouted into drillings in the stone, and brickwork or concrete.

Approximate area of slabs supplied:—12500 ft. sup. in sizes ranging from 3′ 6″ × 2′ 0″ to 2′ 0″ × 2′ 0″.

A section of Broughton Moor Stone, showing the distinctive appearance and texture of the frame sawn finish.

Technical pamphlets showing typical methods of fixing are available as follows: 1, Flooring; 2, Facings; 3, Coping; 4, Cills; 5, Riven Face Slabs.

THE BROUGHTON MOOR GREEN SLATE QUARRIES LTD.

Coniston, The Lake District, Lancashire **Telephone: Coniston 225**

technical section

INFORMATION CENTRE

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

7.69 practice
LONDON BUILDING LEGISLATION

Construction of Buildings in London. LCC (obtainable at County Hall, through a bookseller, or from Staples Press Ltd. 17s. 6d.).

This is a new edition of a book which is a "must" for any architect practising in London. It is in fact a summary and a collation of legislation (and not only LCC legislation) which applies to building work in London. It is not intended as a substitute for the original Acts, and the reader is constantly advised that he should refer to the Acts; but as it states in an intelligible and evidently trustworthy form what the Acts state obscurely, there will not be many occasions when the architect will feel a call to go further.

This new edition includes three vital documents which, to the knowledge of your reviewer, have not been published before. These are not summaries of legislation as such, but codes relating to the three subjects: means of escape in case of fire, the principles governing consents to buildings of excess height or cube, and oil-fired installations. These are matters which the LCC prefers to control not by formal regulations but by taking each case on its merits. The disadvantage of this way of proceeding (as architects are well aware) is that it tends to give too great a responsibility to the officers of the Council, leading to bottomless requirements. The publication of these codes goes a long way to offset this disadvantage. Not only do they save the architect time in the early stages of preparing a scheme but they provide him with a clear exposition of the principles on which his scheme will be judged and thus with a basis for rational discussion. The LCC are to be congratulated on an excellent publication.

10.170 design: building types
HOSPITALS

Hospital Planning for the Anesthesiologist. By William H. L. Dornette, M.D. (Blackwell Scientific Publications Ltd. 119 pp.; 40s.)

This book is not as curious as it sounds. Addressed to anæsthetists, its intention is to give them advice on the planning and equipment of hospitals so that they may ask their architects the right questions: the advice can clearly work in reverse, and after absorbing the material, architects may be well enough informed to suggest the right things to their anæsthetist clients. The book is American and some of its contents are not applicable to the UK. For example, it is usual in America to use operating theatres less intensively than in this country, often there are no more than four major cases per theatre in a day. The operating suites therefore have more theatres for the same number of surgical beds than in Britain and fewer ancillary rooms, since it is not necessary to prepare cases to follow each other in rapid succession. The formula given for working out the ratio of theatres to surgical beds can therefore be disregarded. For the same reason much of the advice given on general planning is only applicable in its context of American practice. The situation is not static, however. In the US there is an increasing call for the provision of separate anæsthetic induction rooms and scrub-up rooms, as is usual in Britain, and, if the Nuffield experimental central sterilizing department in Belfast is a success, new theatre suites here may be based on a central sterilizing and supply department as is now usual in the US.

The book rattles along briskly, scattering sound as well as controversial advice on all subjects, and some experience of hospital design is necessary to sort out one from the other. The section on recovery rooms is good but the section on the "Intensive Care Facility" describes a unit, the merit of which is debatable, and which resembles physically an old-fashioned "Nightingale" ward in Britain, except that each bed position has its own oxygen outlet.

"Intensive care" units are for patients who are at a stage in their illness when almost constant nursing supervision is necessary. The need for such units is to an extent due to the fact that in most new hospitals in the US patients are in one and two bedrooms so that constant nursing supervision is not easy. Supervision in an old-fashioned "Nightingale" ward, with a central nurses' desk is, of course, very easy, but such wards have many drawbacks for patients. A more flexible arrangement of beds in four- or six-bed bays, with single rooms for acutely ill patients placed conveniently for supervision, may accommodate patients at all stages of their illness without the need to transfer them to special departments.

The book has a good section on electrically conductive floors, and other rather sketchy sections on lighting, air conditioning, electrical and mechanical installations and communications. In addition to the operating theatre and its ancillary rooms and those departments mentioned above, it has sections on delivery suites, emergency suites, diagnostic radiology, clinical laboratories and blood banks, central services and the pharmacy, and has a few words to say on many other hospital facilities as well. The scope of the book is therefore very wide, extending far outside the anæsthetist's special province, the anæsthetic room. On the other hand, useful information about departments outside the theatre suite (which occupies less than half the book) is often skimpy. The book is illustrated with photographs and diagrams (but no plans) and some terrible comic drawings which give a quite inappropriately light-hearted air to what is in fact a serious reference book.

10.171 design: building types
TEACHING OF SCIENCE

The Teaching of Science in Secondary Schools. (John Murray (Publishers) Ltd. 17s. 6d.)

This is a compendious work compiled by a Joint Committee of the Incorporated Association of Assistant Masters and the Science Masters' Association. The first edition, although published in 1947, was compiled in 1939, the delay in publication being due to wartime restrictions. This revised edition has been prepared in the light of substantial changes that have taken place in methods of science teaching, materials available for building and equipping laboratories, and the growing importance attached to scientific education.

The book is especially addressed to those who *teach* science subjects in Grammar Schools but frequent references are made to Science in Secondary Modern Schools. The contents include a short history of science teaching, discussions on apparatus, methods, teaching aids, examinations, and the legal responsibilities of science teachers. A large amount of space is given to a detailed survey of the planning and equipment of school laboratories and it appears that this subject is treated in greater detail than is the case in any other modern book published in this country.

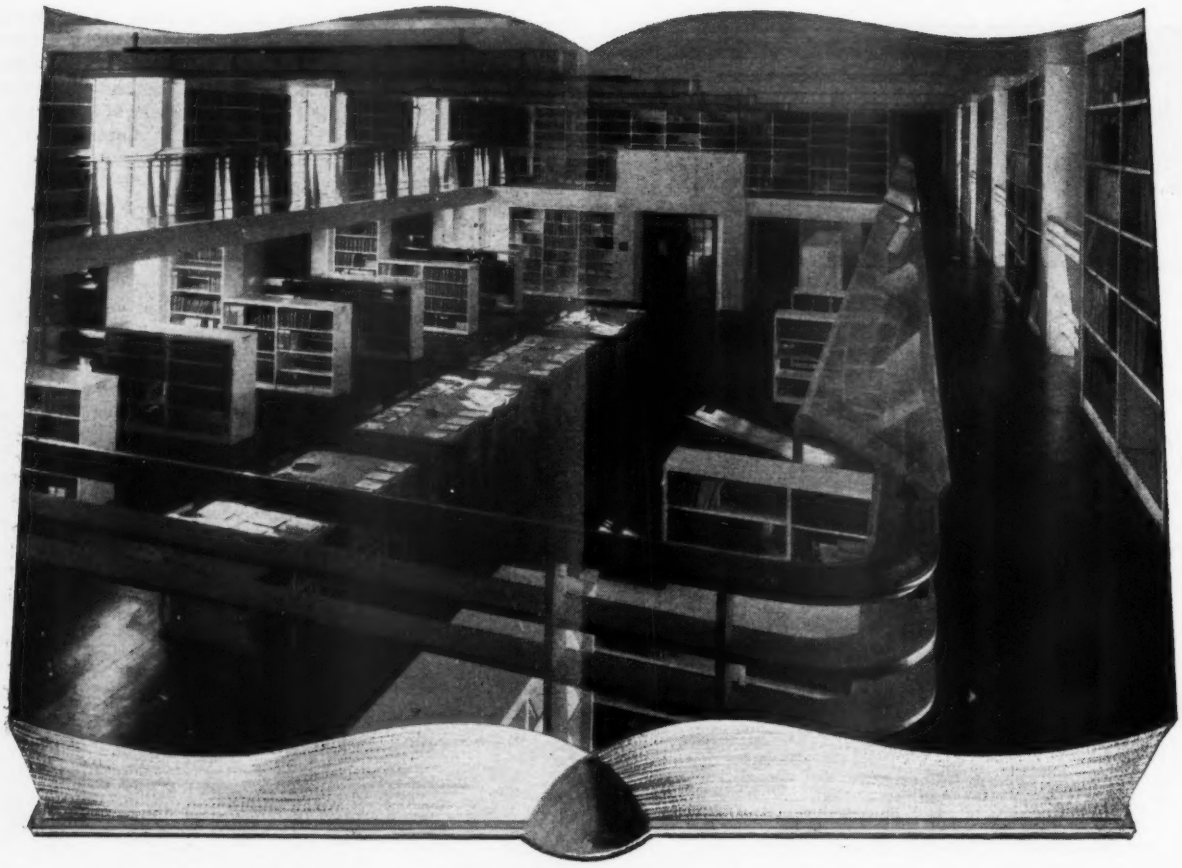
The section on Accommodation for Science Teaching deals mainly with Biology, Chemistry, and Physics Laboratories for Grammar Schools. The authors note that in some schools economy may force the adoption of dual purpose laboratories but emphasize the view that really adequate science accommodation must involve separate laboratories for the subjects mentioned.

There is a careful science teaching bibliography which reveals the paucity of literature on the planning of school laboratories and thus, fortuitously, emphasizes the need for this book.

23.230 heating and ventilation
FUEL COSTS IN SCHOOLS

Fuel Consumption in Schools (First Supplement to MOE Building Bulletin 13), *Test with Oil-fired Warm Air System* (HMSO. 9d.)

The essence of MOE's attack on the problem of school heating consists in an appreciation of the fact that in a building of low thermal capacity and which is used intermittently, the more intermittent your heating the more you will save. It was this which suggested warm air as the most likely method of heat distribution in the first place; and the justification of this choice is to be found in the evidence published in Bulletin 13. Following up this line of



LUXFER BOOKSTACKS AND LIBRARY EQUIPMENT

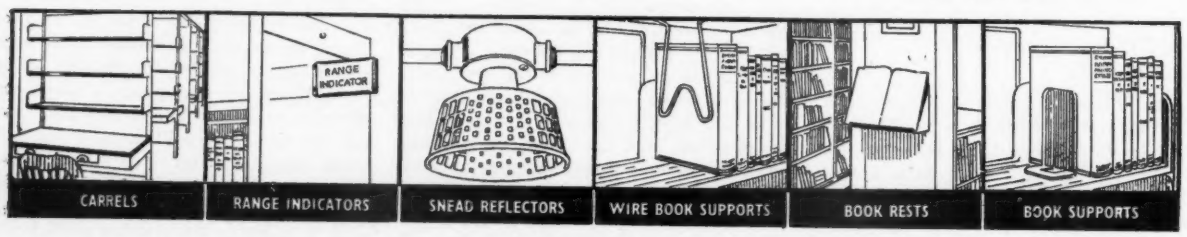
If you are planning a new library, modernizing an existing library or considering the addition of a few bookstacks, consult: LUXFER LIMITED who specialize in the manufacture, planning and installation of Snead Bookstacks. Please write for literature on "Snead Bookstacks and Library Equipment."

LUXFER

Manufacturers of METAL WINDOWS, LANTERN LIGHTS, FERRO-CONCRETE PAVEMENT LIGHTS, BOOKSTACKS and PARTITIONS

WAXLOW ROAD · HARLESDEN · LONDON · N.W.10

Telephone: ELGAR 7292-5 *Telegrams:* LUXFER, HARLES, LONDON.



thought, MOE then argued that the savings would be even more pronounced if that fuel was used (*i.e.* oil) which best lends itself to intermittent firing. The result of following this up is published in this supplement. Comparing a winter's oil-firing in a test school with previous results (scaled down to the same design heat load) in other schools with coal and coke firing shows an annual fuel bill of £175 as against estimated fuel bills of £166-£229 using coal and £194-£250 using coke. Not perhaps spectacular, but decisive when you reflect that the unit price of coal and coke is certain to go up more rapidly than that of oil.

An interesting sideline which emerges from this study concerns the ability of a lightweight structure to retain heat when the heat source is turned off. It has been assumed by many that buildings of low thermal capacity (especially when they have a lot of glass!) give up their heat readily when the source is turned off. A comparison of the inside/outside temperature graphs given in this supplement shows that they don't.

24.206 lighting
DAYLIGHT TABLES

Simplified Daylight Tables. National Building Studies Special Report No. 26. (HMSO. 1s. 9d.)

Achieving sufficient daylight in a building is usually a question which the architect must consider at sketch design stage, very often at just one or two critical points where it appears doubtful. A simple and rapid check is all that is needed, to give an approximate estimate of the situation in each case, but the existing methods of calculation tend to be somewhat elaborate and too time consuming for this type of assessment, besides giving an unnecessarily high degree of accuracy.

The tables in this publication are thus very welcome, being specially intended for this type of quick checking in the early stages of design. They include ones which can be used for the direct light from the sky, and for that reflected from the internal surfaces of a room. Examples are given to show various ways in which the calculations are carried out in practice and a short period of concentrated study is all that is required to become familiar with the technique.

It should, perhaps, be pointed out that the tables can only be used for vertical glazing, and are thus not applicable to sloping or horizontal glass in monitors, roof lights, and so on. But it is fairly evident that for these more complicated situations, the technique would tend to become more cumbersome, and thus offer little advantage over the BRS protractors or other established methods. How much better and more convenient it would be for architects, however, if this publication were combined with the six other standard methods referred to in the text, so as to form one single handbook on daylight calculation, with a simple and clear explanation of each, and when precisely it would be the best one to adopt.

10 DESIGN: BUILDING TYPES

user requirements for laboratories, 4 school laboratories

W. H. Pritchard of Courtaulds, the Chairman of BSI's Technical Committee on Laboratory Furniture and Fittings, resumes his series of articles on User Requirements for Laboratories* by considering in detail the requirements of schools. After first describing the important changes which have taken place since the war in the curriculum, he considers in turn how much space, what furniture and what services will be needed in Physics, Chemistry, and Botany and Biology Laboratories to teach these disciplines both to Ordinary and to Advanced GCE Level.

Specialist nature of school laboratories

It must be accepted that school laboratories have their own especial characteristic problems. They exist to facilitate the *teaching* of science to young people and not for the purpose of carrying out highly specialised *research*. The research laboratory, particularly the industrial research laboratory, is planned on the basis of research within a fairly restricted field of one or more scientific disciplines. Furthermore, the industrial laboratory is designed on the basis of occupation by the same people for five or more days a week throughout the entire year.

There are dangers in attempting to use the basis of planning of an efficient industrial research laboratory as a model for a school laboratory. It is by no means uncommon that when funds become available for a new school laboratory the science master and architect will set off on a series of visits to impressive industrial laboratories to "pick up ideas." The results of other people's experience are valuable provided that they can be properly interpreted and their true relevance assessed. Failure in this respect can easily lead to unnecessarily exacting specifications for services and materials and a basis of planning that is unsuited to what should be neither more nor less than the most convenient type of class room for teaching the practical aspects of a particular branch of science. The teaching laboratory must be related to the educational structure of the country. The statement is axiomatic, but an examination of pre- and post-war university requirements will reveal a change of

* Earlier articles in this series appeared on May 30, June 6, and August 29, 1957.

..a BILSTON bath will be perfect...

ATLANTA

SPECIAL FEATURES

Choice of lengths includes 72", 66", 61", 60" and 54".

Atlanta flat bottom helps to prevent slipping — a point of special importance if a shower is fitted.

Shallow step is safe for young and old. The Atlanta can be fitted to give an overall height of only 16".

Taps can be fitted in three different positions, to meet all possible requirements.

Corner tap mounting facilitates installation and maintenance.

Supplied with or without overflow — with or without handgrip.

The Atlanta costs no more than an ordinary bath

With perfection in mind, a Bilston bath is the natural choice. Bilston design and finish have instant appeal. Bilston quality is appreciated year after year, as its beauty remains unimpaired by the passing of time. The Bilston range includes the exact colour required for any decorative scheme.

WE HAVE AN EXHIBIT AT THE BUILDING CENTRE 26 STORE STREET W.C.1

Bilston

—the bath *SPECIALISTS*

- **Atlanta**
- **Magna**
- **Cresta**
- **Marina**
- **Mermaid**
- **Bermuda**

A BILSTON BATH

BILSTON FOUNDRIES LTD · BILSTON · STAFFORDSHIRE · *Illustrated literature is available on request.*

technical section

emphasis in requirements and distribution of laboratories as between schools and universities.

Formerly entrance to a university course could be obtained by passing the long established Matriculation examination. Courses in preparation for the Intermediate B.SC., or equivalent, examination were often available as part of the period of study at the university. Most university colleges no longer provide courses in preparation for the Intermediate B.SC. examination. It is therefore generally necessary for applicants to pass or gain exemption from the Intermediate examination before entry to the university. Such qualifications may be obtained through a General Certificate of Education with passes in appropriate subjects at Advanced level.

The changed regulations have produced enormous demands for enhanced school laboratory facilities. The old Matriculation examination gave practical laboratory work relatively little value. In the basic science subjects taken at Advanced level GCE, a "practical" forms an important part of the examination and tuition in this respect must now form part of the *school* course.

There are additional factors intensifying the pressure on school laboratories. The Advanced level GCE is usually taken after two years in the VIth form. There is considerable competition for university places and thus many pupils, having already obtained "A" level remain at school for a third year in the VIth form.

The "Third year VIth former" waiting to go up to university may spend that time attempting a University Open Scholarship (or a similar award) and/or a piece of elementary research. Either activity will mean that more time is spent in the school laboratory and frequently on experiments where the apparatus is set up for a few days rather than an afternoon. In terms of both space and time the "Third year VIth former" tends to make heavy demands on the school laboratory. This, among other considerations, makes it undesirable that the junior and senior parts of the school should be forced to share the same laboratory.

Requirements for entrance to a science degree course vary between universities, but as they will obviously affect the entire planning of school science laboratories a broad general concept is essential. The following regulations apply to a particular university but with minor variations may be regarded as typical.

Candidates for admission to any course leading to a Bachelor of Science degree must:

(*a*) Have passed the General Certificate of Education at Ordinary level in at least six subjects.

(*b*) Have passed the General Certificate of Education at Advanced level in Mathematics and two science subjects.

Any school is liable to have pupils with the ambition of taking final degrees in subjects ranging from botany to zoology. It is highly improbable that the school will be able to afford laboratory facilities in all branches of science and we must therefore look for "common denominator" subjects that will satisfy the regulations for the widest range of final specialisation. The table below is typical of subjects that satisfy conditions (*b*) of the entrance requirements already stated.

Subject of Final B.Sc. Degree	*Subjects required at Advanced Level GCE*
Botany	Botany or Biology, Chemistry and one other science subject
Chemistry	Chemistry, Physics and one other science subject
Geography	Geography and two science subjects
Physics	Physics, Mathematics and one other science subject
Zoology	Zoology or Biology, Chemistry and one other science subject

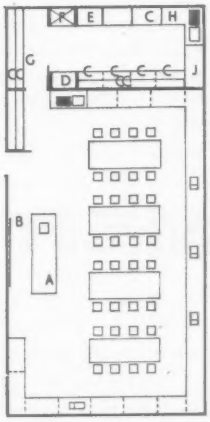
It is apparent that the school teaching biology, chemistry, and physics to "A" level will enable its pupils to qualify for admission to a very wide range of degree courses. Where stringent economy is essential chemistry and physics must remain basic subjects.

Upper and lower school laboratories

On the assumption that the pupil intends to satisfy university entrance requirements of the nature stated we may examine the stages and the minimum laboratory facilities that are essential to each.

The first stage, that of passing six "O" level GCE subjects, will be done in the Lower School. At this stage the aim should be general education rather than specialised knowledge. Although not desirable it is nevertheless possible to teach all normal Ordinary level science subjects in a single General Science laboratory. Such a laboratory should be planned on the basis of 25-30 pupils and it should have an area between 900 and 1,000 sq. ft. Immediately adjacent to the laboratory a room of about 250 sq. ft. should be provided for preparatory work by the science teacher and/or the laboratory technician, and the storage of chemicals and apparatus. An economical layout of a General Science laboratory and its preparation room is shown in Figure 1. Pupils using this type of laboratory will normally be in early adole-

Fig. 1. Typical laboratory layout in a 40-ft. × 24-ft. room.



KEY
A. Demonstration bench
B. Chalkboard
C. Low cupboard
CC. High level cupboard
D. Tall cupboard
E. Glass tube rack
F. Fume cupboard
G. Winchester bottles
H. Asbestos top
J. Workbench

technical section

scence and a bench working height of 2 ft. 9 in.-2 ft. 10 in. will probably be more convenient than the commonly encountered 3 ft.

Services must be provided to facilitate the teaching of differing subjects; and as far as possible the terminations should be fixed to the walls in order to simplify bench construction.

For Advanced Level work a laboratory should be provided for each discipline that is taught. It is reasonable to assume that classes will be smaller but space requirement per pupil is higher. Classes of 15 pupils require a laboratory with a floor area of about 600 sq. ft. Bench provision should be calculated on the basis of at least 6 sq. ft. per pupil. A workshop-cum-preparation room is essential.

Laboratory layouts

Individual laboratory layouts will obviously depend upon the geometry of the room and the subject taught therein. When the type of layout is being decided consideration should be given to possible economies arising from the use of loose tables instead of the conventional heavy fixed benches, except in the case of chemistry laboratories. For most other work the requirements can be met with loose tables for two or four pupils per table and wall benches with mains services. We may therefore consider the principal requirements of the subjects most likely to be taught and as we have already observed, chemistry and physics must be regarded as first essentials.

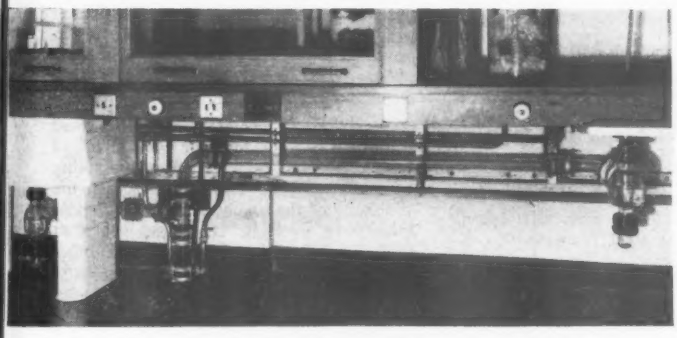
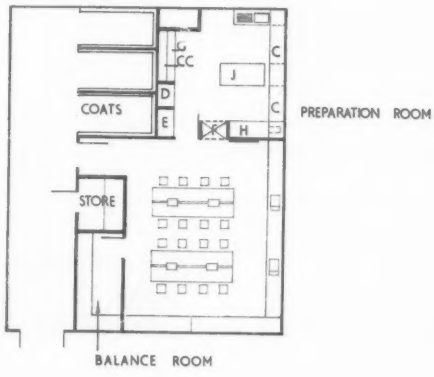


Fig. 2 (above). Glass traps in waste lines below sinks in a teaching laboratory. Fig. 3 (below). Typical advanced chemistry laboratory.

KEY
A. Demonstration bench
B. Chalkboard
C. Low cupboards
CC. High level cupboards
D. Tall cupboards
E. Glass tube rack
F. Fume cupboard
G. Winchester bottles
H. Asbestos top
J. Workbench



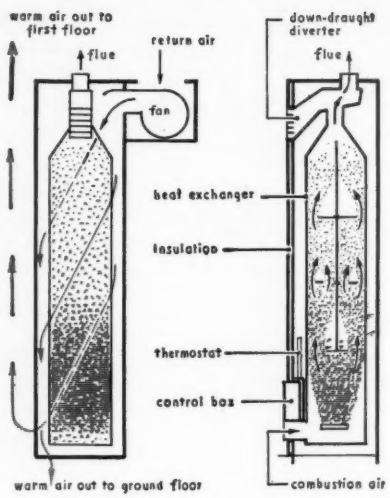
Chemistry: From the aspects of economy, convenience, and safety an arrangement of double sided island benches seems most suited to a chemistry teaching laboratory. Sinks will be required within easy distance of all working places; gas and water taps must be provided on the basis of about one per pupil. The necessary plumbing for these services pre-determines the use of fixed benches. A convenient double bench width is 3 ft. 6 in.—4 ft. and length should be determined on the basis of 3 ft. run per working place. Some fume cupboard provision is essential, but for curriculum work up to "A" level one 3 ft. 6 in. sash for every 12 pupils should be adequate; in practice the requirement can be met by providing one fume cupboard near the teacher's demonstration bench and another in the preparation room. Fans should be fitted to give a lineal air velocity of 50 ft. per minute with the sash half closed.

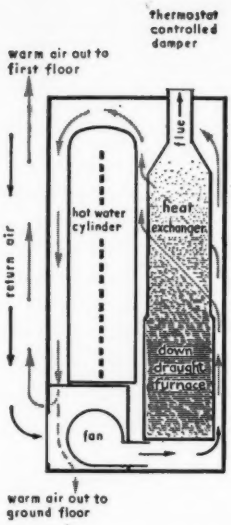
Particularly in schools the plumbing from chemistry waste sinks has assumed an almost mystical importance. At one time it was assumed that for a high class job it was essential to use " chemical lead " piping for this purpose. The material is expensive, needs support at frequent intervals, and in contact with mercury forms a soft amalgam with resultant holes in the pipe-work. Sooner or later some mercury is bound to go down the sinks; in one school for a short period it assumed a rate equivalent to about 1 cwt. a year! With lead plumbing even a small fraction of this amount would be disastrous, but in any case it is an expensive commodity and should not be allowed to run to irrecoverable waste. With the object of allowing easy recovery of mercury and providing some measure of dilution of strong chemicals poured down laboratory sinks, it became customary to fit catch pots or " receivers " under chemistry bench sinks. These took the form of ceramic tanks holding roughly a cubic foot of water to act as a buffer between the laboratory sink and the effluent piping. The tops of the tanks were usually open or, at best, provided with loose fitting covers, and there was straight free discharge from the sink into the receiver. Blockage of the junction of the receiver and the waste system could produce an overflow that was not immediately apparent to the user of the sink and where the laboratory was other than on the ground floor the overflow was usually first noticed by the occupants of the room below. This is not the only drawback of the ceramic receiver. The recovery of mercury and some immediate dilution of chemical waste can now be more efficiently effected by fitting glass traps immediately below laboratory sinks. An illustration of a simple arrangement of this type in a teaching laboratory is given in Fig. 2.

The size of "A" level chemistry classes will obviously vary from school to school and generalisations on ideal laboratory layout thus become extremely difficult if they are to avoid being misleading. For a class of 15 or 16 pupils the arrangement shown in Fig. 3 is essentially practical. The main laboratory is simple and is designed on the basis of eight working

DUCTED WARM AIR

gives a HIGHER COMFORT STANDARD than ANY OTHER HEATING SYSTEM





The best DUCTED WARM AIR system is called RADIATION DUCTAIR

These are the main advantages of ducted warm air heating:—

Speed of response—adjustment of the room thermostat alters temperature faster than is possible by any other system (e.g. to raise a room of 1500 cu. ft. from night background temperature of 55°F to 'breakfast-time' 60°F takes only 20 minutes, where insulation is to Egerton standards.) As soon as the thermostat calls, the full rated output of the unit is made available.

Flexibility. Speed of response means fuel economy can be effected by turning down the thermostat when rooms are not in use, knowing that the temperature can be restored quickly when required. (This is very valuable in, e.g., schools where intermittent heating is required.) For further economy whole rooms can be "turned off" by closing outlet grilles.

Uniformity of temperature distribution. *Low level* discharge and high level return allow very low temperature gradients. This avoids that "cold feet and hot head" feeling characteristic of some older systems.

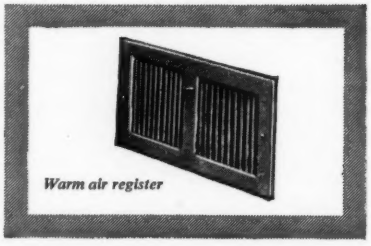
Freedom of planning—by heating the *whole* building *all* the enclosed space becomes useful space. Ducts are easily accommodated at planning stage and they make no demands on wall space. Outlet and return grilles are unobtrusive. Ducted warm air makes both "open" and conventional planning easier and offers scope for new ideas.

Clean heating—since warm air is "moved" into the room—instead of merely rising from an outlet—there is no discoloration of walls. (The warm air has, of course, no contact at any point with flue gases.)

Ventilation—the circulation of warm air is stimulating to the occupants and does away with the "heavy" feeling associated with earlier forms of central heating.

Clothes drying—efficient drying cupboards can be incorporated simply and cheaply. This is of particular value in multi-storey flats.

Drying out. A warm air system can be used to speed the drying out of new buildings for early occupation.



Warm air register

Here are the reasons why:—

Running costs—Radiation engineers take running costs to be the true efficiency index of an appliance. Here is a short example—many others, in detail, may be seen on request. *Bungalow at Oulton Broad, Suffolk. 1500 sq. ft. insulated to Egerton standard. Heated by Ductair 0.50. Average oil consumption over 2 years (heating period 1 Oct. to 31 March) . . . 625 gallons domestic fuel oil. Standard of heating attained: Living room 60°F. Bedrooms 55-60°F (day and night averages.)* N.B. plus *domestic hot water during heating season. Out of season hot water by immersion heater.*

Installation costs—the Ductair system is cheaper than, for example, a fully thermostatically controlled radiator system using comparable fuel. Detailed comparisons are available.

Precision construction—tailored to the particular requirements of each contract, all Ductair is of the highest workmanship. This is essential in producing units of accurately predictable performance to give years of trouble free service.

Nationwide network of Radiation-trained stockists. To speed design and on-site work, Radiation have established more than 40 fully trained area stockists to provide real "head office" attention near your site. Regional design specialists can be called in by any stockist to meet new or unusual problems. Radiation offers a full after-sales service for Ductair equipment.

10 years' working experience in Britain. After a detailed examination of the best American practice in this field and research, Radiation have developed the Ductair system over ten years. This gives Radiation unrivalled experience *under the actual climatic and living conditions peculiar to this country.*

50 year background of research and experiment Radiation technicians, for well over 50 years, have been concerned with making better use of fuel. This is reflected in the simplicity of the highly efficient equipment they have evolved. It means too that Radiation engineers have an unusual ability to see their own system against a background of many alternative systems—an understanding particularly valuable at discussion stage.

RADIATION DUCTAIR is more than just another central heating system. It offers a fully integrated service to architects and builders. Its aim is to raise comfort standards and to make possible the more efficient use both of fuels and building space.

DUCTAIR units (of all sizes, powered by Solid Fuel, Gas, or Oil) have been successfully installed in buildings of all kinds—from houses to shops, flats to schools, churches to pubs. Write to us about the sort of buildings that are of interest to you. We particularly welcome new problems—we've been solving them all our working lives.

DUCTED WARM AIR *systems offer all these advantages and, where required, hot water can be produced by utilising the heat of the appliance "when idling". There is clearly a strong case for warm air heating as such—but which particular system? We believe that* Radiation Ductair *is best able to answer your needs.*

Radiation DUCTAIR

RADIATION GROUP SALES LTD., WARM AIR DIVISION, 10 MORTIMER STREET, LONDON, W.1

technical section

"sets" or pairs. Opinions of teachers vary as to whether "A" level pupils should work individually or in pairs, but in practice the amount of apparatus available usually enforces the latter system.

A balance room having a floor area of about 120 sq. ft. should form part of the laboratory. Provision of balance benches should be made on the basis of 2 ft. 6 in. run of bench for each balance. If it is known that the laboratory will have six sensitive balances it is better to provide three 5 ft. long benches rather than a single bench of 15 ft. Balance benches should not touch each other or the walls and it is essential that they are not in contact with pipes or conduit as these often transmit vibration from remote parts of the building. The balances used will not be of the most sensitive type available, but reasonable care should be taken to avoid vibration, dust, and fumes in the balance room. Strong sunlight, sudden temperature changes, and draughts must be avoided.

A preparation room having an area of about 120 sq. ft. should adjoin the main laboratory. The room will be used for a number of purposes, including:

(*a*) Preparation of standard strength reagents by the laboratory technician, and probably for keeping bulk stocks of such solutions in aspirator bottles. A lead or similar resistant material tray should be provided on the floor to catch drips from the stock solution bottles and prevent damage to floor covering and screed.

(*b*) Construction of elementary glass apparatus by either the science master or the technician. A stout asbestos topped bench should be provided, equipped with a gas blow pipe, with a means of obtaining a steady supply of compressed air at a pressure of about 7 lb. per sq. in.

(*c*) Washing up glass apparatus, including burettes. A large wash-up sink, about 36 in. × 24 in. × 12 in. deep, is necessary, together with an ample supply of hot water. This is the only sink in the chemistry laboratory where a hot water supply is essential and it is often convenient to provide the service from a domestic type gas heated geyser.

(*d*) The source of distilled water should be located in the preparation room. The ion exchange column provides the chemical equivalent of distilled water at a fraction of the cost of condensate distillation and does not need either a source of heat or a drain for running cooling water to waste.

In the course of legitimate experiments pupils will use the main laboratory, balance, and preparation rooms. Chemistry offers a fascinating range of experiments that are not legitimate and these can be highly dangerous both to the pupils and others. The materials for such "experiments" are often acquired surreptitiously from laboratory bulk stocks. But such schoolboy pranks can end in disaster. The risks in this direction cannot be entirely eliminated, but they can be materially reduced by lessening opportunities for "acquiring" dangerous chemicals, particularly in bulk or undiluted form. A small separate store room from which pupils are strictly precluded is a great asset to a school chemistry department.

Physics: Most physics experiments do not entail constant access to a sink and the laboratory can be planned on the basis of plain portable tables that can be pushed up to service terminations carried on walls or service strips. A stout table about 5 ft. × 3 ft. 6 in. will provide sufficient accommodation for two pairs of pupils for most work. A few small shelves, for carrying relatively sensitive galvanometers, should be provided on a vibration free wall, away from direct sunlight. The galvanometer shelves should be kept small, about 8 in. square, and a height of about 4 ft. 6 in. from floor level will be convenient for most work.

The physics curriculum covers light, heat, sound, electricity and magnetism. Frequently the first part of the subject receives undue emphasis when the school laboratory is being planned and this may result in demands for facilities to ensure complete blackout of the entire laboratory. Complete blackout of the whole laboratory is both expensive and unnecessary. If the room has a high level of natural illumination and no shady corners blinds must be provided to give partial dim out for a section of the laboratory. Very few curriculum experiments require anything like complete darkness and it is inconvenient for the whole class to attempt such work simultaneously. A properly screened or curtained section of a room, about 6 or 7 ft. wide, including a length of side bench, is entirely adequate for all work in physical optics up to degree standard. Curriculum experimental work provides no basis for demanding that a photographic dark room be attached to the school physics laboratory. It may well be considered that a photographic dark room is a very desirable general amenity for the school and in that case it will often be found convenient to locate it near the physics laboratory preparation room.

It is sometimes suggested that the physics and chemistry laboratories should share a common preparation room. There are many technical reasons against this suggestion, but even ordinary housekeeping would suggest that it is an extremely dubious economy. The physics laboratory preparation room or workshop can be a most valuable asset not only to that department but to the school as a whole for there are many science masters whose skill in devising and making apparatus is a source of inspiration both to their pupils and colleagues. The workshop or preparation room should have an area of 150-175 sq. ft. and, in addition to cupboards and shelves for the storage of apparatus, it should also contain the following minimum items of equipment:

(*a*) A stout work bench, with both engineer's and carpenter's vices.

(*b*) A motor driven lathe, with accessories.

(*c*) A power driven drilling machine to take drills up to $\frac{1}{2}$ in.

(*d*) A well-insulated ice box, or, if it is not possible readily to purchase ice in the locality, a refrigerator should be provided.

(*e*) A storage battery to serve the main laboratory, together with the necessary charging equipment. The

technical section

electrical capacity of the battery, and thus its physical size, will depend upon numbers in the class. Twelve volts is a reasonable maximum potential and current can be estimated on a maximum basis of 3 amps. per pupil.

(*f*) Distilled water will be required in the physics laboratory from time to time, but there is no point in installing a still or ion exchange column in the physics laboratory workshop if treated water can be obtained from the chemistry preparation room.

The physics laboratory should be reasonably free from vibration; as a rough and ready standard a halfpenny stood on its edge on the bench should remain upright for at least two minutes. Both steel furniture and steel partitions should be avoided in the school physics laboratory as their presence complicates simple magnetic experiments. Ideally for the same reason iron pipes and conduits should be avoided, but where this is not practical the pipe or other magnetic material should be left exposed in order that probable causes of magnetic errors can be spotted by intelligent pupils. One or two suspension beams should be provided to facilitate mechanical physics experiments, they may be of timber or light r.s.j. section, about 8 ft. long, and capable of supporting loads up to 5 cwt. An alternative is the provision of a series of stout eye bolts each capable of taking a load of about 2 cwt.

Although a small number of sinks is desirable in a physics laboratory no special precautions need be taken with regard to effluent as, in general, water will mainly be used for cooling purposes. Normal good quality fittings may be used for the waste system.

Biology and botany: It is undesirable that chemistry and physics classes should be forced to share the same laboratory. There are considerably fewer objections to the more closely related subjects of botany and biology being taught in the same room; unless the school is well staffed it is probable that both subjects will be taught by the same person.

Biology/botany students should have access to a greenhouse or garden room, but where this is not possible a Wardian window should be provided. This is, in effect, a minature greenhouse and it should be about 10 ft. × 2 ft. on plan and run from floor to ceiling, with a south aspect and the minimum of obstruction to sunlight. It should be glazed on both inner and outer walls and provision made for good external ventilation to prevent "damping off" of plants, etc. The Wardian window must have its own heating arrangements entirely independent of the general heating system of the school. Electric soil heating cables are very suitable and call for no attention by caretaking staff when the school is closed. The floor of the "window" should be lined with metal sheet, to take a soil depth of 2 ft. if required, and provision must be made for drainage. Blinds should be fitted to control sunlight for the study of photo-synthesis in plant life. Photo-actinic light, *e.g.*, mercury vapour, may be provided for the artificial simulation of these effects.

A high proportion of elementary biology/botany does not require any services and may therefore be carried out on a moderately stout movable table. A table 3 ft. 6 in. square should provide sufficient working space for four pupils for a large amount of class work. In addition to movable tables a biology laboratory for a class of 30 should have at least 15 ft. of fixed wall benching, with three large sinks, about 24 in. × 18 in. × 10 in. deep, and a microscope bench under the window. A popular type of microscope bench is 2 ft. wide, with the top surface 2 ft. 3 in. above the floor. Chairs with seats 15 in.-16 in. high are required for working at this type of bench. Two or three stout benches a little above normal height, say, 3 ft. 6 in., should be provided for aquaria and vivaria. It should be borne in mind that the full use of these items may entail some service provision, electricity, water and drainage.

Various types of projectors are frequently used in teaching biology and botany. They include the simple "still" film strip projector, the epidiascope, the cine projector, and in some cases even the projection microscope. All require some degree of room darkening, but in the case of the projection microscope good total blackout is essential. The projector operated from behind the screen has attained some degree of popularity and this entails an aperture of about 4 ft. sq. in the class room wall, fitted with a translucent screen. A simple projection recess about 6 ft. × 5 ft. is required at the back of the screen.

Services

Electricity, gas, and cold water may be regarded as the only services that merit general distribution in school laboratories. Compressed air and vacuum are not essential for pupils' practical work up to "A" level and limited demands for these services can best be met by small localized pieces of equipment serving one or two working places reserved for demonstrations or extra-curriculum work carried out by senior pupils in the third year VIth form.

Any school laboratory course must be designed to illustrate the *principles* of the branch of science in question and teach the pupil:

1. A range of basic experimental techniques and the use of standard equipment.

2. The habit of critical assessment of apparatus and results of experiments.

3. Recording clear accounts of experiments and the clear presentation of results.

No elaborate services are required to fulfil any of these aims and the more clearly the laboratory emphasises the need to learn the fundamental principles of science, with the simplest services and equipment, the more surely is the foundation laid for the training of future scientists.

After the general layout of any particular laboratory has been established it is essential that the type, number, and positions of service points should be decided as soon as possible. Requirements will vary with different types of laboratory, but may be briefly reviewed under main service headings.

technical section

Mains voltage electricity: The notes given here are based upon the assumption that the mains voltage electricity will be distributed as single-phase alternating current, at the usual frequency of 50 cycles per second, within the potential range 200-240 volts.

In Lower School or elementary science laboratories mains voltage outlets are not required at pupils' working places. Two 13 amp. sockets should be provided on the teacher's demonstration bench and three similar switch sockets at convenient intervals along a side wall bench for visual aid equipment. Four 13 amp. switch sockets should be provided in the preparation room. It is desirable that all mains sockets in the elementary laboratory should be controlled by a single master switch, preferably located in the preparation room.

For Advanced Biology laboratories 2 amp. sockets for microscope lamps and similar light current apparatus should be provided on the basis of one socket for every three pupils. There is no need to provide 12 volt points for low voltage microscope lamps, for, if these are required, simple inexpensive local transformers will provide low voltage without the need for a special wiring system. Two or three 13 amp. switch sockets should be provided for heavier current apparatus and a socket of this rating should be provided in the Wardian window for supplying soil heating cable.

In Advanced Physics laboratories 5 amp. switch sockets should be provided on the basis of one for every pair of working places and four or five 13 amp. sockets should be allowed for semi-permanent apparatus rigged on side benches.

For Advanced Chemistry laboratories one 2 amp. socket for each pair of working places should be ample for pupils' general use. Four 13 amp. switch sockets should be provided on side benches for drying ovens, etc. In the balance room two or three 2 amp. sockets should be installed for supplying balances with illuminated scales; low voltage is sometimes requested for this job, but again the use of small transformers will avoid the necessity for special wiring.

Preparation rooms attached to either of the above types of laboratory should have four or five 13 amp. switch sockets for supplying stills, electric drills, and similar ancillary equipment.

Low voltage direct current: Normally pupils will not handle mains supply voltages except to plug in a piece of standard equipment; where they have to carry out experiments involving circuit wiring this is usually done with a low voltage direct current supply. Opinions vary as to the optimum voltage for pupils' work, but it should be borne in mind that there is a very wide range of simple equipment, small lamps, motors, etc., that has been designed for the standard motor car 6 or 12 volt systems. Twelve volts is suitable for most simple experimental work. The immediate source will be a battery kept charged with a suitable rectifier. The conventional lead-acid accumulator will give good service providing that it receives adequate maintenance and is not badly treated electrically, *i.e.*, that short circuit or gross overload conditions are avoided. For all practical purposes the output potential per unit cell is two volts. Nickel-iron cells are more expensive to install, but are much less exacting with regard to maintenance and will readily withstand electrical treatment that it would be unreasonable to apply to lead-acid batteries. It should be borne in mind that the output potential per unit cell is rather low, 1.2 volts.

A simple pair of terminals is the most suitable way of supplying low voltage d.c. at pupils' working positions. It is preferable that terminal heads should be of the insulated captive type; purely for mechanical strength the terminals should be of the type that is rated in electrical catalogues as being suitable for currents of 15 amps. or more. Actual current consumption will usually not exceed 5 amps. per working place and in estimating the size of the wiring 3 amps. may be taken as a fair average.

In Lower School or elementary laboratories one pair of low voltage d.c. terminals should be provided for two pupils. For Advanced Physics this provision should be doubled, *i.e.*, one pair per pupil. The number of chemistry experiments requiring low voltage d.c. is very limited and one pair of terminals for every four pupils would be generous provision in the Advanced Chemistry laboratory. The requirements can be catered for by portable accumulators kept on trickle charge in the preparation room and collected therefrom as required.

There would appear to be no occasion for the general distribution of low voltage d.c. in biology/botany laboratories.

Gas: One gas point for two pupils should be adequate for elementary or Lower School laboratories. For Advanced Chemistry one tap per pupil should be the basis notwithstanding the fact that work may be carried out in pairs. In the "A" level Physics syllabus the demands for gas are relatively few and can be met on the basis of one tap for four pupils. In biology/botany laboratories gas taps at spacings of about 10 ft. along side benches should be adequate for all normal work.

Water: One sink (about 12 in. × 9 in. × 6 in.), with a three way water tap standard over it, should serve six pupils in elementary science laboratories. For Advanced Chemistry a somewhat larger sink with a three-way water standard having a central swan neck should be provided for every two pairs of working places. In physics and biology laboratories three or four sinks fitted in side benches should be adequate for classes of the sizes already mentioned.

Water taps should comply with BS 1010/1954. They are now obtainable in a range of finishes, including black bronze, chromium plate, and plastic coatings in a range of colours. The plastic coating is a sprayed and stoved plastic based paint that will resist attack from a wide range of acid, alkali, and solvent fumes. The finish is particularly suitable for chemistry laboratories, both for taps on working benches and those placed inside fume cupboards.

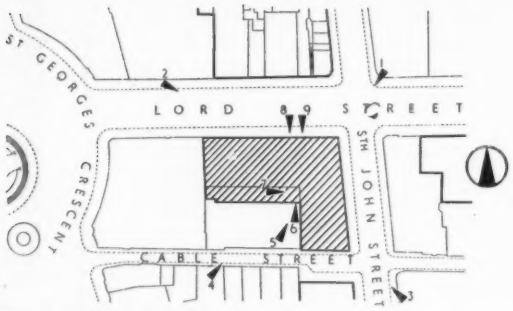
OFFICES and SHOPS

ARMOUR HOUSE, LORD STREET, LIVERPOOL; designed by ROBERT GARDNER MEDWIN in association with STEPHENSON, YOUNG and PARTNERS; architect-in-charge WILLIAM KNIGHT; assistant architect ANTHONY KNEALE; quantity surveyors TODD and LEDSON; structural consultants L. G. MOUCHEL and PARTNERS

This office building of consciously restrained design makes a welcome break from the monotonous and barren character of the part of Liverpool in which it is situated. The building provides maximum lettable shop space on the ground floor and lettable office space on the upper floors.

Viewpoint 1: the Lord Street and South John Street frontages.

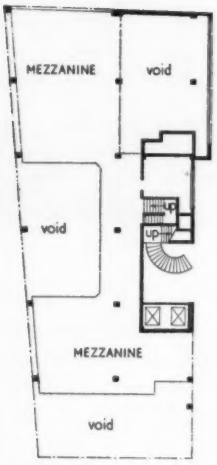
building illustrated



Site plan with photographic viewpoints

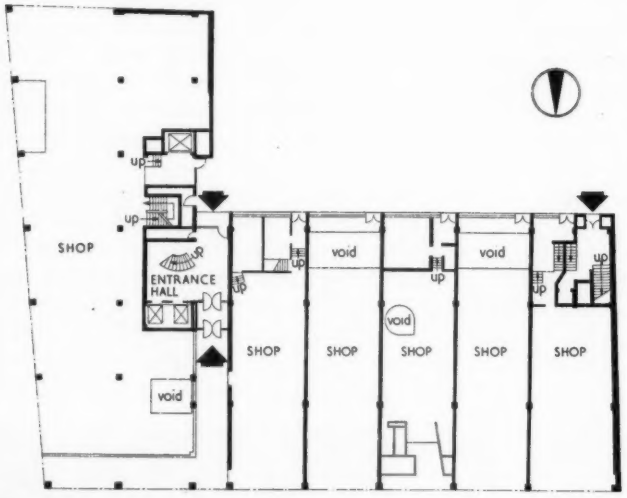
The sheer elevations to Lord Street (viewpoint 2, opposite page, top) and South John Street (viewpoint 3, above left) are faced, on their upper floors, with light grey quartzite slabs divided at intervals with lines of a darker grey quartzite, running vertically and horizontally past the windows. This simplicity of treatment needs a contrast which the shop fronts on the ground floor should provide, but only one of these is at present completed. The ground floor columns are faced with a red vitreous glass mosaic, and the first three from the corner in Lord Street are to be free standing, forming an arcade, with the two shop fronts set back some 10 ft. There is also to be a mezzanine level in these shops, making use of the additional height created by the fall in the street level. The Planning Authority forbade the use of curtain walling, which made the task of providing adequate light in the deep offices behind extremely difficult. In fact, they insisted upon substantial areas of stone. Restrictive elevational control applied in this way can easily compromise the architect without necessarily achieving its objective of harmonious planning. A sheer cladding treatment of this nature, with the glazing brought out nearly flush, raises familiar problems of weathering and of water shedding. Although the quartzite facing is virtually impermeable, stains are already visible at the ends of the sills. Above right, viewpoint 4: in contrast with the Lord Street and South John Street elevations, this side, with its foreground car park, is more lively. The two staircases and service blocks are clearly defined, being rendered and painted dark red. Light green fireclay glazed tiles are used below window sills and over the entire first floor, above the service entrances to the shops. Opposite page, bottom, viewpoint 5: generous high level windows light the rear of the shop spaces, with a service door and brick panel below. The ground level windows light and ventilate the basements below the shops. Below left, viewpoint 6: a rather disturbing number of finishes occur around this staff entrance. Quartzite is used to line the entrance lobby itself, with painted concrete and brickwork on one side, painted rendering on the other and light green glazed tiles above. The entrance screen is of ebonized hardwood. Below right, viewpoint 9: finishes to the main office entrance on Lord Street, which connects with the staff entrance at the rear, are more successfully handled. The red vitreous glass mosaic of the columns gives way to the patterned glazed tiles on the return wall, flanking the first shop to be completed. The lettering, however, does appear to be rather an afterthought.

building illustrated

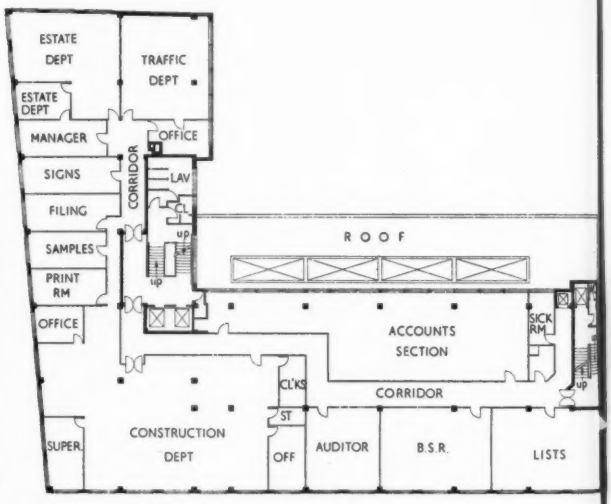


Mezzanine plan

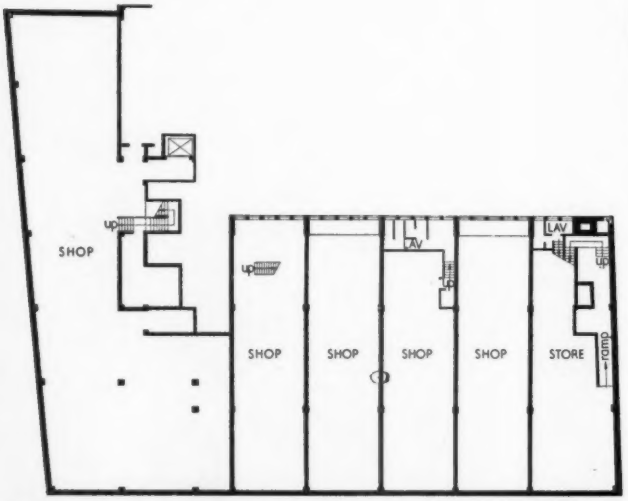
This drawing illustrates the architect's proposals for the corner shop or showroom, with one of its windows recessed 10 ft. behind the arcade. The structure for the suspended mezzanine floor, still further recessed behind the windows, is already installed.



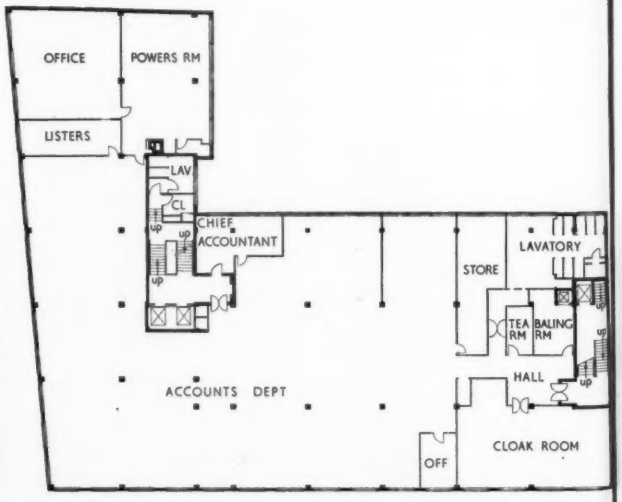
Ground floor plan



Second floor plan



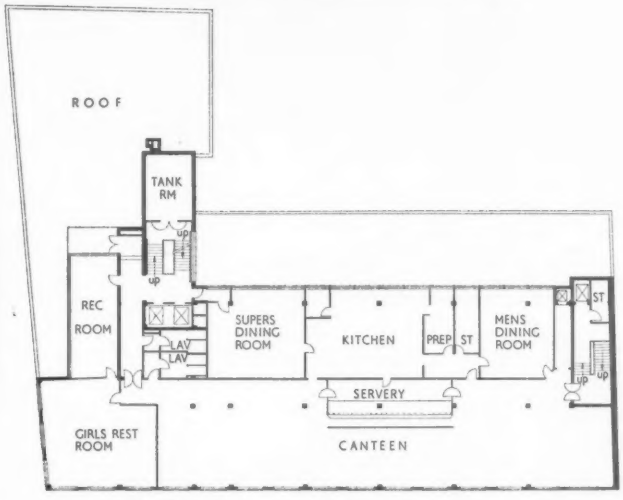
Basement plan [Scale: $\frac{1}{16}$" = 1' 0"]



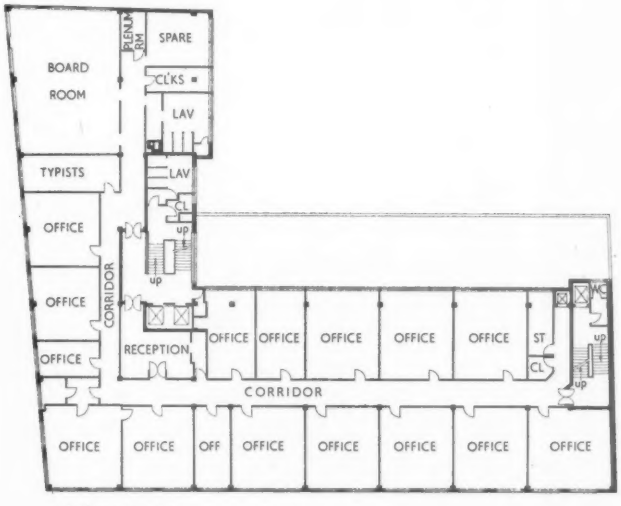
First floor plan

analysis

Viewpoint 8: the first shop to be completed, a jeweller's, is finely detailed, with metal glazing trim forming two eye-level show case windows and a large plate glass window above, lighting deep shop space behind. The vigorous lettering in the free standing metal box is cut out from its fascia, backed with translucent glass and internally lit.



Fourth floor plan



Third floor plan

CLIENT'S REQUIREMENTS

The promoters required a building giving the maximum letting space for shops of varying size and type on the ground floor and of lettable office space above the shops on the minimum permitted number of floors. Town Planning regulations demanded a height of five storeys, neither more nor less, on the Lord Street frontage. They also forbade total curtain walling and insisted upon substantial areas of stone on this elevation.

PLANNING AIMS

The building occupies half a block on the redevelopment frontage of Lord Street, Liverpool's main shopping thoroughfare. It was designed with the continuity of the street architecture in mind, the upper storeys of the main street frontages being deliberately restrained in character. When complete, the corner shop, with mezzanine balcony, recessed behind an arcade of free standing red mosaic columns and beams, will provide the main focus of interest. (See perspective sketch on opposite page.)

SUMMARY

Ground floor area: 15,954 sq. ft.
Total floor area: 88,056 sq. ft.
Type of contract: prime cost plus fixed fee. In this type of contract the cost is estimated on a Bill of Quantities priced by the quantity surveyor after rates have been discussed with the contractor. There is no tender. The fee is based upon an agreed sliding scale.
Work began: February 1955.
Work finished: April 1957.
Estimated price of foundations, superstructure, installations and finishes: £386,431
Tender price of external works and ancillary buildings: Nil.
Final contract price: £389,180.

	cost per sq. ft.	s	d
Preliminaries and insurances		5	11½
Contingencies, nil			
Work below ground floor level		13	4½

In-situ reinforced concrete retaining walls and basement floors, with *in-situ* r.c. and brick division walls.

STRUCTURAL ELEMENTS

Frame or load-bearing element 8 5

In-situ r.c. columns and main beams. Secondary beams precast on site.

External walls 7 3

In-situ concrete and brick with the following external finishes:
Main street elevations, panel scheme of light and dark grey quartzite; vitreous glass mosaic tiling on fascias and columns at ground floor level.
Car park elevations, random quartzite on parts; fireclay tile panels over entire first floor facade and below windows of upper floors.
Porous, rough textured rendering on staircase towers.

Ratio: $\frac{\text{solid wall}}{\text{floor area}} = \frac{0{\cdot}3898}{1}$

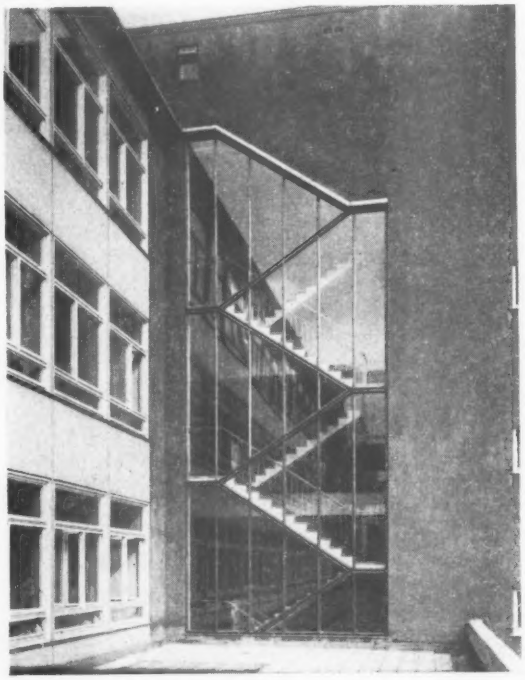
building illustrated

Above, the office entrance hall, looking towards the rear staff entrance. The floor is finished with grey and black terrazzo tiles, the walls are faced with Sicilian white and Belgian black marbles, and the open, light walnut battens are fixed to deal bearers on black painted plaster. A metal plant trough, on steel angles, over the staff entrance is lit from six ceiling fittings. The ceiling is painted plaster on suspended metal lath. The staircase and landings are all heated by warm air convectors and one of the metal grilles of this system is visible beyond the staircase.

The staircase, seen left, rises up to the first floor on a curved in-situ reinforced concrete carriage beam with precast concrete treads. Precast black terrazzo slabs on these treads have a pattern of grey non-slip inserts. The balustrades and handrails are in polished silver bronze. A narrow trim of Belgian black marble surrounds the two aluminium sliding doors of the lift.

The staircase continues in straight flights from the first floor, with black terrazzo treads and non-slip inserts to the front edge of each tread. The plastered staircase soffits and the flank wall to the right (out of the picture above) are painted light blue.

The pattern of the staircase window, viewpoint 7, has been determined by the line of the staircase beyond, seen here from the flat roof of the first floor rear offices.



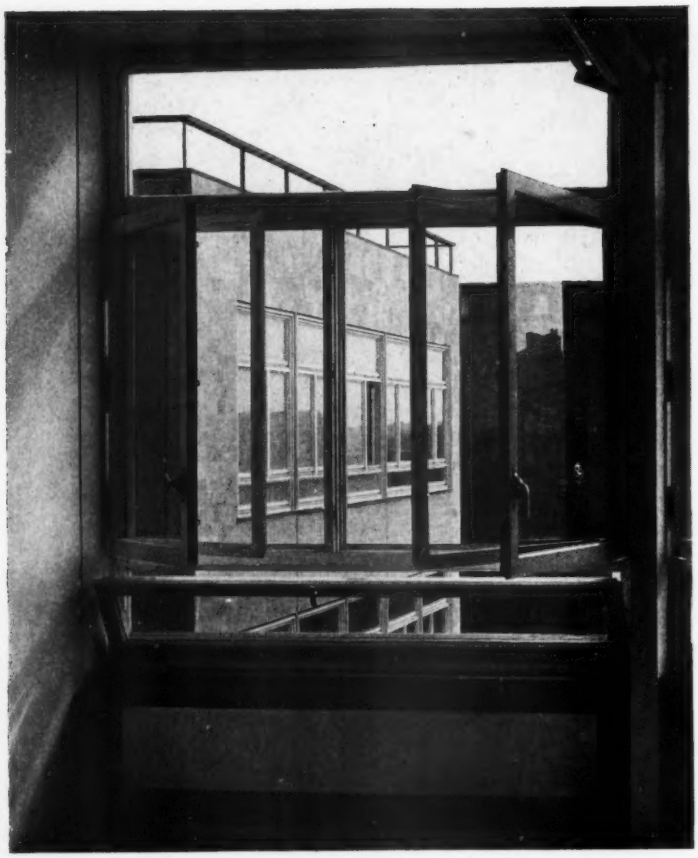
analysis

	s	d
Windows Double purpose-made casements in softwood, opening inwards on friction stays. Double casements are separable for cleaning purposes. Ratio: windows / floor area = 0·1437 / 1	2	11
External doors Purpose-made in hardwood. Ratio: doors / floor area = 0·061 / 1		3½
Upper floors *In-situ* reinforced concrete slabs. Area: 6,165 sq. yd. Superload: 70 lb. per sq. ft.	6	2
Staircases Two. Generally *in-situ* reinforced concrete with precast combined terrazzo tread and riser 1½ in. thick with strip non-slip insert on front edge. The curved stair in the main entrance hall is formed of precast cantilever treads set to an *in-situ* curved carriage beam. 1¼-in. terrazzo slabs are bedded on the precast concrete treads with non-slip inserts set to a pattern. Balustrade and handrail in polished silver bronze. Widths: 4 ft. 6 in., 5 ft. 0 in. Total rises: 65 ft., 53 ft.	2	0
Roof construction *In-situ* r.c. slab with foam slag insulating screed. Area: 1,271 sq. yd.	1	9
Roof lights Glass lenses set in concrete in flat roof over rear of first floor office area. Number of lights: 4. Total area: 588 sq. ft.		3
Glazing Double glazing throughout office floors to reduce traffic noise (windows of vacant shops not included in contract price). Actinic glass to south-facing windows. This is the only protection from solar heat provided.	1	3
Total of structural elements	30s	3½d

PARTITIONS AND FITTINGS

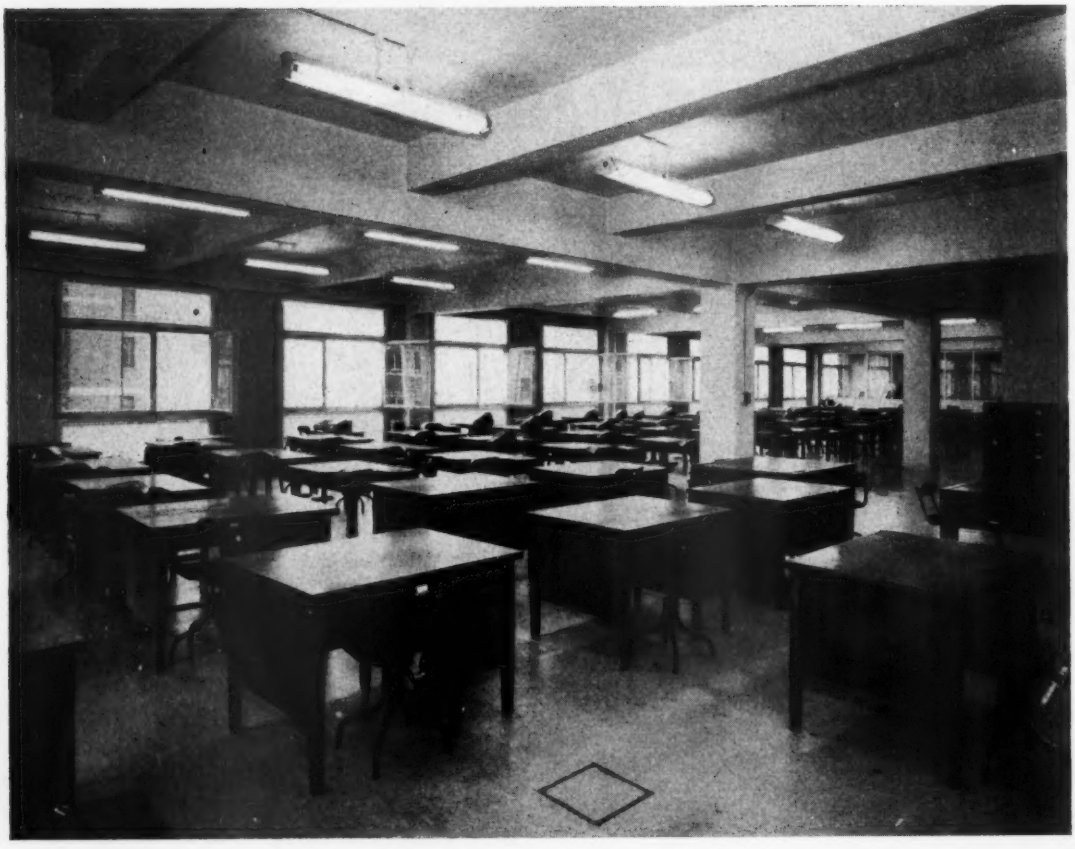
		s	d
Internal partitions		3	8
Type of partition	*Area of each type*		
4½-in. and 9-in. brick for permanent offices and cloakrooms	912 sq. yd.		
Frame and insulating panelling in corridors, with borrowed light from glazing above.	1,388 sq. yd.		
Screens Softwood frame, glazed, for small overseeing offices.			¼
Internal doors Number of single: 130. Flush semi-solid and fire core. All painted. Number of double: 14 pairs. Hardwood, glazed.		1	4

building illustrated



A detail of a window on the third floor office level at the rear of the building is shown left, with double glazed sashes separated for cleaning purposes. Mild steel brackets support a 6-in. pressed steel tray which forms the internal sill. The tray is filled with screed and has a thermoplastic tile finish with a hardwood edge screwed to it. Below the sill finned hot water pipes are concealed behind a steel plate and the wall is lined with hardboard over ¾-in. insulation board, both screwed to battens in the concrete.

The office areas (one of which is shown below) were furnished and lit entirely by the occupying tenants and the architects had no responsibility for this. Their ideas for acoustic and lighting treatment, and for decoration, had to stop at the halls and corridors. The problem of ventilating such an area without resorting to costly air conditioning was a difficult one, but the architects believe that the inward opening top and bottom lights of the windows should give adequate ventilation. As this photograph shows, however, the staff in this general office have thrown open the larger double glazed casement window units (only intended to be opened for cleaning purposes) ignoring the top and bottom units. The necessity of opening several windows in warm weather does of course defeat part of the purpose of the double windows, to exclude traffic noise; and if casements only are used for ventilation, draughts are produced, which blow papers off the desks.



The corridor partitions are of softwood with plastered insulation board facing, and large borrowed lights above, glazed in two separate sheets of 32-oz. glass, butt jointed. Fluorescent tube light fittings are housed in the suspended acoustic tile ceiling.

This concrete framed and roofed penthouse accommodates a staff games room and gives access to the roof. The glazing is a neat, metal sectioned curtain wall, clipped to the face of the concrete frame. The furniture here, as elsewhere in the building, was chosen by the tenants.

analysis

	s	d
Ironmongery		7
On all main doors, satin chrome finished floor springs, flush bolts, pull handles and lock escutcheons.		
On doors to offices and service areas, overhead springs, where applicable, mortice locks with lever handles and long backplates, steel butt hinges (heavy pattern), all silver anodised aluminium finish.		
Fittings		¼
Access ladders to tank room, etc. Lightning conductors.		
Total of partitions and fittings	**5s**	**7½d**

FINISHES

Floor finishes			3 3
Type of finish	*Area in sq. yds.*	*Price per sq. yd.*	
Terrazzo	709	35s 0d	
Quarry tiles	139	39s 0d	
Thermoplastic	37	20s 0d	
Ceramic tile	148	53s 0d	
Cork tile	4,910	22s 8d	
Ceiling finishes			2 6
In offices, ⅝-in. plaster direct to concrete soffites, painted.			
In corridors, acoustic fibre board suspended on battens, painted.			
In entrance hall, plaster on suspended expanded metal lath, painted.			
Wall finishes			4 0
Main staircase, Sicilian white marble slabs.			
Secondary staircase, glazed cement.			
Offices, ⅝-in. plaster, painted.			
Lavatories, glazed tiles.			
Roof finishes			1 0½
Built up bituminous felt with asbestos tile where it is subjected to foot traffic. Granite chips elsewhere.			
Area: 1,729 sq. yd.			
Decorations			2 10
Lustre oil paint on walls and ceilings generally.			
Gloss paint on woodwork.			
Total of finishes		**13s.**	**7½d**

SERVICES

External plumbing		¼
4-in. and 6-in. vertical and horizontal cast iron soil drainage.		
4-in. cast iron rainwater pipes.		
Hot and cold water installation		1 11
Hot water from low pressure accelerated system rated on 175 galls.p.h. at 140 deg. F., serving normal requirements of shops and lavatories. Where there is heavy demand, as in the canteen, this is met by additional plant.		

analysis

	s	d
Sanitary fittings		5½

Type of fitting	*No. of each type*
W.c.s	21
Basins	31
Sinks	7
Drinking fountains	17
Urinals	9

Heating and ventilation — 4 10¼

Forced warm air convectors in staircase and halls, perimeter convectors in office area. Radiators in lavatories and secondary areas. The system is operated by two oil fired boilers. Provision is made for 10,000 gallon storage. Water temperature is controlled by a compensator set geared to external weather conditions and a low set thermostat on time switch operates at night and week ends. The convector heater units temperature is controlled by room thermostats, grouped into zones controlled by a time switch and low set thermostat.

Air temperature in spaces heated by perimeter convectors and radiators will be controlled by varying the water temperature in accordance with outside weather conditions by means of the compensator set.

Perimeter convectors are specially designed continuous sill type. The heating surface is copper with aluminium fins. These run around outside walls and generally the tops form a continuous sill surfaced with black thermoplastic tiles. Front panels are silver bronze metallic finish. The design differs on the first floor, where the sill height has been lowered to give greater area of window in relation to the greater depth of this office floor and poorer external lighting at this level. Here the enclosure is grilled on the face and also on the top, which heats effectively, but tends to darken walls by upward convection.

Gas installation — ¼

No. of points: 9.

Electrical installation — 5 8¼

Cost includes light fittings.

Type of point	*No. of each type*
Lighting	750
Power	234

Cost includes light fittings.

Lifts — 3 7½

Passenger lifts: 3.
Goods lifts: 1.

Total of services — 16s 7d

	s	d
Drainage		7¾

Enclosed in crawl ducts. Two branch connections to manhole in carpark; provision made at rear of shops for variable toilet connections to meet occupiers' requirements. 6-in. cast-iron drains generally.

Other elements — 1 8½

Mezzanine steelwork for shop 1.
Shopfront for shop 2.
Alterations to tenants' requirements.
Fixing canteen equipment. (Fittings not included in contract.)

Total per sq. ft. of floor area:

£389,180 (net cost excluding external works) / 88,056 sq. ft. (measured inside external walls) = **88 4½**

COST COMMENTS

This project was based on a prime cost plus fixed fee contract, which precludes any form of cost planning or any check on ultimate cost to the client. The analysis is prepared from final costings, but whether it is possible at the outset of design to obtain a reasonable balance of initial capital investment for this type of contract is debatable.

Town planning required an imposing facade and led to the considerable use of expensive constructional materials externally, stonework, mosaic, and quartzite. And the main circulation areas inside the building have been finished in the same costly style, with terrazzo and marble staircases, and polished silver-bronze handrails and ironmongery.

The partitioning and finishes to the lettable office space is also of a high standard.

The heating installation cost less per square foot of floor area than might have been expected in a scheme of this type, and this perhaps reflects the savings in heat loss achieved by the double glazing, which has of course cost more than single glazing.

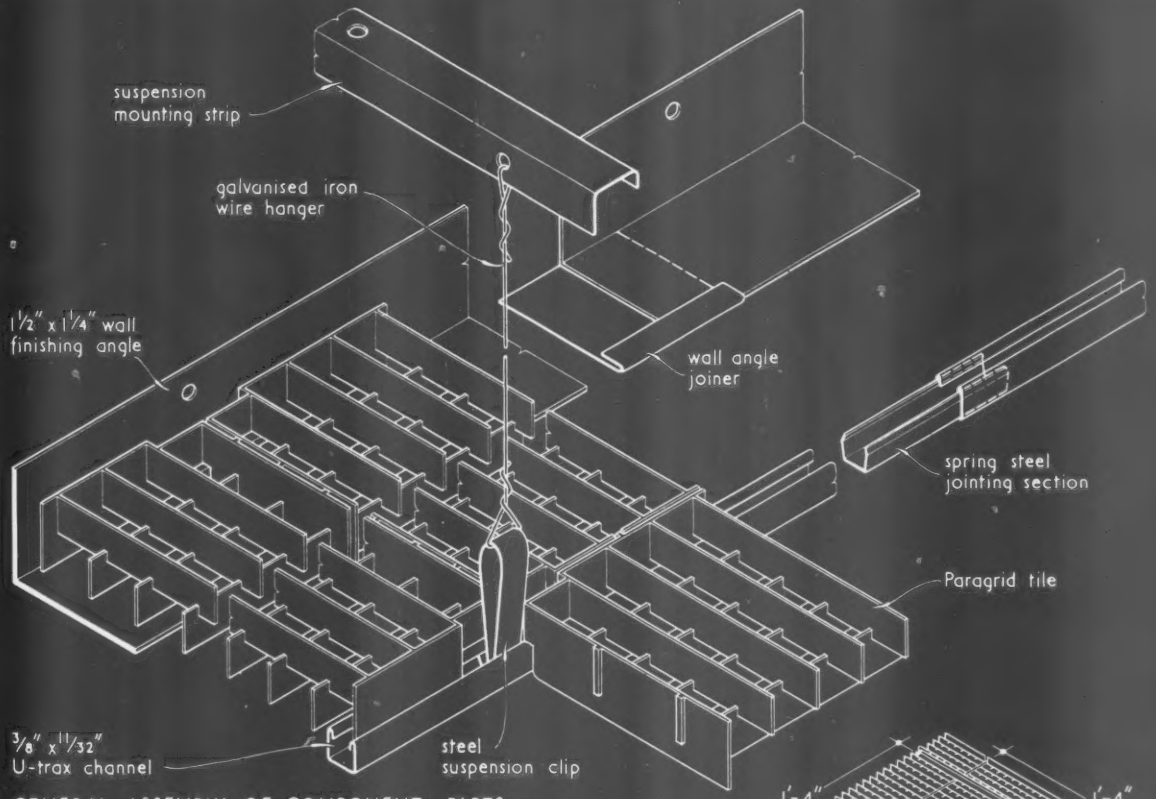
Note that the analysis shows a separate cost for incidental items unallocated to specific elements, and also that there are no contingencies (prime cost contract), and no furniture or fittings are included.

CONTRACTORS

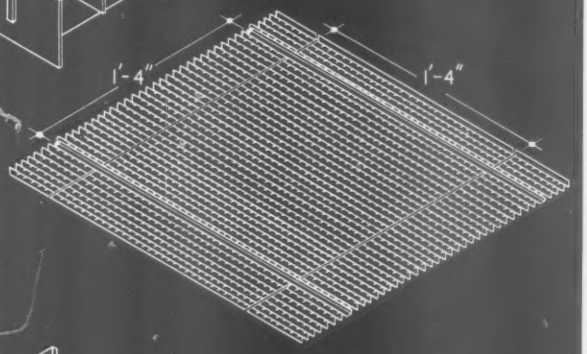
General contractors: Wm. Thornton & Sons Ltd. *Sub-contractors: Heating:* Weatherfoil Ltd. *Electrical:* Troughton and Young. *Plumbing:* Engineering Services Installations Ltd. *Lifts:* Evans Lifts Ltd. *Roofing:* Wm. Briggs. *Rooflights:* Lenscrete Ltd. *Marble, quartzite, mosaic and faience:* John Stubbs (Marble & Quartzite) Ltd. *Terrazzo:* Carrara Marble Co. *Wall and floor tiling:* R. A. Davison & Co. Ltd. *Plastering:* Pollock Bros. Ltd. *Windows:* Empe-Werke Holzindustrie. *Glazing:* Williams & Watson Ltd. *Balustrades:* J. R. Pearson. *Flooring:* Korkoid Ltd.

ILLUMINATION | PLASTIC ILLUMINATED CEILING

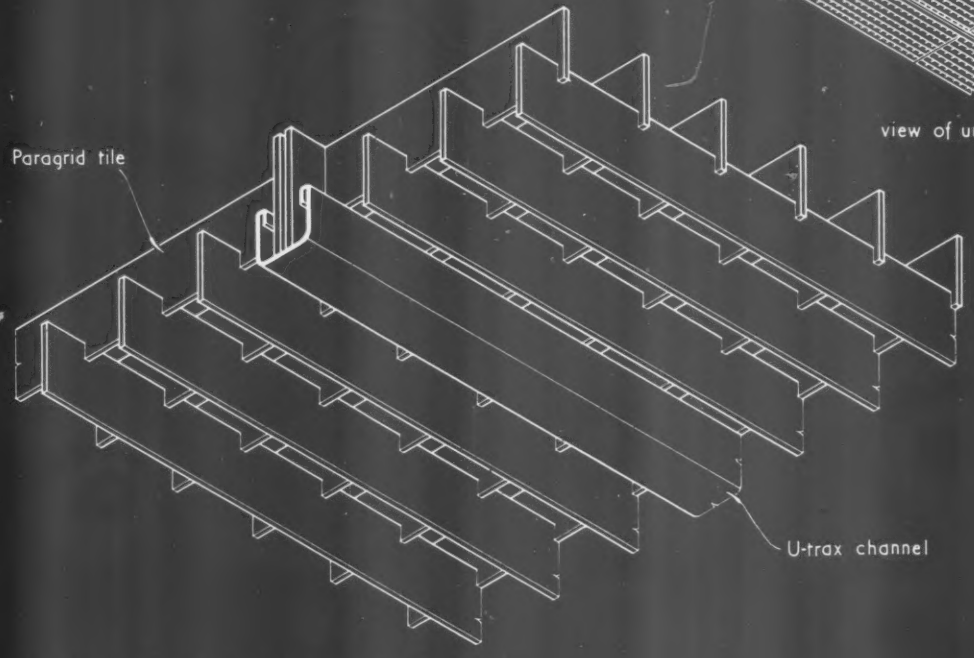
The Architects' Journal Library of Information Sheets 695. Editor: Cotterell Butler, A.R.I.B.A.



GENERAL ASSEMBLY OF COMPONENT PARTS.



view of underside of ceiling



FULL SIZE DETAIL OF TILES FROM UNDERSIDE.

·PARAGRID TILE· PLASTIC ILLUMINATED CEILINGS. Manufacturer: Harris and Sheldon (Electrical) Ltd.

34.Z2 ·PARAGRID TILE· PLASTIC ILLUMINATED CEILINGS

This Sheet describes Paragrid tiles which may be used for lighting the whole or part of a ceiling area or incorporated in lighting installations. They are made of moulded plastic giving a high degree of light diffusion. The louvre cells and supporting channels are of exceptionally small proportions so that the ceiling has a finely-textured appearance.

General

Paragrid tiles can provide an illuminated ceiling which conceals services and building irregularities and does not appreciably impair air circulation, so that the installation of heating and air-conditioning systems is simplified.

The edges of the tiles are held longitudinally in metal channel sections (U-trax) and interlocked laterally. They are suspended from the structure, as shown in the drawing on the upper face of the Sheet, by special clips fitted into the channel sections. The tiles are readily demountable, without disturbing the balance of the suspension, for access to lighting fittings, cleaning, etc.

Components and Sizes

Tiles: The tile is a one-piece polystyrene injection-moulding. It is translucent, does not discolour and is destaticised. It is 16 in. square and $\frac{3}{4}$ in. deep and so designed that the $\frac{1}{2}$ in. by $\frac{1}{2}$ in. grid gives a 40° cut-off in all directions, the longitudinal and transverse dividers being in different planes.

The tiles are keyed at the edges which fit into the U-trax channel to ensure alignment with adjacent tiles, and the other edges have ribs to hold the tiles apart sufficiently for light to filter through and make the transverse joints less noticeable.

U-trax channel: This is in steel, $\frac{3}{8}$ in. wide by $\frac{11}{32}$ in. high and in standard lengths of 8 ft. 0 in. Lengths of channel are joined by spring-steel jointing sections which fit inside the ends of the channel.

Suspension clips: Steel suspension clips fit into the U-trax channel as shown.

Suspension mounting strip: $\frac{3}{4}$ in. by $\frac{1}{2}$ in. steel section is used as shown in the drawing for suspending the tiles from the structure. Fixing holes are provided at 1 ft. 4 in. centres and the vertical flange is drilled to take the suspension wires. It is available in standard lengths of 8 ft. 0 in.

Suspension wire: 0·028 in. galvanised iron wire is available in 100 ft. coils.

Wall-finishing angle: The tiles are supported at walls by $1\frac{1}{2}$ in. by $1\frac{1}{4}$ in. steel angle drilled for fixing at 1 ft. 4 in. centres. It is available in standard lengths of 8 ft. 0 in. It is butt-jointed and the joint covered by a wall angle joiner as shown.

Weight

Each 16 in. by 16 in. panel weighs $14\frac{1}{2}$ oz. The average overall weight of a complete Paragrid ceiling is approximately 12 oz. per sq. ft.

Lighting

If possible the ceiling cavity should be painted white and the lighting fittings should be bare lamps without reflectors. When calculating the lighting intensity required for any given application, approximately 20 per cent. should be added to make up for losses due to interposing the tiles between the source and the area to be lighted.

When the depth of the ceiling cavity is less than half the lamp spacing, fluorescent fittings should be parallel with the U-trax channels.

Fixing

The suspension mounting strips are suitably fixed to joists or grounds at right angles to the direction in which it is desired to run the U-trax channels. Hanging of the U-trax channels and tiles should be started from a fixed point, either one corner or in some cases, especially for small areas, the centre of the ceiling, to preserve symmetry of design. The tiles can be easily cut where necessary with a hack-saw or side-cutting pliers.

Applications

In addition to their use for ceilings, Paragrid tiles may be used with effect for display purposes in shops and exhibitions and incorporated in lighting installations in many ways.

Colour and Finish

The Paragrid tiles are white with U-trax channels and wall-finishing angles stove-enamelled white or with any other finish to order. Suspension mounting strips, suspension clips and jointing sections are rust-proofed.

Maintenance

The tiles should be taken down at least once a year and washed with a weak detergent solution. At the same time lighting fittings should be cleaned and the surface above the Paragrid ceiling washed or painted as necessary.

Compiled from information supplied by:

Harris and Sheldon (Electrical) Ltd.

Address: Ryder Street, Birmingham, 4
Telephone: Birmingham Central 6272.
London Office: 46, Great Marlborough Street, W.1.
Telephone: Gerrard 0869.

COST ANALYSIS, PLANNING AND CONTROL: 1

This Sheet is the first of a series on cost analysis which is intended to assist the architect to assess and control the cost of his building at any stage in its planning and erection.

Definition of Elements

Cost analysis is a method of breaking down the total cost of a building into a number of separate costs, each of which represents an *element*. For example, Heating Services : 3s. 10d., or Roof: 9s. 2½d. are the costs of these elements per sq. ft. of floor area. An element is that part of a building which always performs the same function, regardless of its design or method of construction. Waste and Soil Pipes perform the function of conveying soil and waste water from sanitary fittings: the Roof performs the function of enclosing space, excluding weather and retaining heat. It is an essential characteristic of cost analysis that the classification by elements corresponds to an architect's mental approach to, and manipulation of, his design. Departures from this definition are sometimes necessary. Functions of the elements may overlap (an internal wall may be both partition and part of the structure) or custom or convenience may prompt other departures (Ironmongery and Glazing for example are often regarded as separate elements).

List of Elements

Note: This list was worked out at the request of the Architects' Journal by a group of architects and quantity surveyors for the publication of all types of buildings. It may have to be modified slightly to accord with another list of elements which is being prepared for filing and classification purposes.

Preliminaries and Insurances
Contingencies
Work Below Lowest Floor

Structural Elements
Frame
Upper floors
Roof
Rooflights
Staircases
External Walls
Internal Structural Walls
Windows
External Doors
Partitions
Internal Doors
Ironmongery

Finishes
Wall Finishes
Floor Finishes
Ceiling Finishes
Decorations

Fittings

Services
Sanitary Fittings
Waste, Soil and Overflow Pipes
Cold Water Services
Hot Water Services
Heating Services
Ventilation Services
Gas Services
Electrical Services

Special Services
e.g. lift, refuse chute, etc.

External Works
Drainage
Other external works.
Playground and paved areas } for educational
Drainage (nett cost) } buildings only

The purpose of analysing building costs by elements is to accumulate general and specific knowledge of the way money is distributed in buildings so that it may be more skilfully controlled. An analysis shows the proportion of the total money spent on each element in providing each square foot of supported, protected, heated, lighted and equipped floor area.

The square foot unit: Costs are expressed in shillings and pence per square foot of floor area so that they are related directly to the measure of accommodation provided for the total cost to the client, and to enable the costs of different buildings to be compared. The square foot was chosen in preference to the cubic foot because plan dimensions of a building are generally a more precise and significant measure of accommodation than cubic dimensions.

Application of Analyses

Apart from general appreciation of cost levels which the study of buildings and their analyses yields, there are a number of specific uses for the method:

1. To trace the cause of high (or low) costs. If one building costs 85 shillings and another similar building costs 94 shillings per square foot of floor area, a comparison of the analyses of both will show in which elements the major part of the difference lies. The analysis is thus a kind of " cost stress diagram " showing where the reasons for the high (or low) expenditure may be found.
2. To relate cost to function. The comparative study of a number of buildings and their analyses enables the architect to equate value with expenditure —to judge broadly whether the money spent on an element is commensurate with its quality, importance and efficiency relative to other elements.
3. To compare the costs of different materials or methods of construction. If in one building Cold Water Services are in copper piping and in another, galvanised iron, element costs will help to show which method is the more expensive.

Adjustments for comparison: Cost comparisons cannot always be made directly. For example, to compare proprietary curtain walling in one building with its equivalent in another may require the adding together of several elements; External Walls, Windows, External Doors and part of the Wall Finishes in the second building.

A second kind of adjustment may be needed to ensure that similar *quantities* of material are being compared in different buildings. This may be effected by

1.C1 COST ANALYSIS, PLANNING AND CONTROL: 1

translating the cost per square foot of floor area into a cost per unit area (or number) of the actual element, e.g., inclusive cost per square foot of external wall; per sanitary fitting; per lighting point, etc.
In presenting cost analyses it is necessary, therefore, to indicate the specification, quality and quantity of element as well as the cost.
Example:

Roof Construction	*Area of roof on plan*	*Cost per sq. ft. floor area*
Pre-stressed clay planks 16-ft. span, 2-in. insulating screed, 3-layer bituminous felt finish. Cedar boarded 10-in. fascia with aluminium-alloy capping	6,000 sq. ft.	6s. 4d.

Preparation of Analyses

Analyses are prepared by collecting, under the various element headings, items from a priced bill of quantities appropriate to each. Alternatively, the bill may itself be written up in elements when it is prepared. This offers certain advantages to the builder, as well as to the architect and quantity surveyor. With either method it is evident that items should be ascribed to element headings according to a consistent system. For example, lintels in cavity walls should always go either with External Walls or with Windows, so that these elements represent the same things in all analyses that might be compared with one another.
Until recently there was no agreed set of standard definitions and surveyors used their own discretion in preparing analyses. In a later Sheet in this series definitions for the list above will be given in full, applicable to the majority of building types.

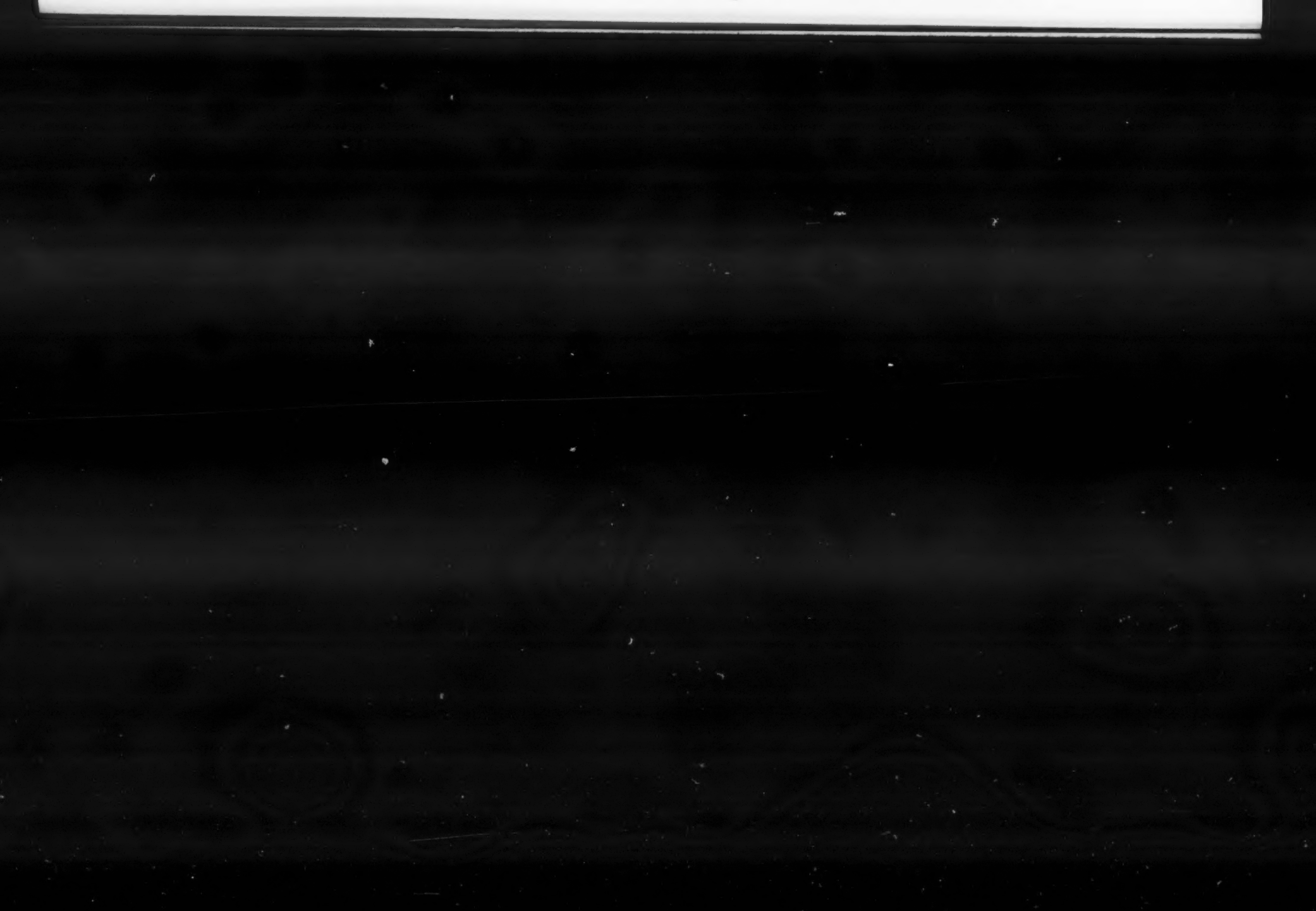
Cost Planning

Cost planning is a method of controlling the cost of a building project within a stated cost limit from an early stage in the design. It begins at the point where the main lines of a planning solution are fairly established in three dimensions, but before constructional design has been considered in detail: at the stage when the architect has a clear idea of standards of quality and of site conditions.

Target costs: The first step is to work out target costs for each of the elements. One method for this, although not the only one, is to make use of the cost analyses of one or two previous buildings which both architect and quantity surveyor know thoroughly. They should be broadly similar in type, method of construction, quality or contract circumstances, but close similarity in all these aspects is not necessary. Thorough knowledge of the buildings, their costs and quality is more important. The procedure is for each element cost in the analysis used to be adjusted for differences of quantity and quality of elements between the building it represents and the new design. Quantity adjustments are a simple matter of translating the cost per square foot of floor area into cost per unit of element (e.g. square foot of wall, sanitary fitting, lighting point, etc.), applying these to the quantities of element in the new design and then translating the result back into cost per square foot of floor area of the design.
Quality adjustments are a matter of using experience and judgment, of adding or deducting a few pence, or of using costs from another analysis where a particular element corresponds closely to the design envisaged. It should be made clear that the target costs so derived do not necessarily represent particular methods of construction. They represent sums of money set aside to provide for the discharge of specific architectural functions.
Thus it is essential that architect and quantity surveyor work closely together in preparing the cost plan.

Application of target costs: Once the initial cost plan is laid down, the detailed working out of constructional design can proceed. As each element is considered, the construction proposed for it is priced by the quantity surveyor, specialist sub-contractor, and, if it is a negotiated contract, by the builder. The price is then translated into cost per square foot of floor area and compared with the target allowed for it. If it is less than the target, the surplus money can be held in reserve or allocated to other elements. If more than the target, the method of construction can be reconsidered to reduce its cost, or extra money must be found by deduction from target sums of other elements.
By this means, the architect knows at every stage whether or not he is exceeding his budget and how his expenditure is distributed throughout the building. In practice, it is advisable to have overall cost checks at regular intervals throughout the design stage to keep the whole cost plan up to date.

Compiled by John Carter, A.R.I.B.A.



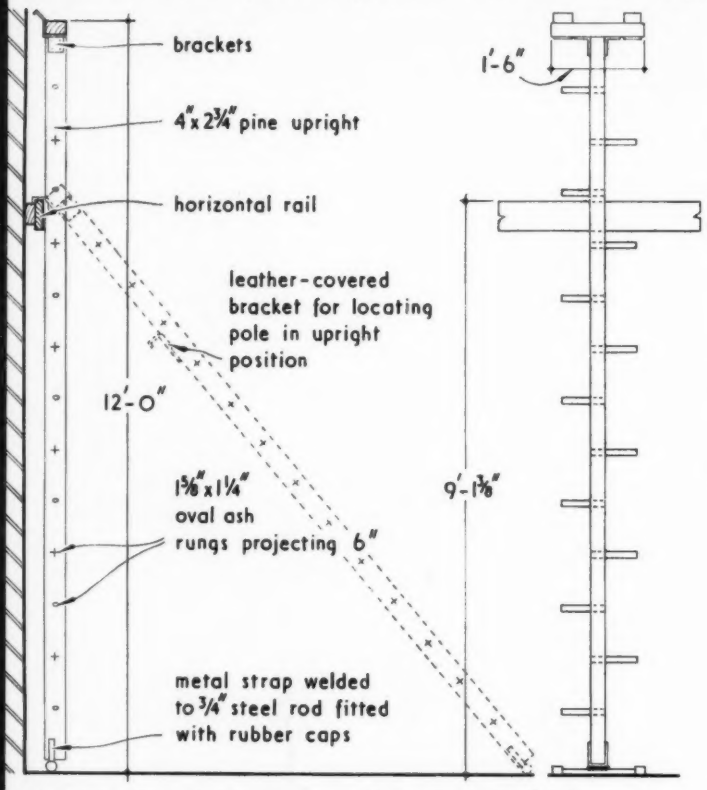
GYMNASIUM EQUIPMENT: SCHOOL AT AMERSHAM, BUCKS

Chief Architect's Department, M.O.E., in collaboration with the County Architect, Buckinghamshire County Council: J. S. B. Coatman, Mary B. Crowley, David L. Medd and C. E. D. Wooster, architects-in-charge

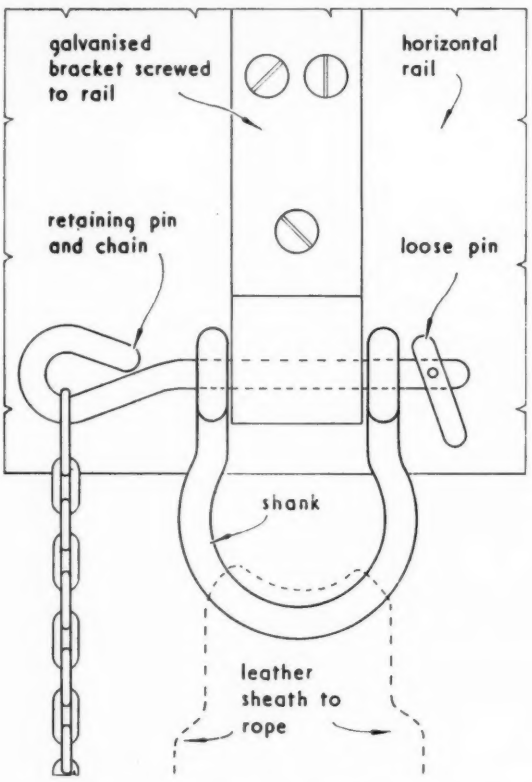
In a gymnasium which has also to serve as an assembly hall, the special problem arises of stacking equipment so that it will be out of the way. The interest in this case is therefore, not so much in the equipment, as in the single hardwood rail to secure it, both while in use and when stacked away. Note the shank and bracket for securing the climbing ropes and the inclusion of a curtain track in the underside of the rail.

GYMNASIUM EQUIPMENT: SCHOOL AT AMERSHAM, BUCKS

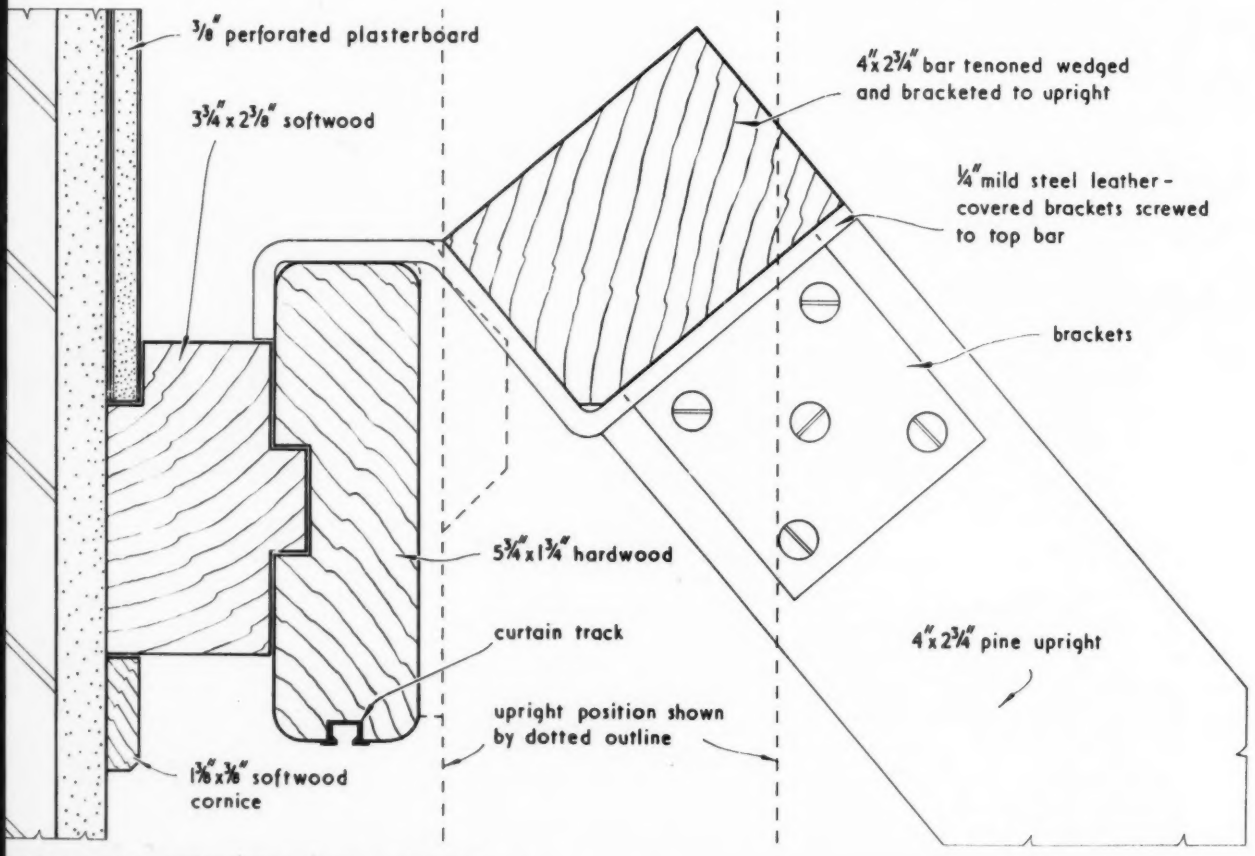
Chief Architect's Department, M.O.E., in collaboration with the County Architect, Buckinghamshire County Council: J. S. B. Coatman, Mary B. Crowley, David L. Medd and C. E. D. Wooster, architects-in-charge



ELEVATIONS OF CLIMBING POLE. scale ⅜"=1'-0"



DETAIL OF SHANK AND BRACKET FOR CLIMBING ROPE. scale ½ full size



DETAIL OF HORIZONTAL RAIL. scale ½ full size

Chartered Architects: J. DOUGLASS MATHEWS & PARTNERS Linoleum installed by CATES

The staff lounge in the ultra-modern new factory of ASPRO-NICHOLAS LTD, manufacturers of pharmaceutical preparations, has been floored with NAIRN BATTLESHIP LINOLEUM. The design chosen gives an effect of spaciousness, cleanliness and comfort particularly suited to a factory of this type. Nairn 'Quality' Linoleum is made in two thicknesses — LINTILE 6.70 mm, BATTLESHIP 4.50 mm, plain or marbled, in a wide range of colours offering unlimited scope for architecturally designed floors. Throughout the world Nairn Linoleum is chosen for quality . . . design . . . colour . . . hard wear and hygiene.

Aspro-Nicholas Ltd choose

NAIRN linoleum

For full information about **NAIRN LINOLEUM** *write or telephone to* **MICHAEL NAIRN & CO LTD.** *131 Aldersgate Street, London, EC1, Monarch 5211, or telephone Birmingham Office: Midland 5989, Manchester Office: Central 1417, Glasgow Office: South 1011. Head Office and Works:* KIRKCALDY, SCOTLAND. KIRKCALDY 2011

News continued from page 666

HOUSING CENTRE

Plea For Playgrounds

"All the shadow and mystery that lend enchantment to the play of children are being swept away. Modern dwellings are hygienic, practical, and well equipped—but there are no longer delicious dark attics under the rooftops, no cupboards under the stairs—no niche where a child can be entirely by himself."

This was only one point of introduction in Lady Allen's plea at the Housing Centre last week for imaginatively designed playgrounds to meet children's needs in towns today.

From her other expressions of dismay at some results of modern redevelopment it might be thought that Lady Allen is leading an attack on modern architecture. She quoted an advertisement showing blocks of flats 18 storeys high: "Six of these mammoth structures in monolithic reinforced concrete will eventually dominate the changing London skyline. . . ." These, she thinks, will be utterly out of scale with children, and speaking about schools she believes the "vast expanse of glass" will play a part in the ever-growing nervousness of the present generation. However, Lady Allen is not against modern architecture as such: her belief is that the kind of urban redevelopment we are now witnessing is not sufficiently well thought out to provide for the basic necessities of children. "Gardens are disappearing . . . a few bushes may be dotted over the green strips that remain after the car parks and roads have claimed the major space, but usually the children are not allowed to play amongst them. The streets are a death trap. Children's play is being tidied out of existence. Their one salvation that remains is that we should bring a modicum of imagination into their playgrounds."

Lady Allen has been a protagonist for children's rights for many years. As an enthusiast she is exceptional in that she never becomes a bore, no doubt because she is always developing her ideas and travelling to keep in touch with progress abroad, and also because she always manages to put her ideas into practice.

One is tempted to ask why so little progress has yet been made: there are for instance no standards for the size and types of playground which should be provided. Certainly "economy" is one of the reasons, but is more often used for an excuse for inaction. A more likely reason is that no single department in a Local Authority is really interested. The Housing Department's attention is fixed on providing the largest number of dwellings, the Parks Department, although it may be responsible for providing the fixed equipment, has little knowledge of social problems, and the Education Department only concerns itself with children in Schools. A few nursery schools have been established experimentally in blocks of flats but new nursery schools are still "Banned." Similarly a number of play centres are being run by yet another body, the Health Department. Lady Allen calls for some co-ordination here and we must sympathize with this view.

The fear of litigation also discourages Local Authorities from departing from flat asphalt playgrounds surrounded by unclimbable fences and fitted with standard swings and other fixed equipment which, extraordinarily, have been accepted as safe.

It is time that the Ministry of Housing and Local Government (if playgrounds are to remain a "Housing" responsibility) gave some real thought to this subject. Perhaps it could be spurred on by SPUR.

JOHN STILLMAN

AESTHETIC CONTROL

A Bristol Symposium

Whether or no planning authorities should be allowed to exercise control over the form and appearance of buildings designed by architects has become a burning question for many members of the profession, and during the past few years some quite bitter comments have been made by both sides. The controversey has centred round two main themes. The difficulties and absurdities that have arisen over the operation of the controls themselves, on the one hand; and on the other, the growing conviction that in spite of all the elaborate machinery designed to prevent it, widespread spoliation of town and countryside with "eyesores" or "safe" designs of a dismally low standard continues largely unchecked.

Planners are by no means disposed to accept either of these criticisms; so when the Bristol and Somerset Society of Architects held a one-day Symposium on Design and Planning Control, at which planners, architects, and members of planning committees were invited to examine practical problems arising out of the present system, it seemed inevitable that the usual arguments and counter arguments would appear.

Throughout the whole proceedings at Bristol, however, there was very little that could be called provocative. The organizers, aiming to provide a balance of views in the main papers, had invited two non-architect planning officers—Mr. Denton-Cox of Somerset and Eric Higgins of Gloucester—to offset Lionel Brett and Arthur Ling. They had also limited the scope of the subject to private housing development.

The planning officers showed a united front

in their approach to the subject. Both were at pains to explain and justify the system of controls operated by their authorities and the principles on which the applications submitted to them were judged. Both spoke in favour of having a panel of independent architects who could be called upon when difficult cases occurred—although one officer admitted that sometimes the members of the panel seemed unwilling to give a definite opinion. Both deplored the low standard of public taste, the ravages of the spec builders who fostered it and suggested that architects could and should do more to counteract this as designers and as propagandists for good design. It was clear that they believed a measure of control over design was justified under present conditions and that architects had very little real ground for complaint. Apart from a few gentle digs—the influence of fashion on design and the inability of architects to agree amongst themselves seemed to be the favourites—neither speaker semed disposed to be over-critical.

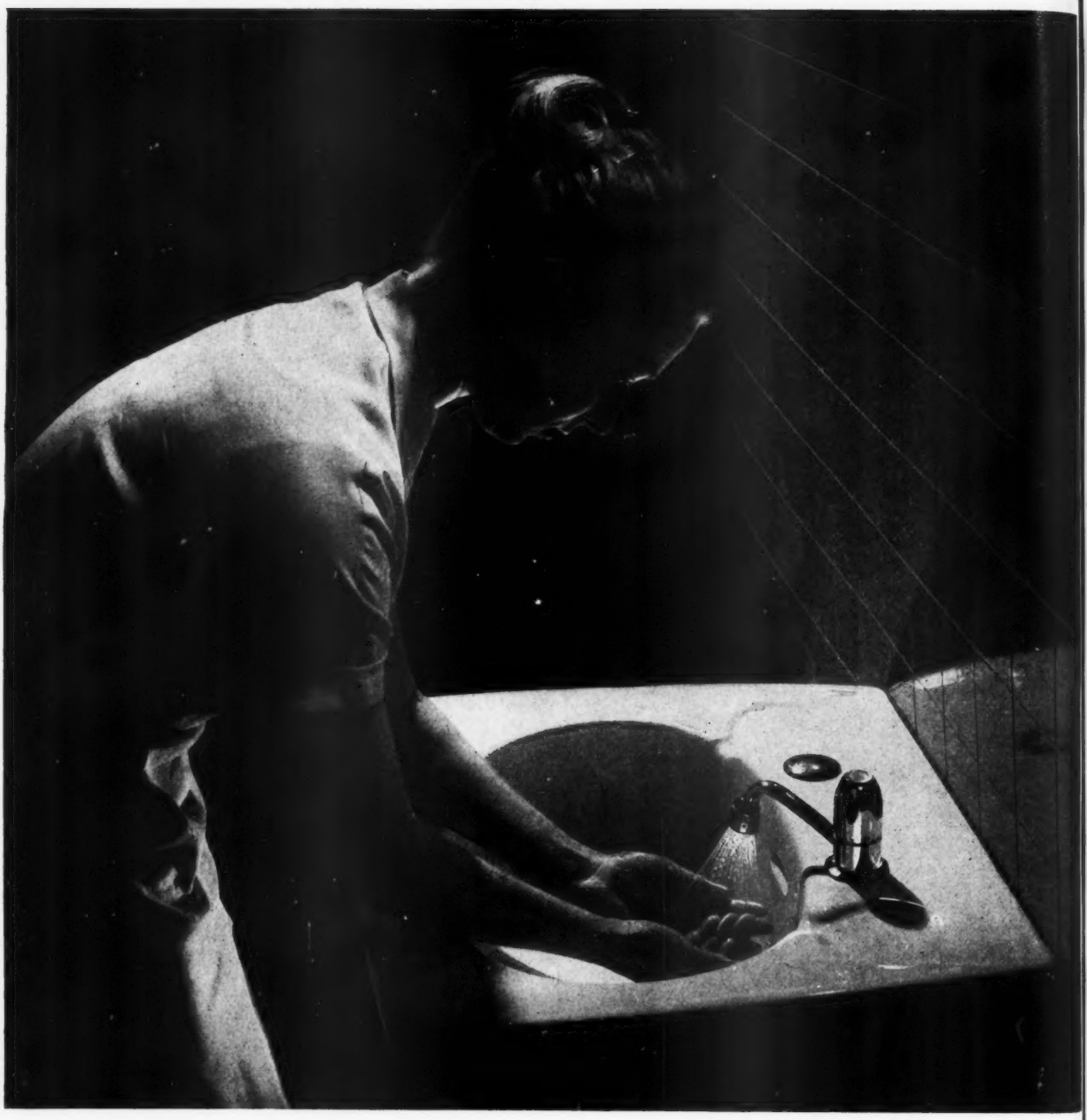
The architects' point of view was presented with equal restraint. Lionel Brett having put the case for and against æsthetic control with scrupulous fairness, agreed that on balance he felt the arguments for some kind of control were the stronger. As to the form this control should take, he did not believe that the restriction of control to unqualified persons or to limited areas was practical. Nor did he think that the co-opting of architects on to planning committees—although very valuable—was the whole answer. If there were to be no fundamental change in our approach to planning and design then the present system could be made to work provided the controls themselves were more subtly and gently exercised and were coupled with a certain amount of visual re-education. He went on to discuss major problems of design in three different types of environment. In towns we should make more use of the basic distinction between "Classic" and "Romantic" townscape as this could provide a valuable frame of reference and a useful guide to suitability. In suburbs he felt that layout and the overall idea was more important than the individual house, but this vital question of layout could not be left to the speculative builder if we were to avoid the tyranny of the building line. In rural areas, although the individual house was more important, he felt that trees rather than buildings dominated the landscape. In controlling design in the country it was to the villages—particularly, he thought, to the smaller villages—that we should turn for our inspiration.

Mr. Ling's views were somewhat more forthright. He roundly declared that no negative system of planning controls could ever, of itself, secure good design, however well it was administered. The present system whereby the architects on the staff of a planning authority were obliged to provide the spec builder with free professional services to protect the public from his outrages was, he believed, deplorable. It was high time for it to be made obligatory for all schemes submitted to planning authorities to be designed and submitted by architects, for although the proportion of architect-designed submissions varied considerably between different areas, it remained regrettably low. In his view the chief responsibility for our failure to produce good design in private housing lay with the builder and the building society, particularly since they encouraged developers and the general public to think in terms of individual plots of land rather than layouts and groups of buildings. There were many indications that public taste was developing and turning away from the old, largely pre-war standards of house design, but this could only find expression if developers, builders and architects could act together under the leadership of the planning authorities in a creative effort towards better design. Private architects, he believed, should insist on being allowed to play their proper part in designing housing schemes for today. If they allowed themselves to become mere agents for getting builders' plans and designs passed by the local authority they deserved rough treatment.

The discussions which followed the papers ranged very widely and on occasion were rather difficult to follow, but the President of the Society, E. F. Tew, had no such difficulty. In his summing up, he found the architects of Bristol and Somerset in agreement on a number of points. First, in the need to continue their efforts to educate the public taste for better design in private housing. On controls, it seemed clear, he thought, that most members would admit the need for design controls of some kind through increased sensitivity might make this unnecessary in the long run. If the design of every major project could be placed in qualified hands—as it obviously should be—not only could architects and planning officers act much more creatively; they might even be more tough with their clients when necessary! He himself believed that the advisory panel system worked well and hoped that it would be possible to set up committees for Bath and Bristol itself very soon.

An outsider's impression of the meeting was that in the West Country architects and planning officers seem to jog along without much serious friction. If the advisory panels of architects, which the county planning authorities seem to find particularly useful, are in part the reason for this, then there is at least one strong point in their favour. In Bristol at any rate it seems possible to discuss control of design more dispassionately than is the case elsewhere.

PAUL BRENIKOV



Unatap

One tap instead of two
giving both hot and cold
Wash in the running spray
halves the hot water

Unatap was designed by our Technical Staff in collaboration with the Building Research Station. More about it from Walker, Crosweller & Co. Ltd., in pamphlet UC/2.

WALKER, CROSWELLER & CO. LTD., CHELTENHAM

Telephone: CHELTENHAM 56317

Trusconversations 6

SCENE: An architect's office

Enter a harassed architect

"George! I've just been to the site and it's frightful — the soil I mean —"

"I can see that Jimmy, you've spread it all over the carpet."

"— Spriggs has dug one trial hole and there's six inches of sand, then peat — and in another there's running sand and, he says, at Podgers down the road they had to go down forty feet before they reached bottom — prestressed piles and all —"

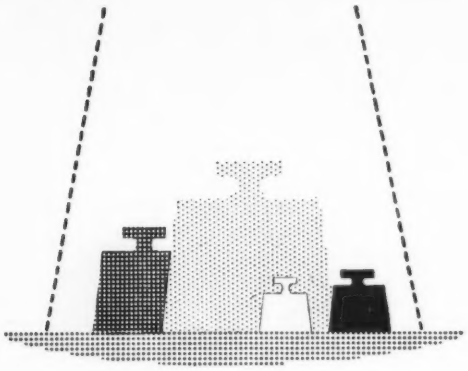
"Well we've got Truscon doing the structure."

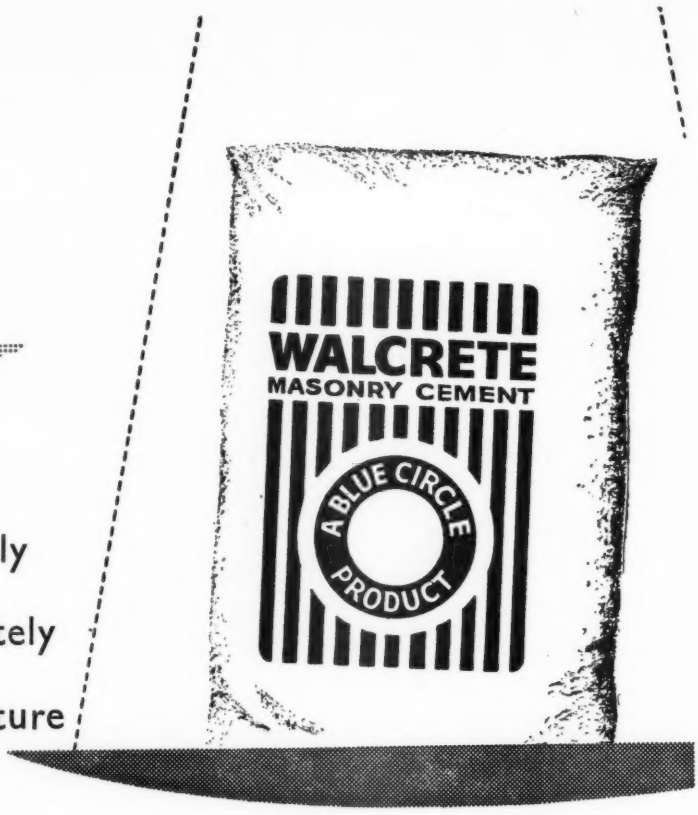
"Yes — and on the next site Spriggs says they've got normal footings — what have Truscon got to do with it?"

"Just this: they've got a couple of pretty good site investigation teams. Get 'em in Jim. They'll do a survey, give us a report and design the foundations too."

"You don't seem a bit worried George."

"I'm not. Now go and scrape the mud off your shoes."





Because the correct constituents are accurately proportioned and intimately mixed-in during manufacture you get the perfect mortar material with

WALCRETE

which is made under rigid laboratory control to Blue Circle standards. Only Walcrete, suitable sand and water are needed on the site. *Because of its high sand carrying capacity Walcrete produces a cheaper mortar* for brickwork, rendering, internal plastering etc., with the following properties:—

Excellent plasticity and workability
Low shrinkage and moisture movement
Higher resistance to sulphates than conventional mortars
Excellent cohesiveness
Frost resistance. Good water retentivity

Write for further details and prices to:
THE CEMENT MARKETING COMPANY LIMITED
PORTLAND HOUSE, TOTHILL STREET, LONDON, S.W.1
G. & T. EARLE LIMITED, HULL
THE SOUTH WALES PORTLAND CEMENT & LIME COMPANY LIMITED, PENARTH, GLAM.

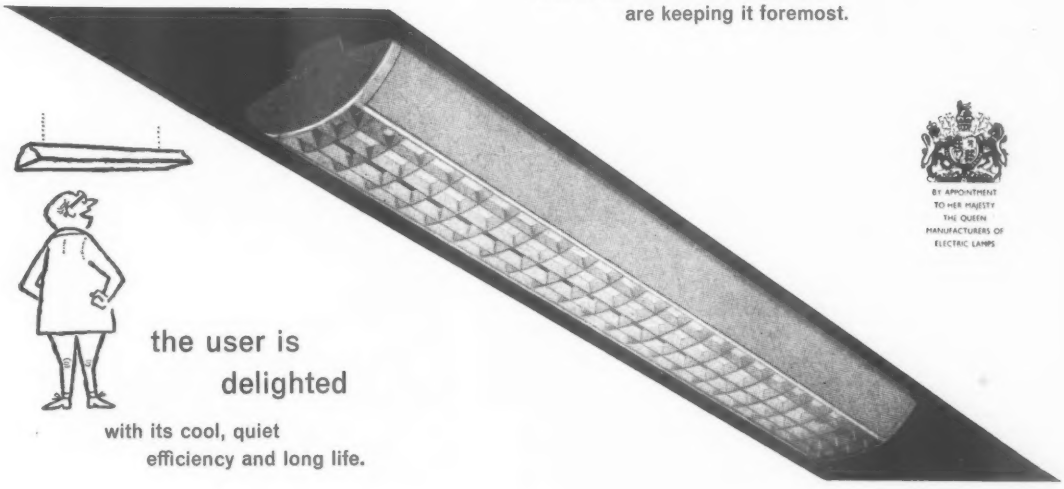
A BLUE CIRCLE PRODUCT

the architect remarked

on the sound design, its good-looks, its good-lighting; and that parts are standardised to cover so many needs at so low a cost.

the electrician was pleased

with the time saved by fast-installation fixing devices and ease of maintenance. 'New-Range' was the first of its kind and Crompton are keeping it foremost.



the user is delighted

with its cool, quiet efficiency and long life.

BY APPOINTMENT TO HER MAJESTY THE QUEEN MANUFACTURERS OF ELECTRIC LAMPS

NO WONDER OVER 250,000 'NEW-RANGE' FITTINGS ARE PLEASING EVERYONE THEY SERVE!

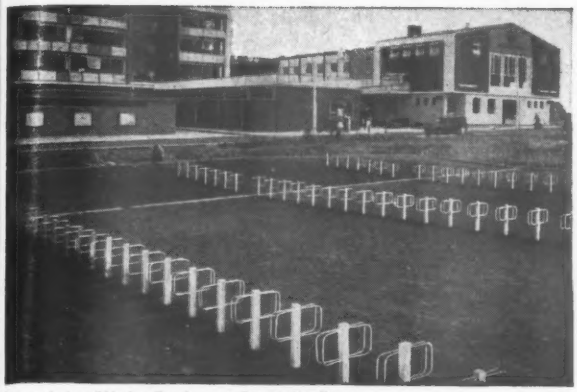
Full details and advice from any Crompton Parkinson branch office

ELECTRICAL EQUIPMENT

Crompton 'NEW-RANGE'

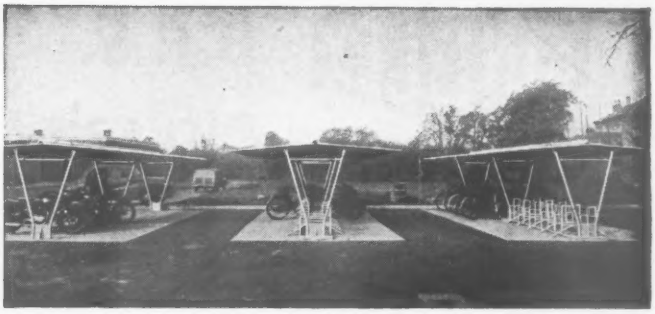
FLUORESCENT FITTINGS

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

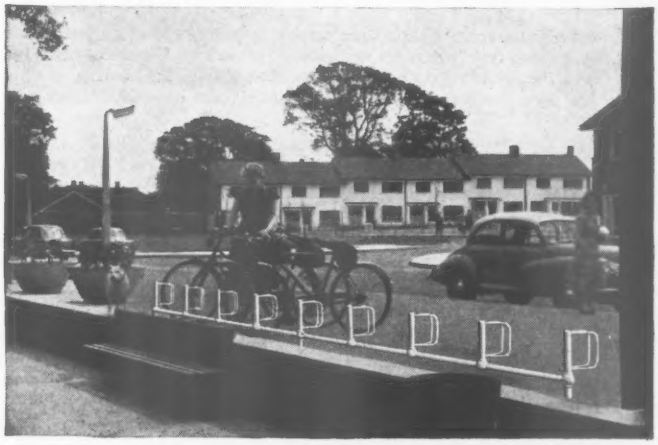


By permission of Harlow Development Corporation, Essex

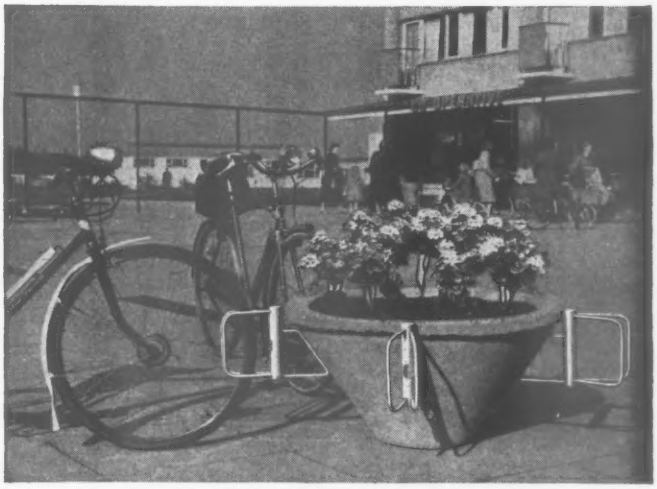
By permission of The Chief Education Officer, County Borough of Ipswich, Suffolk



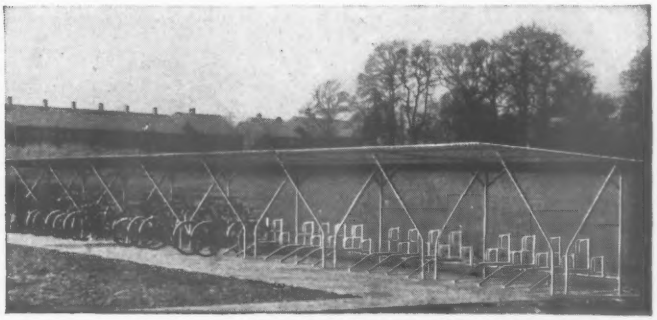
By permission of The Chief Education Officer, Norfolk Education Committee



By permission of The Chief Architect, Crawley Development Corporation, Sussex



By permission of L. G. Vincent, Chief Architect, Stevenage Development Corporation, Herts



By permission of The County Architect, Middlesex County Council

It's in the bag!

"Murilite"

REGD. TRADE MARK

PRE-MIXED PERLITE PLASTER

THE INTRODUCTION OF LIGHT WEIGHT AGGREGATE PLASTERS INTO THIS COUNTRY HAS MADE IT POSSIBLE FOR THE FIRST TIME TO PRODUCE A PRE-MIXED PLASTER, IN WHICH ALL THE INGREDIENTS NECESSARY TO PRODUCE PERFECT PLASTERING ARE PRESENT IN THE ONE BAG.

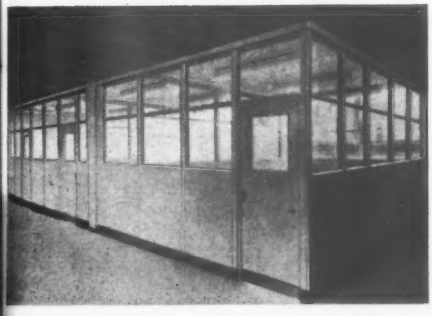
Pre-mixing ensures correct proportioning of plaster and aggregate.
No worries as to quality of sand.
Consistent setting time.
Greatly increased fire resistance.
Improved thermal insulation.
One third the weight of sanded plasters.
25% saving in weight of metal lath.
Reduction of pattern staining.
Sufficiently resilient to minimise cracking.
Less condensation.
No content harmful to decoration.

GYPSUM PLASTER & CEMENT

CAFFERATA & CO. LTD.

NEWARK • NOTTS. TELE : NEWARK · 2060

It depends upon the dividers



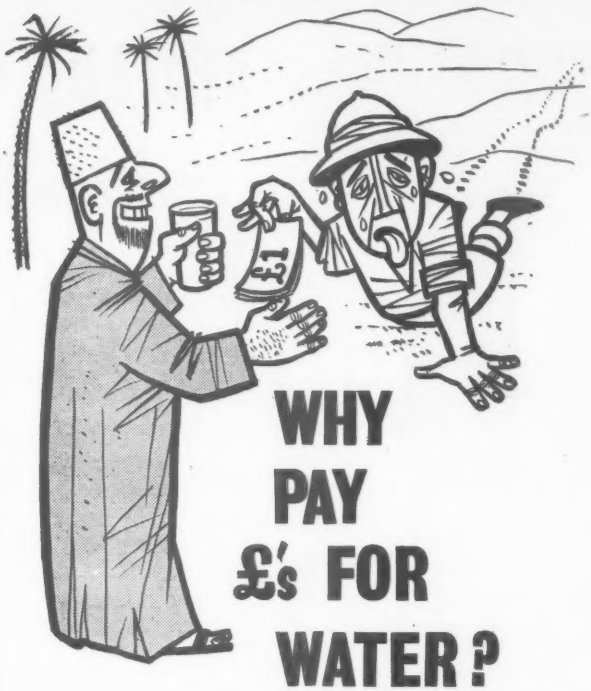
Even at the drawing board stage it is advisable to call in Constructors and obtain the benefit of their long and practical experience. Constructors steel partitioning is planned to ensure ease of installation and afterwards can be re-arranged with the minimum of inconvenience to suit changing requirements. Concealed wiring facilities, switches and built-in heating units are amongst the exclusive Constructors features that go far to achieve perfection in the designing of a well planned installation.

GOOD PLANNERS ALWAYS CONSULT

CONSTRUCTORS

FOR FACTORY EQUIPMENT & OFFICE FURNITURE

CONSTRUCTORS GROUP. Dept. Z, 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



WHY PAY £'s FOR WATER?

YOU DON'T—WHEN YOU BUY

UNI-BOND

Uni-Bond is sold undiluted, extended or filled, and therefore has treble it's value, as it can be filled and diluted to your own particular work.

For instance:—
1 Gallon of Uni-Bond added to 2 gallons water, produces 3 gallons of bonding fluid for plastering or rendering.
The highly concentrated nature of UNI-BOND, unlike many imitations, permits considerable dilution for numerous applications without loss of adhesion. UNI-BOND is the most universal bonding agent used throughout the United Kingdom, by the M.O.W., Admiralty, Air Ministry, War Department, and the largest and leading building contractors, also specified by leading architects.

Uni Bond

BONDS ANYTHING TO ANYTHING

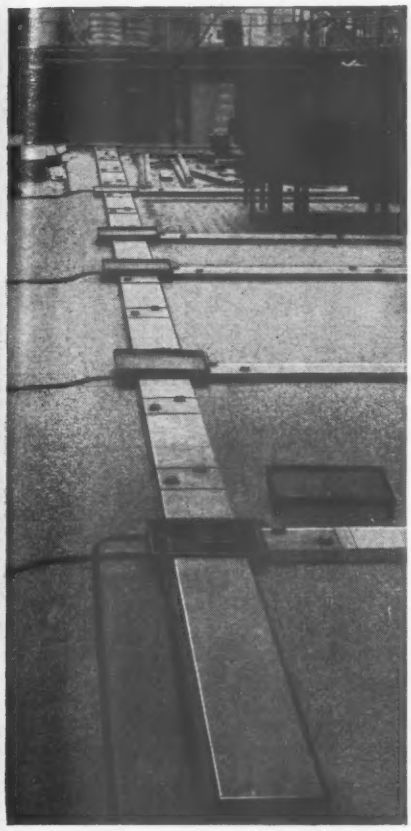
More and more UNI-BOND, the multi-purpose Bonding Agent, is being used by Joiners, Plasterers, Painters, Decorators, in floor-laying, glazed tiling, and in fact, everywhere where timber, metals, hardboard, bricks, tiles and a hundred other materials that require permanently filling, bonding or cementing together.
In handy cans, no mixing or heating, clean in use and finish. UNI-BOND is resistant to water, oil and petrol and dilute acids, does not crack or craze.

THERE IS NOTHING SO GOOD AS UNI-BOND

BACKED BY A MONEY-BACK GUARANTEE

Send your enquiries to:—

DEPT. 'E'
THE LIQUITILE SUPPLY CO. LTD.,
48, HIGH STREET,
CAMBERLEY, SURREY
TEL.:—Camberley 2263



THE IMPROVED

Greenwood-Airvac underfloor Conduit System

. . . provides for all cables to be accommodated in one duct with adequate screening between telephone and power cables.

Bankers Trust C., (New York) Bucklersbury House, E.C.4. Architect: O. Campbell-Jone:, Esq. FRIBA, FRICS, London, E.C.4. Main Contractors: Humphreys Ltd., London, S.W.1. Electrical Contractors: Thorpe & Thorpe Ltd., London, E.C.4.

Latest Developments:
★ Remote adjustable floor frame in brass
★ Waterproof junction box

Greenwood Airvac Conduits Ltd

GREENWOOD AIRVAC CONDUITS LIMITED

Patentees, Designers and Manufacturers of Electrical Conduit Systems

Carlisle House, 8 Southampton Row, W.C.1. CHAncery 9377 (3 lines) 'Grams 'Aircon' Westcent London

---

The ECONARAD Junior

Made from a noble metal (copper to BSS 659) and to a beautiful design, the Econarad can be safely used without expensive calorifiers

Standard Sizes? We make several.

Special Sizes? Anything you say.

May we tell you more about it?

ECONA MODERN PRODUCTS, LTD. AQUA WORKS, HIGHLANDS ROAD SHIRLEY, SOLIHULL, WARWICKSHIRE Tel: Solihull 3078 52430

CLASSIFIED ADVERTISEMENTS

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

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

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 despatched by air-mail on Wednesday of each week (one day prior to A.J. publication date). The cost of this special service to Overseas subscribers will be 5s. for four weeks (1s. 3d. for each additional week) and 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

30s. per inch; each additional line, 2s. 6d.

CORPORATION OF THE CITY OF ABERDEEN
TOWN PLANNING DEPARTMENT

Applications are invited for the following posts:—

(*a*) SENIOR ASSISTANT (PLANNING) in the Salary Grade £945 to £1,085 per annum.

(*b*) SENIOR ASSISTANT (DEVELOPMENT CONTROL) in the Salary Grade £1,005 to £1,085 per annum.

(*c*) ASSISTANT (DEVELOPMENT CONTROL) in the Salary Grade £880 to £955 per annum.

(*d*) PLANNING ASSISTANT in the Salary Grade £700 to £760 per annum.

Further particulars of these posts are obtainable from the Director of Town Planning, 5, Bon-Accord Crescent, Aberdeen, to whom applications should be submitted on or before 22nd November, 1958.

J. C. RENNIE,
Town Clerk.
1929

NEWCASTLE REGIONAL HOSPITAL BOARD
REGIONAL ARCHITECT'S DEPARTMENT

Applications are invited for the following permanent (superannuable) posts on the staff of the Regional Architect.

In addition to its normal building programme the Department is concerned with the planning and execution of a number of major hospital projects and the posts offer ample opportunity for gaining all-round general as well as hospital experience, and for doing good-class work in an expanding department.

(*i*) **ASSISTANT ARCHITECT.** Salary—£700 × £25 (3) × £30 (1) × £35 (6)—£1,015.

Applicants for this post should be registered architects and should have had practical experience of the planning and construction of public buildings. In this case the commencing salary will be fixed within the Grade by reference to relevant experience and to age.

(*ii*) **SURVEYING ASSISTANT** (Lands and Buildings). Salary—£525 (at age 21 or over) × £20 (4) × £25 (5)—£730.

Applicants for this post should have passed the Intermediate Examination of the Royal Institution of Chartered Surveyors, or an examination recognized by the Institution as equivalent, and should be experienced in surveying sites and buildings. The successful applicant will be required to assist with the making of a survey of all hospital sites and buildings in the Region and the preparing of record plans.

The commencing salary within the grade will depend upon the applicant's age and the amount of practical experience.

Applications, stating age, qualification, past and present appointments, present salary and details of experience and training, together with the names of three referees (of whom at least two should be architects), should be forwarded to the Secretary to the Board, Benfield Road, Newcastle-upon-Tyne, 6, not later than 12th November, 1958. 1852

QUANTITY SURVEYING ASSISTANTS required by AIR MINISTRY in LONDON and PROVINCES. Duties include abstracting and billing, site measurement and preparation of estimates. Commencing salary and grading according to age, qualifications and experience. Salary ranges in London: (*a*) £545 at age 25 rising to £745 for candidates with minimum three years good experience under Quantity Surveyor or Building Contractor; (*b*) £695 at age 26 rising to £870 for candidates with O.N.C. (Building) or (Builders Quantities) or equivalent and good experience under Quantity Surveyor or Building Contractor. Approved full time study will count towards period of experience. Salaries somewhat lower in Provinces. Promotion and pensionable prospects. Five-day week, 3 weeks' leave a year. Appointments carry liability for service anywhere U.K. or overseas. Applicants normally should be natural born British subjects. Write stating age, qualifications and previous appointments including type of work done, to Manager, Professional and Executive Register, Ministry of Labour and National Service, Atlantic House, Farringdon Street, E.C.4, quoting reference PE 105/745. No original testimonials should be sent. Only applicants selected for interview will be advised. 1627

TOWN PLANNERS

Central Mortgage and Housing Corporation, Canada's Federal housing agency, requires experienced TOWN PLANNERS for work in the Architectural and Planning Division, Head Office, Ottawa.

Applicants should be corporate members of the Town Planning Institute and possess a university degree or equivalent in architecture or engineering. Experience in physical planning essential.

Starting salary from $4,800 to $5,400 per annum, depending on qualifications and experience.

Travel assistance grants to help defray the cost of moving to Canada will be given on the following scale:

Married: $500.
Single: $200.

Applications, stating age, marital status, qualifications and details of experience, together with the names and address of three referees, are to be addressed to Supervisor, Personnel Department, Head Office, Ottawa. Replies will be treated in confidence. 1840

BOROUGH OF EPSOM AND EWELL
BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT
APPOINTMENT OF ARCHITECTURAL ASSISTANT—A.P.T. I

Applications are invited for the appointment of an Architectural Assistant on Grade A.P.T. I commencing salary up to £755 per annum including London weighting.

Applicants should have had experience in the preparation of plans, specifications, etc., connected with the development of housing estates and maintenance of buildings and preference will be given to candidates holding the Intermediate examination of the R.I.B.A.

Applications stating age, qualifications and experience, with the names of three referees should be sent to Mr. C. G. Cobbett, A.M.I.C.E., M.I.Mun.E., Borough Engineer and Surveyor, Town Hall, The Parade, Epsom, so as to reach him not later than the 17th November.

EDWARD MOORE,
Town Clerk.

October, 1958. 1900

BOROUGH OF CHELMSFORD
CAPITAL WORKS PROGRAMME

Applications are invited for a JUNIOR ARCHITECTURAL ASSISTANT, Grade A.P.T. I (£575—£725 p.a.), or Grade A.P.T. II (£725—£845 p.a.). Starting salary according to experience. Further particulars may be obtained from the Borough Surveyor, Municipal Offices, Chelmsford. Closing date 11th November, 1958.

B. A. FRANCIS,
Town Clerk.
1813

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies exist for ARCHITECTS, Grade II (salary £1,037 10s.—£1,305) and Grade III (salary £815—£1,090) for the Housing, Schools and General Divisions. Full and varied programme of new work including Schools, Multi-storey Flats, and Town Development. Starting salaries according to qualifications and experience.

Particulars and application form, returnable by 21st November, from Hubert Bennett, F.R.I.B.A., Architect to Council, County Hall, S.E.1 (Ref. EK/48/58). (2091.) 1837

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD

Applications are invited for the following appointments on the permanent staff of the Board's Regional Architect generally in accordance with Whitley Council conditions of service. London weighting allowances payable in all grades.

ASSISTANT ARCHITECT

Applicants must be Associate members of the Royal Institute of British Architects and capable of preparing working and detailed drawings and specifications and supervising work on individual projects. Experience of hospital planning and construction an advantage. The commencing salary will be within the scale £700 × £25 (3) × £30 (1) × £35 (6)—£1,015.

ASSISTANT QUANTITY SURVEYOR (*a*)
ASSISTANT LAND SURVEYOR (*b*)

Applicants for both posts must be Corporate members of the Royal Institute of Chartered Surveyors.

(*a*) (Quantity Surveying Section) with sound practical experience in working up and taking off of quantities for contracts, checking contractors' accounts, estimating and analysing prices.

(*b*) With sound practical experience of the Surveying of land and buildings and familiarity with matters relating to the Town and Country Planning and Building By-laws.

The commencing salary for both posts will be within the scale £700 × £25 (3) × £30 (1) × £35 (6)—£1,015 p.a.

ARCHITECTURAL ASSISTANT AND LAND SURVEYING ASSISTANT

Applicants must have passed the Intermediate Examination of the appropriate institution or an examination giving exemption therefrom. Salary £525 (at 21 or over) × £20 (4) × £25 (5)—£730 p.a. Commencing salary may be above the minimum but not more than £605 per annum.

Application forms may be obtained from the undersigned at 40, Eastbourne Terrace, W.2, and must be completed and returned by not later than 24th November.

E. G. BRAITHWAITE,
Secretary.
1902

BOROUGH OF ACTON
ARCHITECTURAL ASSISTANT

Applications are invited for the permanent appointment of Architectural Assistant, A.P.T. I, £575 to £725 p.a. plus London allowance (maximum £30).

Applicants should have passed the R.I.B.A. Intermediate examination or its equivalent.

Applications including age, qualifications, experience and the names of two referees, must be sent to the Borough Engineer, Town Hall, Acton, W.3, by 17th November, 1958. 1875

CORBY DEVELOPMENT CORPORATION
ARCHITECTS

Applications are invited for the following appointments on the staff of the Chief Architect:

A SENIOR ASSISTANT ARCHITECT, salary within the Grade A.P.T. VII, £1,034—£1,273.

AN ASSISTANT ARCHITECT, salary within the grade A.P.T. V, £844—£1,029.

The commencing point within these scales will depend upon experience and qualifications.

The appointment will be subject to Superannuation under the Local Government Scheme.

The work of the Corporation offers wide experience in the design and construction of houses, Town Centre buildings and factories, both in large schemes and in individual buildings.

Housing is available and assistance with removal expenses will be provided.

Applications stating age, education, training, qualifications, experience, present and past appointments and salary, together with the names of two Referees must reach the undersigned by Tuesday, 18th November, 1958.

R. F. BROOKS GRUNDY,
General Manager.

Spencer House,
Corby, Northants. 1882

COUNTY COUNCIL OF NORTHUMBERLAND
COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the post of ASSISTANT QUANTITY SURVEYOR on the permanent staff of this Department. Salary on A.P.T. scales Grade III—£845 rising by five annual increments to a maximum of £1,025 per annum.

Applicants should have experience in the preparation of bills of quantities, measurement of work on site and preparation of interim valuations and final accounts and must have passed the Final examination of the Royal Institution of Chartered Surveyors (Quantities Sub-Division).

Applications giving full details of age, education, qualifications, and previous experience together with the names and addresses of two referees to whom reference can be made should reach this office not later than Friday, 14th November, 1958.

The appointment will be subject to the provisions of the Local Government Superannuation Acts and the successful candidate will be required to pass a medical examination.

C. C. BROWN, A.R.I.B.A.,
County Architect.

County Hall,
Newcastle upon Tyne, 1. 1889

URBAN DISTRICT OF FELTHAM
ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of an Architectural Assistant on the Council's unestablished staff at a salary within Grade A.P.T. III of the National Scales (£845—£1,025 per annum) plus London weighting. Applicants must be suitably qualified.

Forms of application, obtainable from the undersigned, must be returned accompanied by copies of two testimonials not later than 18th November, 1958. Canvassing directly or indirectly will disqualify and applicants must disclose, in writing, whether to their knowledge they are related to any member of or the holder of any senior office under the Council.

M. W. COUPE,
Clerk of the Council.

Council Offices,
Feltham, Middlesex. 1905

BOROUGH OF HARROW
APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of Architectural Assistant, A.P.T. Grade II (£725 to £845 per annum, plus London weighting) in the department of the Borough Engineer and Surveyor. Candidates should have passed the Intermediate Examination of the Royal Institute of British Architects.

The appointment will be subject to the provisions of the Local Government Superannuation Acts and to the National Joint Council's Scheme of Conditions of Service.

The Council is unable to provide housing accommodation for the successful candidate. Canvassing will disqualify.

Forms of application, obtainable from me, should be returned not later than Saturday, 22nd November, 1958.

D. H. PRITCHARD,
Town Clerk.

Town Clerk's Office,
Harrow Weald Lodge,
Harrow,
Middx. 1924

ASSISTANT ARCHITECT required by POPLAR BOROUGH COUNCIL. Permanent appointment. Salary scale £750—£1,030 plus weighting.

Applicants must have passed the Final R.I.B.A. and have had town planning experience.

Application form obtainable from Borough Engineer and Surveyor, Poplar Town Hall, Bow Road, E.3. Closing date, 17th November, 1958. 1904

SLOUGH CORPORATION
ASSISTANT ARCHITECT needed for housing and re-development schemes and general municipal building works. Applicants should have good experience in design and supervision of works. Salary within Grade for Special Classes (£750 × £40—£1,030). Must be A.R.I.B.A. Housing would be provided for married candidates.
Confidential applications, giving names of two referees, age, qualifications and experience, should reach the Borough Engineer, Town Hall, Slough, Bucks, by Monday, 17th November, 1958. 1891

CITY AND COUNTY OF BRISTOL
CITY ARCHITECT'S DEPARTMENT
Applications invited for Permanent Staff Post of SENIOR ASSISTANT ARCHITECT, Grade A.P.T. II (£725 × £30—£845) or Special Scale (£750 × £40—£1,030). Starting grade will be appropriate to professional experience and qualifications but preference given to Associate Members of R.I.B.A.
Applicants must have had considerable experience in design, construction and contract administration preferably with large local authority. Details and application forms, returnable by November 17th, from City Architect, Council House, Bristol, 1. 1907

BOROUGH OF EALING
(a) BUILDING SURVEYOR, A.P.T. II (£755—£875 inclusive). Experienced in estimating for architectural work and supervision of small building jobs.
(b) ENGINEER FOREMAN, MISC. VI (£715—£775 inclusive). Skilled engineering fitter, experienced in steam and oil-fired boilers, automatic stokers, kitchen machinery and machine tool repairs.
Full particulars and application forms from Borough Surveyor, Town Hall, Ealing, W.5. Closing date 17th November, 1958. 1850

CANNOCK URBAN DISTRICT COUNCIL
APPOINTMENT OF ARCHITECTURAL ASSISTANT
Applications are invited for this vacancy in the Architect's Department at a salary within Grade A.P.T. II (£725—£845) per annum, the commencing point to be fixed according to qualifications and experience. Housing accommodation available for married applicants. Further particulars and forms of application are available from the undersigned. Closing date, 23rd November, 1958.
H. C. ALLEN,
Clerk of the Council.
Council House,
Cannock, Staffs.
1st November, 1958. 1925

LANCASHIRE COUNTY COUNCIL
PLANNING ASSISTANTS required at PRESTON, WIGAN and BURY. Applicants should be studying for, or possess, a qualification in planning, architecture, civil engineering or surveying and appropriate experience is desirable.
National Joint Council Conditions of Service. Salary rising to £1,030 (N.J.C. Special Scale) for qualified applicants.
Candidates not yet fully qualified will be appointed on the appropriate grade and subject to satisfactory service will progress to the Special Scale on obtaining the final qualification.
Applications stating appointment applied for, giving age, qualifications, present appointment and two referees to the County Planning Officer, East Cliff County Offices, Preston, by 17th November, 1958. 1898

BOROUGH OF HESTON AND ISLEWORTH
APPOINTMENT OF GENERAL ARCHITECTURAL ASSISTANT
Applications are invited for the appointment of a General Architectural Assistant at a salary in accordance with Grade A.P.T. II (£725 × £30—£845) plus London weighting.
Applicants must have had good experience in architectural design and building work under construction and should have passed the Intermediate examination of the Royal Institute of British Architects.
The Council is unable to assist with housing accommodation.
Applications are to be submitted by November 17th on forms to be obtained from and returned to the Borough Engineer and Surveyor, 88, Lampton Road, Hounslow. Canvassing will disqualify.
D. MATHIESON,
Town Clerk.
Town Hall,
Hounslow. 1823

LONDON COUNTY COUNCIL
PARKS DEPARTMENT
Vacancies exist for:—
(I) ARCHITECTURAL ASSISTANT. Applicants must have good draughtsmanship and drawing office experience on preparation of working drawings and specifications, supervision of contract work and land surveying.
(II) LANDSCAPE ARCHITECTURAL ASSISTANT. Required for preparation of working drawings, specifications and supervision of works on site, for new parks, etc.
(III) TECHNICAL ASSISTANT. Required for preparation of working drawings, schedules, specifications and supervising contracts for new playing fields and school gardens. Drawing office and land surveying experience essential.
Salaries up to £860 a year according to qualifications and experience.
Application forms from Chief Officer of the Parks Department, The County Hall, Westminster Bridge Road, S.E.1 (WATerloo 5000 Ext. 8076). (2142) 1915

CITY OF BIRMINGHAM
CITY ARCHITECT'S DEPARTMENT
DRAUGHTSMEN OR DRAUGHTSWOMEN required, with experience in Architecture or Constructional Engineering.
Commencing salaries, according to capabilities and experience, will be within Grade A.P.T. I (£595—£745) for applicants possessing the Ordinary National Certificate, or Miscellaneous Grades IV, V or VI (£585—£765) for unqualified applicants with suitable practical experience.
Pension Scheme, five-day week, medical examination.
Applications, stating age, present post and salary, qualifications, experience and two referees, to the undersigned by 21st November, 1958.
A. C. SHEPPARD FIDLER,
City Architect.
Civic Centre, Birmingham, 1. 1930

GLOUCESTERSHIRE COUNTY COUNCIL
ARCHITECTURAL ASSISTANTS
(QUALIFYING CLASS)
A.P.T. Grade I (£575—£725), A.P.T. Grade II (£725—£845) and Special Grade (£750—£1,030). Applicants for Grades I and II must have passed Intermediate Examination R.I.B.A. and for Special Grade the Final Examination. N.J.C. Service Conditions, superannuation, medical examination.
Apply giving age, present position, salary and date of appointment, details of previous appointments and names and addresses of two persons for reference, to County Architect, Shire Hall, Gloucester, by 13th November.
GUY H. DAVIS,
Clerk of the Council. 1926

BATTERSEA BOROUGH COUNCIL
Applications are invited from suitably qualified persons for the permanent appointment of ASSISTANT QUANTITY SURVEYOR in A.P.T. Grade II (£725 × £30—£845 per annum, plus London weighting £30 per annum age 26 or over). The commencing salary will be according to qualifications and experience.
The appointment is subject to the Local Government Superannuation Acts, 1937/53. Further particulars and form of application obtainable from the Borough Engineer and Surveyor, Town Hall, S.W.11. Closing date 14th November. 1880

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD
ASSISTANT ARCHITECT required—good experience of design and construction necessary preferably in hospital work. Applicants must be Associate Members of the R.I.B.A. Salary scale £700 × £25 (3) × £30 (1) × £35 (6)—£1,015 plus £20—£50 London weighting. *Ref.* 679.
ARCHITECTURAL ASSISTANTS also required. Applicants must have Intermediate R.I.B.A. Salary scale £525 (age 21) × £20 (4) × £25 (5)—£730 plus £20—£30 London weighting. *Ref.* 680.
Commencing salary above minimum may be paid according to relevant practical experience appropriate to the posts. Whitley Council conditions, superannuable. Apply, stating age, qualifications (with dates) and experience, with names of two referees to Secretary, North West Metropolitan Regional Hospital Board, 40, Eastbourne Terrace, W.2, by 17th November, quoting appropriate reference number. 1913

ADMINISTRATIVE COUNTY OF LEICESTER
SURVEYOR required by County Land Agent and Valuer, 10 Market Street, Leicester. Duties include design, construction and repair of farmhouses and buildings and valuation of urban property for rent, rating, purchase, etc. Candidates must have passed Finals of R.I.C.S., C.A.E.A.I., or equivalent. Initial salary according to qualifications and experience within scale £750—£1,030. Selected candidate required to have car; loan for purchase granted if necessary; allowance paid for running costs. Post pensionable. Alternate Saturdays free. Removal expenses and temporary lodging allowance paid to married man in certain circumstances. Apply by 24th November, giving full details and names and addresses of three referees. 1912

NATIONAL COAL BOARD
EAST MIDLANDS DIVISION
QUANTITY SURVEYING ASSISTANT required for the Architect's Department, Nottingham.
The post will be graded Quantity Surveying Assistant, Grade 2 (salary scale £595 × £25—£710) or Grade I (£715 × £25—£850) according to experience and qualifications.
Experience in a contractor's office will be an advantage.
Applications within 7 days to Divisional Chief Staff Officer, National Coal Board, East Midlands Division, Sherwood Lodge, Nr Arnold, Nottingham. Please mark envelope and application S.V 495. 1902

HALTEMPRICE URBAN DISTRICT COUNCIL
ENGINEER AND SURVEYOR'S DEPARTMENT
Applications are invited for the appointment of an ASSISTANT ARCHITECT in the Engineer and Surveyor's Department, A.P.T. Special Grade, £750 × £40—£1,030 per annum, with commencing salary dependent upon qualifications and experience.
The appointment will be temporary and for a period of about two years, and the successful applicant will be required to take charge of the Council's Housing Contracts and to work on other schemes the Council has in hand.
Applications, stating experience and commencing point within the salary scale required, and names of two persons to whom reference may be made, should be forwarded to the Engineer not later than noon on Monday, 17th November, 1958.
A. B. GLASSFOOL,
Clerk of the Council.
Anlaby House,
Anlaby, East Yorkshire. 1918

Architectural Appointments Vacant

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra

INTERMEDIATE ASSISTANTS required for Architect's Office, London Salary £600 to £800. Industrial and Commercial projects. Scope for initiative and responsibility. Box 1696.

ARCHITECTURAL ASSISTANTS required for Office, University, Laboratory and Hospital Buildings, some office experience necessary. Intermediate or Final standard. Five-day week. Write Adams, Holden & Pearson, 38, Gordon Square, W.C.1. 1688

FIRST CLASS SENIOR ASSISTANT required. Must have good office experience in London. Very interesting work. Five-day week. Morris de Metz, F.R.I.B.A., 2, Ludgate Hill, London, E.C.4. Telephone CITy 4086. 1656

BURLES & NEWTON require ARCHITECTURAL ASSISTANTS in their London and Southend-on-Sea offices. Interesting and varied practice, including churches, schools, housing, etc. Some experience necessary. R.I.B.A. Final standard. Age about 23-30. Reply, giving details of experience and salary required, to 25, Bedford Row, W.C.1, or to Weston Road, Southend-on-Sea. 1785

ARCHITECTURAL ASSISTANT required up to Intermediate standard, good draughtsmanship essential. Salary by arrangement. Vigers & Co., Architects, 4, Frederick's Place, Old Jewry, London, E.C.2. 1751

SENIOR and INTERMEDIATE ASSISTANTS are invited to join an expanding Architect's practice in Edgbaston, Birmingham, which offers exceptional prospects. Box 1762.

ARCHITECTURAL ASSISTANT required in the Chief Architect's office of a la Multiple retail firm with offices in London. F day week, pension scheme, dining room. Apps cants should state age, qualifications, experience and salary required. Box 1767.

ARCHITECT. Housing Development division (centred in Surrey) of substantial construction company, seek services of A.R.I.B.A. to head architectural section. Particular interest needed as to cost research, and the minimising of variations during construction. Must be conversant with layout and engineering considerations, and have good experience in contemporary design. Salary by arrangement (not less than £1,000 p.a.). Car provided. Contributory pension scheme. Assistance with accommodation if required. Please apply, stating age, and salary required, and experience to Box 1812.

ARCHITECTURAL ASSISTANTS required for large schemes of contemporary character. Excellent opportunities to suitable applicants. Five-day week. Please write giving full particulars of experience and salary required to Johns, Slater & Haward, F./A.R.I.B.A., 32, Foundation Street, Ipswich. 1817

ARCHITECTURAL ASSISTANTS required with office experience for varied and interesting work. Pension scheme available. Write stating experience and salary required to Ernest J. Thomas, Jolly & Grant, 26 Kent Road, Southsea, Hants. 1804

ASSISTANT ARCHITECT required for varied work, should be qualified or near Final standard. Pension scheme available. Write with details training and salary required. T. H. Johnson & Son, FF./R.I.B.A., 20, Priory Place, Doncaster. 1824

INTERMEDIATE ASSISTANT with office experience required London Office, varied work. Preference given to applicants actively studying for Final. Study time allowed by arrangement. Box 1825.

ASSISTANT required in busy West End practice, about 25 years of age and R.I.B.A. Intermediate standard. Good opportunities for taking responsibility. Please write giving details of experience, and salary required. Box 1868.

ARCHITECTURAL ASSISTANTS required in busy progressive practice in Middlesbrough carrying out interesting and varied work. The salary payable will be according to qualifications and experience within the range £700—£900 p.a. Apply in writing stating age and details of previous experience to Box 1801.

WANTED, ARCHITECTURAL ASSISTANTS, qualified and Intermediate standard, for posts in Huddersfield or Shrewsbury Offices. Interesting responsible work—Schools, Factories, Hospitals, Churches, etc. Pension Scheme. Abbey & Hanson, 11, Cloth Hall Street, Huddersfield. Tel. 225. 1848

NORMAN JONES, SONS & RIGBY require ARCHITECTURAL ASSISTANTS, good draughtsmen, sound knowledge of building construction, able to produce working drawings, surveys, etc. Salary ranges £750—£800 and £600—£700. Please write stating age, experience, etc. to 271 Lord Street, Southport, Lancashire. 1846

ASSISTANT ARCHITECTS. Recently qualified men or those near Finals required in the Architect's Department of Richard Costain Ltd. Permanent and pensionable post. Apply to Assistant Personnel Officer, 111, Westminster Bridge Road, London, S.E.1. 1842

ARCHITECTURAL ASSISTANT required for small office with varied practice. Five-day week. Please write, stating age, training, experience and salary required. Alexander Graham, F.R.I.B.A., 15, The Tything, Worcester. 1856

BUCKINGHAMSHIRE firm of Architects within 30 miles of London with a varied practice require an ARCHITECTURAL ASSISTANT at Final R.I.B.A. standard. Five-day week. Salary according to age and experience. Please write giving full particulars to Box 1851.

RONALD WARD & PARTNERS require ARCHITECTURAL ASSISTANTS with contemporary outlook, and willing to use own initiative. Salary range £600 to £900. Congenial working conditions. Five-day week. Apply 29, Chesham Place, Belgrave Square, S.W.1. Telephone Belgravia 3361. 1830

ARCHITECTURAL ASSISTANT of Intermediate R.I.B.A. standard required in Reading Office. Applicants must be good draughtsmen, able to make surveys, produce working drawings and details. Must be used to working in a provincial office. Apply in writing, stating experience and salary required to Box 1869.

VERNER REES, LAURENCE & MITCHELL require an ARCHITECTURAL ASSISTANT who has at least three years' office experience. Please write to 38, Holland Villas Road, W.14. 1910

ARCHITECTURAL ASSISTANT at about Intermediate standard required for private practice. Good salary according to ability. Write for full particulars to Thompson & Chipperfield, 1, Woburn Street, Ampthill, Bedford. 1909

QUALIFIED Architect, aged about 30, required as CHIEF ASSISTANT for Country Practice. Reply, giving age, details of experience and salary required to Box 1933.

ARCHITECTURAL ASSISTANT.—Applications are invited for the post of temporary Architectural Assistant in a Dublin office. Applicants should have experience in design and presentation of sketch schemes. Salary £8 to £10 per week according to ability and experience. Applications, giving full details of age, education and experience, should be submitted on or before November 15th, 1958, to Box 1931.

BIRMINGHAM Architects, Clifford Tee & Gale, F/F.R.I.B.A., have a vacancy for an Intermediate Standard ARCHITECTURAL ASSISTANT and a Final Standard ASSISTANT with office experience for large and interesting industrial and commercial projects. Five-day week. Apply to Mr. R. G. Cox, F.R.I.B.A., 43, Frederick Road. Telephone Edgbaston 3676. 1928

SENIOR and JUNIOR ASSISTANTS required. Salary according to ability/experience. Five-day week. Apply with full particulars to G. de C. Fraser, Son & Gearey, 27, Dale Street, Liverpool. 1927

CHIEF ARCHITECTURAL ASSISTANT with experience and initiative urgently required to take charge of small Drawing Office. Varied practice. Salary £1,080—£1,200. Apply, giving full particulars of qualifications, experience, training, to Box 1923, or telephone Shoreditch 3383 for appointment.

JAMES & BYWATERS urgently require ASSISTANT for careful detailing. Applicants must be of at least Intermediate standard and have had not less than two years' office experience. Salary to be agreed at interview. Apply in writing to 5, Bloomsbury Street, W.C.1, or telephone Museum 9952. 1922

ARCHITECTURAL ASSISTANT required—Intermediate standard or above. Some office experience essential. Salary according to ability, experience and qualifications. Apply: Wm. Crabtree, F.R.I.B.A., 8, Robert Adam Street, W.1. (Tel.: WEL. 9909.) 1917

ARCHITECT requires part-time or temporary help from experienced Assistant/Associate in London area. Speed, accuracy and good draughtsmanship essential. Must be able to carry out surveys unsupervised. Box 1921.

INTERMEDIATE/FINAL ASSISTANTS immediately; varied interesting work; good detailing essential. Phone AMB. 7271 for appointment; Musman & Cousens, 12, Upper Berkeley Street, W.1. 1887

QUALIFIED or Final standard ARCHITECTURAL ASSISTANT with at least two years' office experience. Must be a good draughtsman, orderly minded and with practical knowledge of detailing and general office routine. Applicant will be responsible for supervising small drawing office as well as some outside site supervision. Excellent opportunity for applicant seeking responsibility. Five-day week, luncheon vouchers. Apply in hand-writing, giving full particulars of experience and salary required, to Felix Walter, F.R.I.B.A., 4, Raymond Buildings, Gray's Inn, London, W.C.1. 1919

ASSISTANT required. Intermediate standard. Congenial work and real experience. Ivor Warner, 57, Shelton Street, Covent Garden, W.C.2. Covent Garden 1377. 1885

ARCHITECTURAL ASSISTANTS of Intermediate standard urgently required for Housing Development. Permanent progressive posts, superannuation scheme, good working conditions. Housing accommodation available if necessary. Write, giving full details of age, experience and present salary, to Chief Architect, New Ideal Homesteads Ltd., 61, South Street, Epsom, Surrey. 1916

ARCHITECTURAL ASSISTANT required by Wates Ltd. Experience in speculative housing work essential. Salary range £700 to £900 per annum. Five-day week, pension, bonus. Write stating age, experience and present salary, to Personnel Manager, at 1,258/60, London Road, Norbury, S.W.16. 1934

ARCHITECTURAL ASSISTANT required, school trained, with one or two years' office experience, for small practice, mainly domestic work. Must be good designer and first class draughtsman. Please apply, giving fully details of training, experience and salary required, to Turner & Kitching, A/A.R.I.B.A., 20, Stone Street, Gravesend. 1872

ARCHITECTURAL ASSISTANT of contemporary outlook required from about Intermediate standard to recently qualified, for practice mainly concerned with large commercial projects. Five-day week. Congenial working conditions. Good salary by arrangement. Apply in writing, giving details of Architectural education, age and experience, to J. Alfred Harper & Son, Union Chambers, 63, Temple Row, Birmingham, 2. 1871

JUNIOR ARCHITECTURAL ASSISTANT required by Public Property Company. Experience in housing design and estate layout desirable. Good draughtsmanship essential. Intermediate R.I.B.A. or R.I.C.S. Write giving full details of experience, positions held and salaries earned, to Ref. 0020/232, Land & General Developments Ltd., 8/9, Berkeley Street, London, W.1. 1901

ARCHITECT'S ASSISTANT required for the London Office of a firm of Architects with interests throughout the country; must be of Intermediate R.I.B.A. or R.I.C.S. standard. Superannuation scheme. Apply to: Cotton, Ballard & Blow, 5, Baker Street, London, W.1. WELbeck 3364. 1903

LANCHESTER & LODGE urgently require ARCHITECTURAL ASSISTANTS within the £650/£800 salary range. Varied and interesting work. Five-day week and luncheon vouchers. Write full particulars, 10, Woburn Square, W.C.1. 1884

ARCHITECTURAL ASSISTANT required by leading firm of Land Agents and Surveyors in their Chelmsford Office. Salary by arrangement. Five-day week. Apply to E. F. Logan, A.R.I.B.A., Staff Architect, Coval Hall, Chelmsford. Telephone No.: 4631/3. 1897

GOLLINS, MELVIN, WARD & PARTNERS have vacancies for JUNIOR and INTERMEDIATE STAFF. Five-day week, quarterly bonuses, pension scheme. Telephone WEL. 9991 for appointment. 1896

GOLLINS, MELVIN, WARD & PARTNERS have vacancies for school trained ASSISTANTS interested in the design of University and Hospital buildings. Five-day week, quarterly bonuses, pension scheme. Tel. WEL. 9991 for appointment. 1895

ARCHITECTURAL ASSISTANT, Intermediate standard, required for small, busy practice. Apply in writing, stating age, experience and salary required to R. G. Sperry, A.R.I.B.A., 169, High Street, Epping. 1879

ARCHITECTURAL ASSISTANT, Intermediate A.R.I.B.A., required by a large Birmingham firm for work on interesting contemporary multi-store projects in Birmingham. Preferably capable of working with minimum supervision. Five-day week. Telephone Edgbaston 4571, or write J. Seymour Harris & Partners, 3-4, Greenfield Crescent, Five Ways, Birmingham, 15. 1876

A COMPETENT ASSISTANT, with several years' experience and capable of working with little supervision, required in Branch Office, Birmingham, engaged on a varied and interesting programme of commercial projects. Applications, giving full particulars and salary required, to: G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4. 1874

SENIOR ASSISTANT, A.R.I.B.A. or equivalent, with experience of domestic design; used to both office and site work and supervision; required by Architect engaged on housing and shops for a London Property Company. Work will be in London and Pinner. Salary £900 to £1,000, according to qualifications. Pension scheme. Box 1878.

EXPERIENCED INTERMEDIATE or SENIOR ASSISTANT required for expanding, progressive practice. Salary £500 to £800 p.a. Written particulars from first class applicants will be considered by Morgan & Carn, A/A.R.I.B.A., 12, Grand Avenue, Hove 3, Sussex. 1877

ARCHITECTURAL ASSISTANT required of R.I.B.A. Intermediate standard, with three or four years' office experience. Facilities available for part-time study at the R.W.A. School of Architecture. Apply, stating age, experience and salary required, to Burrough & Hannam, 17, Orchard Street, Bristol, 1. 1888

ASSISTANT urgently required for hospital work in West End office. Intermediate standard. Quick and accurate draughtsmanship essential. Box 1899.

WORKER-UP required in Quantity Surveying section of Architect's office. Good opportunity for Taking-off and Specification writing. Luncheon voucher scheme. Reply Box 1920.

Architectural Appointments Wanted

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra

ARCHITECTURAL ASSISTANT (23), married, seeks post abroad. Passed Finals A.A. 1957. Anywhere considered. Box 1932.

A.R.I.B.A., 34, experienced, mainly industrial and domestic, seeks senior responsible position with commercial organization, preferably London area. Box 1936.

Other Appointments Vacant

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra

LECTURER required to give series of elementary talks in Spring and Summer 1959, on managements conversion and equipment of property, in leading London Secretarial College. Box 1805.

N.W. KENT.—A vacancy exists in the Architect's Department of an industrial company for an ARCHITECTURAL DRAUGHTSMAN with at least three years' office experience, able to prepare working drawings from sketch plans under supervision. Five-day week, good working conditions. Applicants should state age, experience and salary. Box 1914.

THE BUILDING BOARDS DIVISION OF THE BOWATER ORGANISATION requires a number of salaried TECHNICAL REPRESENTATIVES to handle the sale of their recently introduced new THERMAL ACOUSTIC PANELS in the LONDON and HOME COUNTIES AREA.

These vacancies should appeal to experienced Representatives and preference may be given to those used to calling on Architects. The desired age is around 30 years but in certain circumstances older candidates may be considered.

The Company offers a Contributory Superannuation Fund, certain other facilities, and a modern car will be supplied.

All applications will be treated in confidence and initial interviews will be arranged in London. Letters should contain full details of age, education, qualifications, experience and positions held, and should be addressed to the Manager, Personnel Administration, The Bowater Paper Corporation Limited, Bowater House, Knightsbridge, London, S.W.1. 1893

ARCHITECTURAL DRAUGHTSMAN required for preparation of scale and full size details, in connection with the manufacture of decorative fibrous plaster work. Previous experience in this branch of the trade useful, but not essential. Apply in writing, stating age, experience, and salary required, to The Secretary, Trollope & Colls Ltd., One Noble Street, Gresham Street, London, E.C.2. 1906

JOSEPH LUCAS, LIMITED, propose to appoint a CIVIL ENGINEER or an INDUSTRIAL ARCHITECT to act as Estates and Buildings Manager for Home and Overseas projects. He will act as the Company's representative in negotiations with private architects and contractors, and will be responsible for the technical and financial aspects and progressing of contracts. This new appointment will provide an interesting and expanding opportunity to a fully qualified man between 30 and 40 years of age who has had a number of years industrial experience.

A high salary and an attractive pension arrangement is available for the applicant capable of doing this job. Applications should be made in writing to the Personnel Director, Joseph Lucas Limited, Great King Street, Hockley, Birmingham, 19. 1873

REQUIRED by manufacturers of new plastic floorcovering, experienced full-time REPRESENTATIVE, well known to Architects and Flooring Contractors, to introduce new line. Great potentialities, salary, expenses, commission. Box No. DA. 1037, c/o Whites, 72, Fleet Street, London, E.C.4. 1883

CAWOOD WHARTON & CO., LTD., require a TECHNICAL REPRESENTATIVE in their expanding Lightweight Roofing Dept. General knowledge of building essential, structural knowledge desirable. Preference given to applicants calling on architects in London but living S. or S.W. of London. Apply, stating age, experience and present income, to Staff Manager, Cawood Wharton & Co., Ltd., Southlands, Harrogate. 1881

Services Offered

4 lines or under, 9s. 6d.; each additional line, 2s. 6d Box Number, including forwarding replies, 2s. extra

"DON" ARCHITECTURAL MODEL MAKERS. We offer the highest grade work with speed and reliability.—Please 'Phone Erith 3843 or Hastings 1366. 1673

THE SITE SURVEY COMPANY
Blackheath, S.E.3. Tel.: LEE Green 7444-5
Fully equipped to undertake urgent Engineering and Architectural surveys in any part of the country and abroad. Specialists in ¼ in. scale detailed surveys for extensive city development areas. 1890

MODELS FOR ARCHITECTS. Charles Longbottom specialises in this work and offers first class personal service to architects in the London area. Northcroft Studio, Northcroft Road, West Ealing, W.13. Phone Ealing 7349. 1436

CABINET MAKERS and Joiners. Used to Built-in-Furniture Specials. Interior schemes executed. Buckley & Gibbons, 76, Chiltern Street, W.1. Welbeck 8384. 1755

WORKING DRAWINGS, detailing, specifications, etc., efficiently carried out by experienced architect (A.R.I.B.A., A.M.T.P.I.) on whole, part-time or temporary basis. Box 1816.

NAMEPLATES, PLAQUES, CRESTS, etc., in bronze, brass, and plastic: quotations and lay-outs submitted.—Abbey Craftsmen, Ltd., Abbey Works, 109A, Old Street, London. E.C.1. CLE. 3845. 4165

MODELS, Architectural. Top-experienced freelance will estimate for: Details, collaboration or for complete schemes, any period. K. Critchlow, A.R.C.A., Bat 7694, 75, Falcon Rd, London, S.W.11.

INTERNATIONAL FIRM of consulting engineers prepared to enter into competition with developers and architects for development schemes. Box 1894.

Partnership and Financial

Six lines or under, 15s.; each additional line, 2s. 6d. Box No. including forwarding replies, 2s. extra.

PARTNERSHIP or association required in London or Surrey by Architect (38) with Cambridge degree, substantial clients, capital, car, etc. Box 1776.

ASSOCIATE (34), married, public school, keen, energetic, conscientious, 5 years' experience in responsible position (2 years as senior assistant and group leader) working with little or no supervision and responsible for £¾m. of building work annually, seeks position as Chief Assistant with good prospects possibly leading to partnership in London or Home Counties. Commencing salary range £1,350—£1,500. Box 1820.

For Sale and Wanted

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra

MISCELLANEOUS collection of good condition seasoned Oak, dismantled from Suffolk farmhouse. All sizes from 14 × 14 beams (19 ft.), to inch boarding. Available as a lot or selected parcels to purchaser's requirements. Apply Box 1911.

Practice For Sale

Four lines or under, 9s. 6d. Each additional line, 2s. 6d. Box No. including forwarding replies 2s. extra.

FOR SALE in West Country Town. Established practice with freehold offices and house. Going abroad. Box 1799.

Miscellaneous

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. 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. Paul's Road, N.1. Canonbury 2061.

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. 9429

ARCHITECTURAL METALWORK of all types supplied and fitted. Gates, doors, balustrades, staircases, steel structures. Design staff available.—Clayton & Bamber, Ltd., Cartersfield Road, Waltham Abbey, Essex. 5823

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. Phones: Loughborough 2446/7. 1599

OFFICES to let in W.1 area, particularly suitable for Architects. Two large well lit drawing offices with own toilet facilities. Box 1810.

LAMPS, SHADES. The only lampshade manufacturers executing special orders in a week with fabrics dyed to any colour, with finest workmanship, imaginative design and unsurpassed service. Nita Miller, 63a, Grosvenor Street, W.1. May. 0951/2. 1791

FULLY equipped, well lit, Architectural Drawing Office, 300 sq. ft., Charing Cross area, at a monthly rental. Typing and telephone facilities available. Box 1886.

ARCHITECT requires one room and use of typist and telephone, preferably in the West-End area. Box 1892.

Educational Announcements

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. 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./B.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.

TUITION—Correspondence and Personal Tuition given for the R.I.B.A., Institute of Builders and Clerk of Works Institute Examinations, also in all aspects of Building, Engineering and Draughtsmanship. C. W. Box, F.R.I.B.A., 115, Gower Street, W.C.1. Euston 3906. 9911

FIRST FOLD HERE

AJ enquiry service

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

FOLD HERE

Postage will be paid by Licensee

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

BUSINESS REPLY FOLDER
Licence No. S.W. 1761

THE ARCHITECTS' JOURNAL

9-13 Queen Anne's Gate

London, S.W.1.

FOLD HERE

TUCK IN THIS END

Alphabetical index to advertisers

For Appointments (Wanted or Vacant), Competitions Open, Drawings, Tracings, etc., Education, Legal Notices, Miscellaneous, Property, Land and Sales, see 129, 130, 131, 132.

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 _____

_____

6.11.58

CODE
0402

0969
0413

1132
0435
0817
0712
0443

0828
0848
0463
0470
0473
0708
1037
0483

0494
0526
1068
1071
0898
0523
1012
0995
0531
1114
0917
0535
0908
0928

0702
0541
0542
0544
0547
0550
0554
0555
0653

0561
0563
0566

1048

0811

0586
0590
0591
0593
1039

0609

A
A

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, 23/2o, Cursitor Street, London, E.C.4.