

# THE ARCHITECTS' JOURNAL



standard contents

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

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Vol. 134 No. 4

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Registered as a Newspaper.

★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their addresses and telephone numbers. The glossary is published in two parts—A to I one week, I1 to Z the next. In all cases where the town is not mentioned the word LONDON is implicit in the address.

ILA	Institute of Landscape Architects. 1, Park Crescent, w1	Museum 3473
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, wc2	Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, wc1	Museum 7197
IQS	Institute of Quantity Surveyors. 98, Gloucester Place, w1	Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, ec3	Avenue 6851
IRA	Institute of Registered Architects. 68, Gloucester Place, w1	Hunter 1945
ISE	Institution of Structural Engineers. 11, Upper Belgrave Street, sw1	Sloane 7128
JFRO	Joint Fire Research Organisation (DSIR & Fire Offices' Committee). Fire Research Station, Boreham Wood, Herts.	Elstree 1341/1797
LDA	Lead Development Association. 34, Berkeley Square, w1	Grosvenor 8422
LMBA	London Master Builders' Association. 47, Bedford Square, wc1	Museum 3891
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, sw1	Trafalgar 7711
MOE	Ministry of Education. Curzon Street House, w1	Hyde Park 7070
MOH	Ministry of Health. 23, Savile Row, w1	Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, sw1	Whitehall 4300
MOLNS	Ministry of Labour and National Service, 8, St. James's Square, sw1	Whitehall 6200
MOS	Ministry of Supply. Shell-Mex House, wc2	Gerrard 6933
MOT	Ministry of Transport. Berkeley Square House, w1	Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, se1	Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 14, Howick Place, Victoria Street, sw1	Victoria 1600 & 6477
NAS	National Association of Shopfitters. 2, Caxton Street, sw1	Abbey 4813
NBR	National Buildings Record. Fielden House, 10, Great College Street, Westminster, sw1	Whitehall 6554
NCBMP	National Council of Building Material Producers. 10, Storey's Gate, sw1	Abbey 5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, wc2	Trafalgar 3927
NFBPM	National Federation of Builders' and Plumbers' Merchants, High Holborn House, 52-54, High Holborn, wc1	Chancery 7772/7
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, w1	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, sw4	Macaulay 4459
NFHS	National Federation of Housing Societies. 12, Suffolk St., sw1	Whitehall 1631
NHBRC	National House Builders Registration Council. 58, Portland Place, w1	Langham 0064/5
NJCBI	National Joint Council for the Building Industry 11, Weymouth Street, w1	Langham 2785
NPL	National Physical Laboratory. Head Office, Teddington	Teddington Lock 3222
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, ec3	Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street, sw1	Trafalgar 6838
NT	National Trust. 42, Queen Anne's Gate, sw1	Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, sw1	Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, sw1	Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh	Fountainbridge 7631
RIB	Rural Industries Bureau. 35, Camp Road, sw19	Wimbledon 5101
RIBA	Royal Institute of British Architects. 66, Portland Place, w1	Langham 5533
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, sw1	Whitehall 5322/9245
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, sw1	Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, w1	Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, wc2	Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, sw1	Sloane 5134
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, sw1	Victoria 2186
SE	Society of Engineers. Abbey House, Victoria Street, sw1	Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, ec3	Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, wc1	Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, w1	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, wc1	Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, wc2	Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, ec4	City 4771
TPI	Town Planning Institute. 18, Ashley Place, sw1	Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, ec4	City 5040
WDC	War Damage Commission. Eagle House, 90/96, Cannon Street, ec4	Mincing Lane 2000
ZDA	Zinc Development Association. 34, Berkeley Square, w1	Grosvenor 6636



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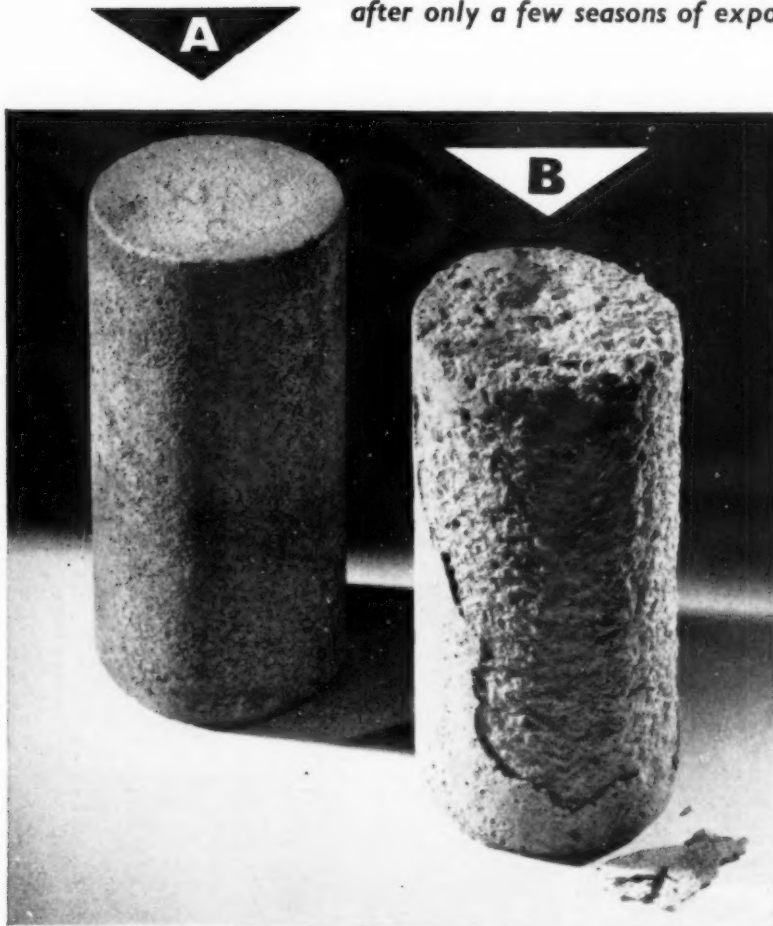
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Stand on it. Drop it.

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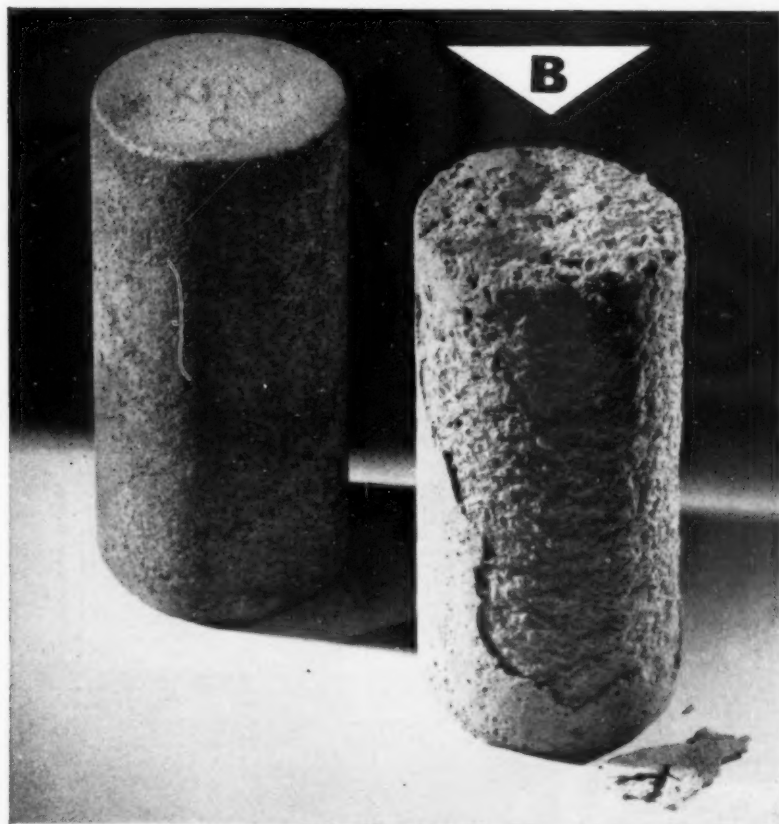
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The illustration below explains why it is often found necessary to repoint joints in brickwork after only a few seasons of exposure

**A**

**B**



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she can't  
have one  
without  
the other

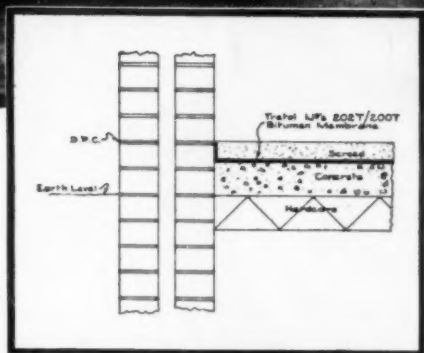
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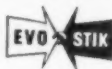
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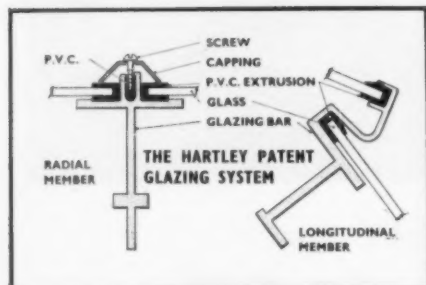




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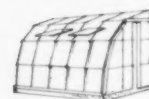


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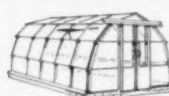
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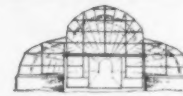
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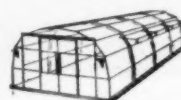
Hartley "7" 7'3" Wide 7'9" High  
(Lean-to)



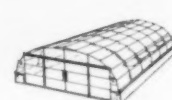
Hartley "10" 10'0" Wide, 7'1" High



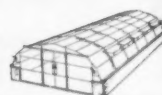
Palm House 38'6" Wide, 18'6" High



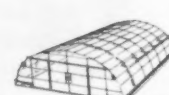
Hartley "14" 13'3" Wide, 8'6" High



Hartley "18" 18'4" Wide, 9'0" High



Hartley "21" 21' 2 1/2" Wide  
10'0" High



Hartley "27" 28'1" Wide, 11'9" High

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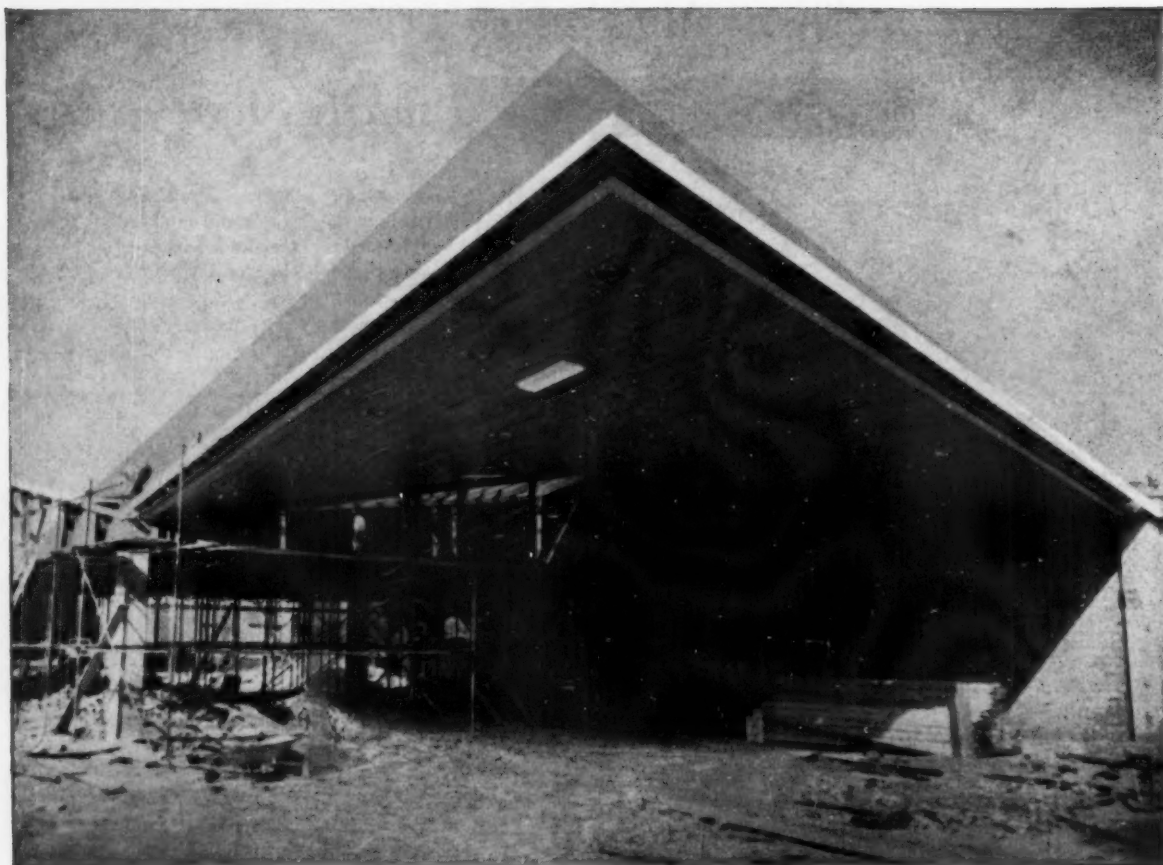
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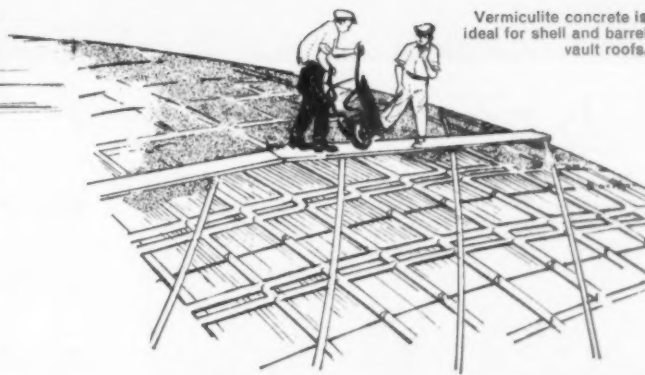
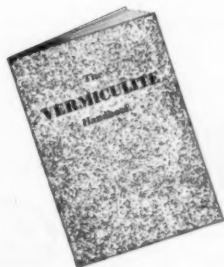
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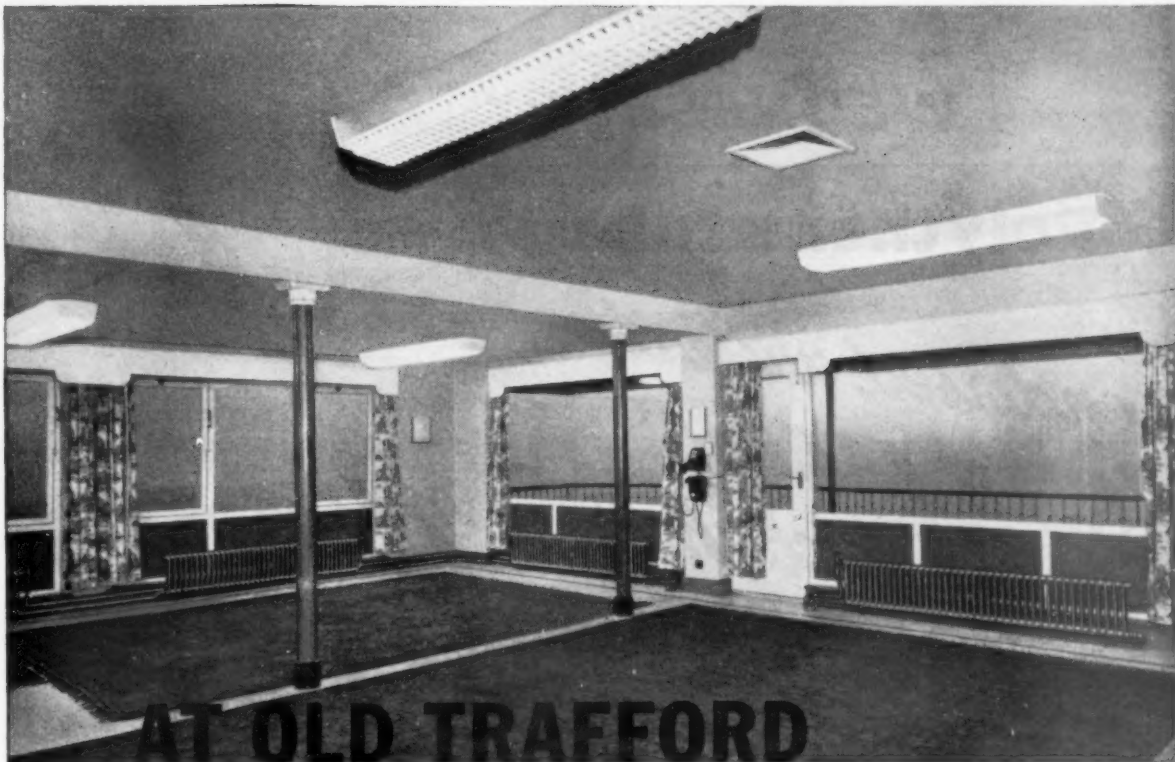
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FOR LASTING DECORATIVE  
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reeds run either the length  
or width of the board



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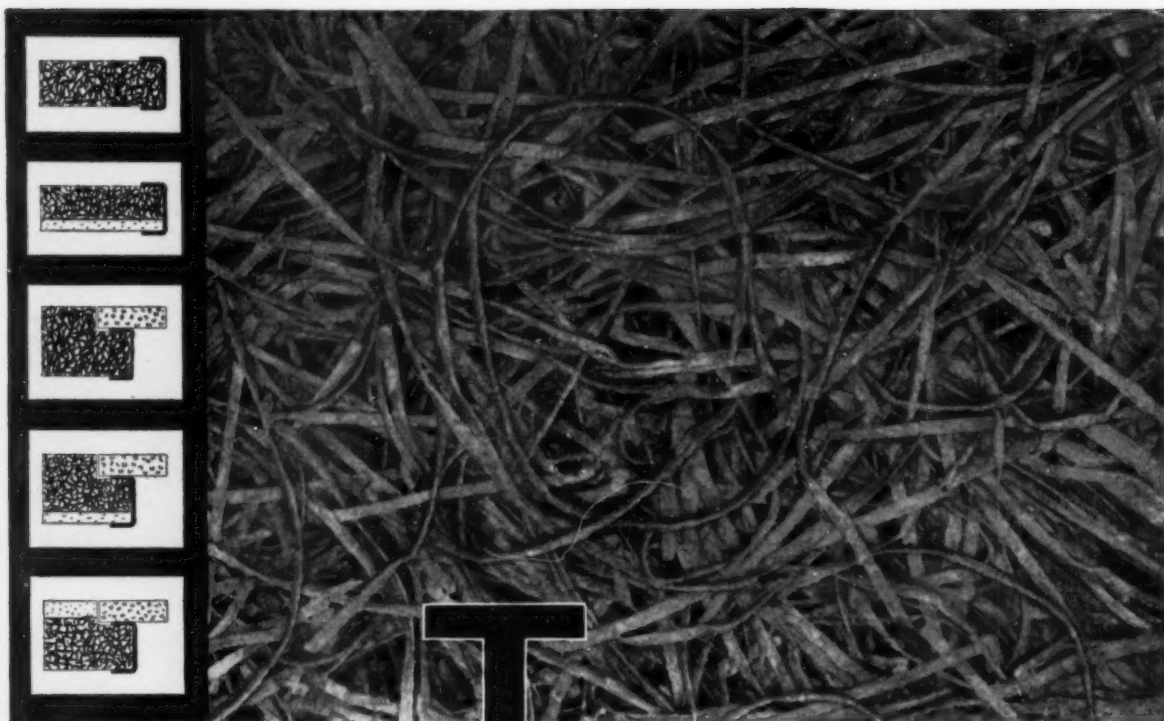


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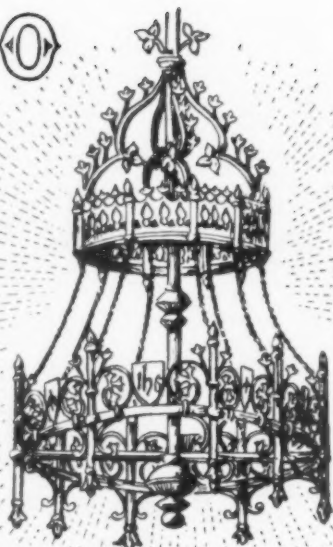
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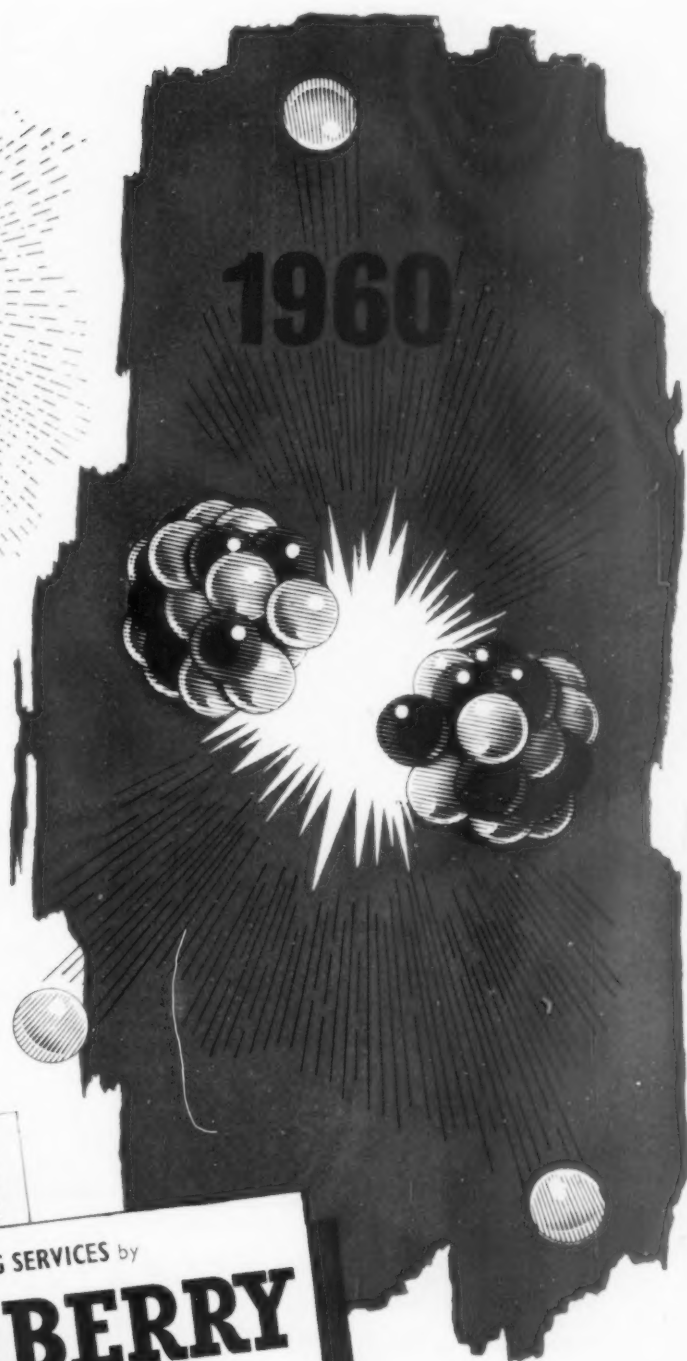
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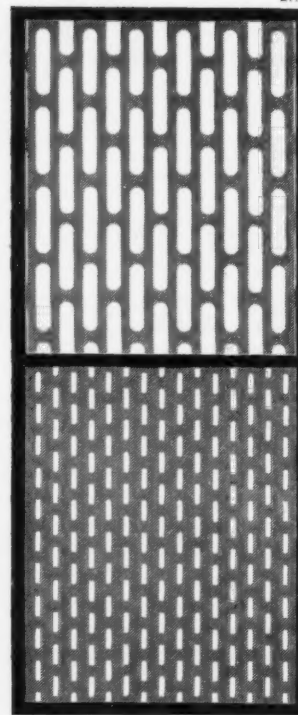
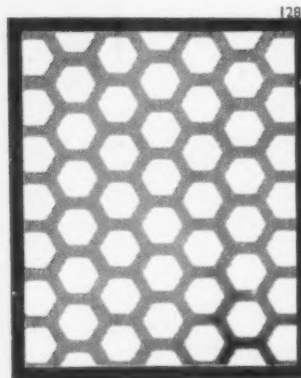
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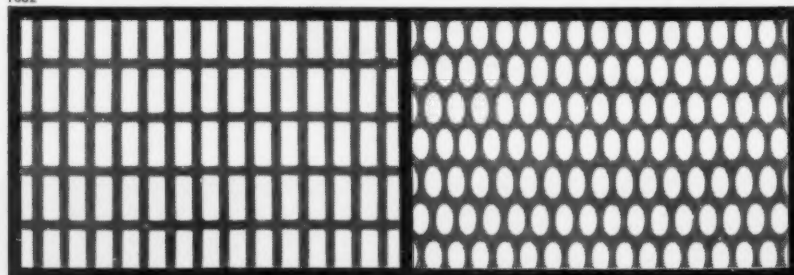
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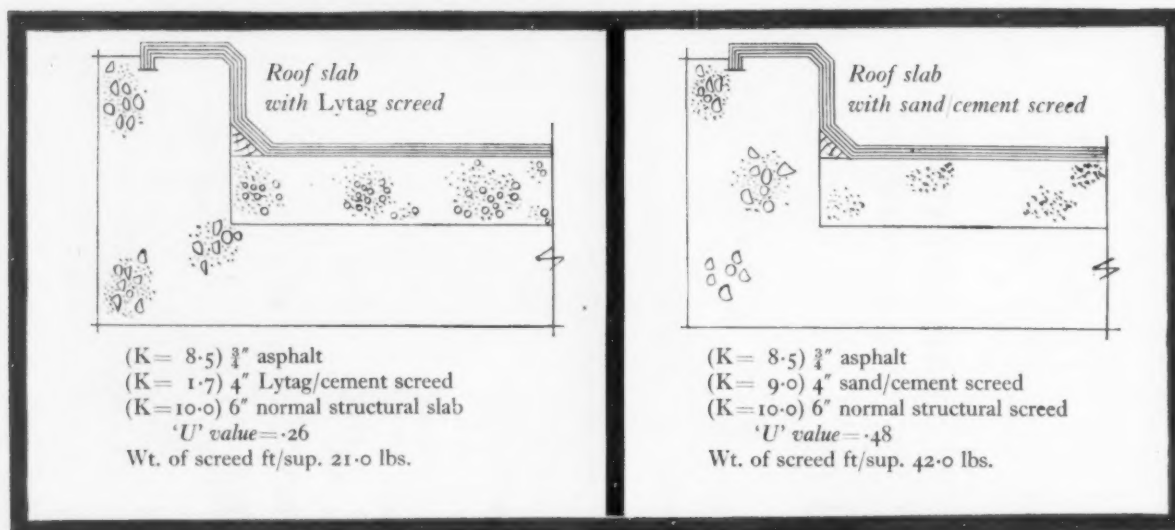


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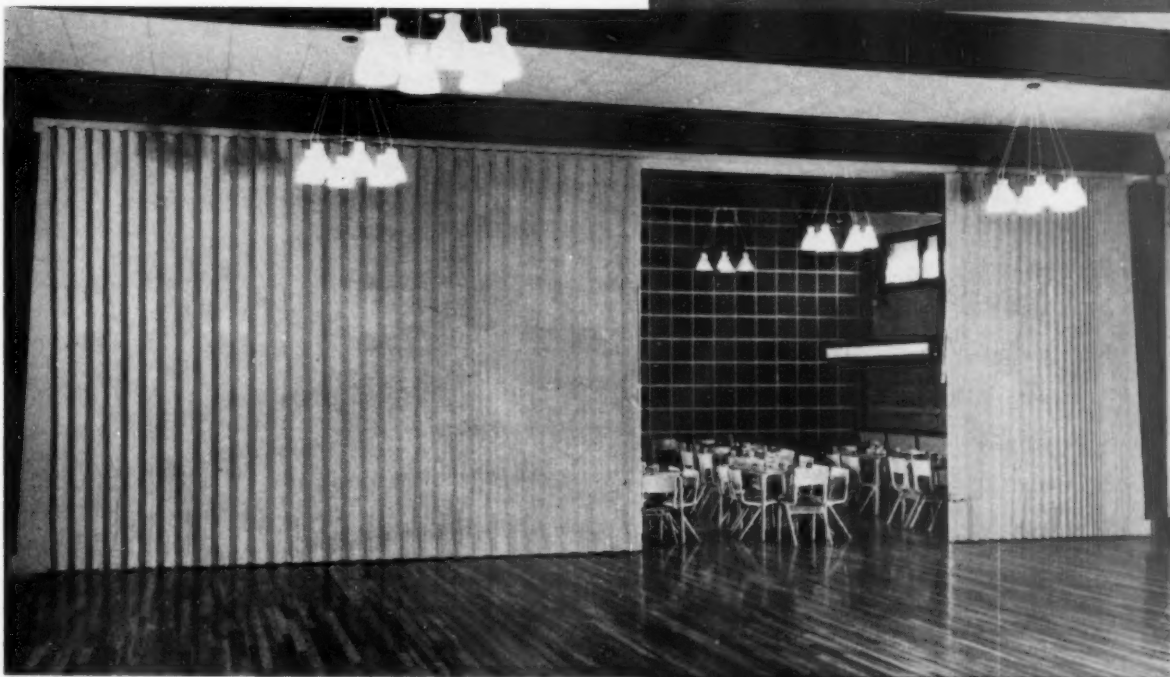
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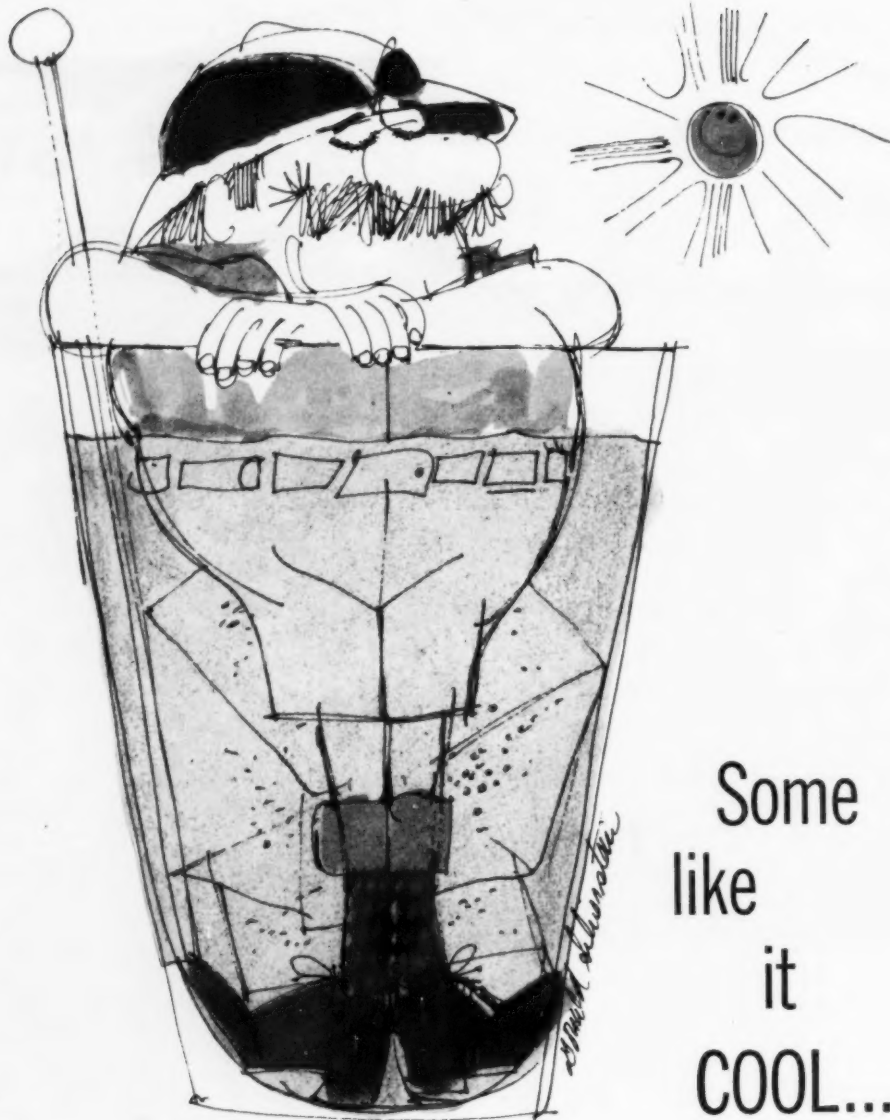
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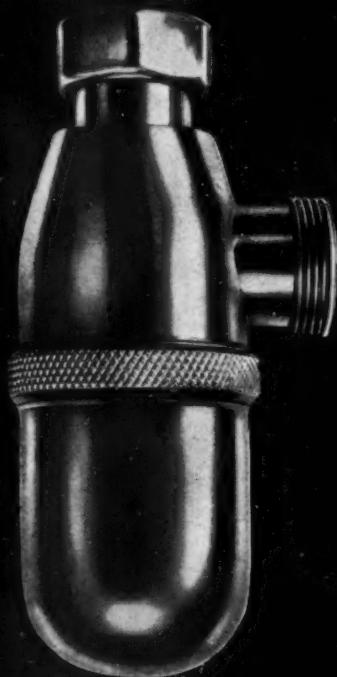


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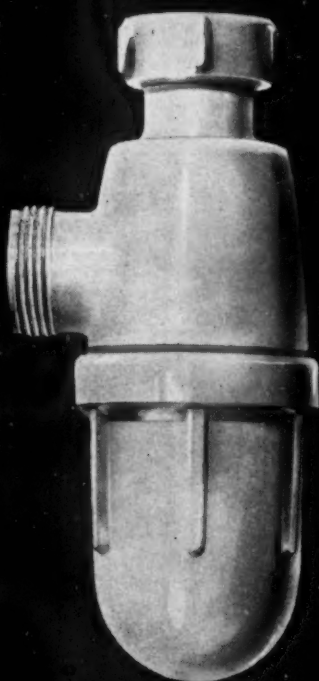
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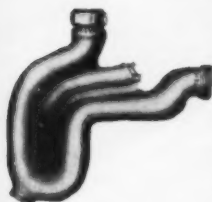
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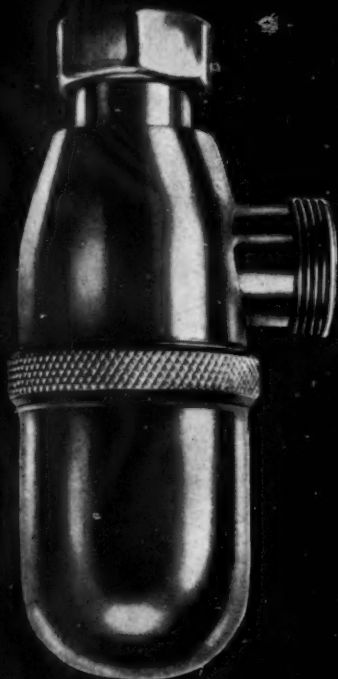
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THE ARCHITECTS' JOURNAL  
(Supplement) July 26, 1961

# Who makes Snaprib



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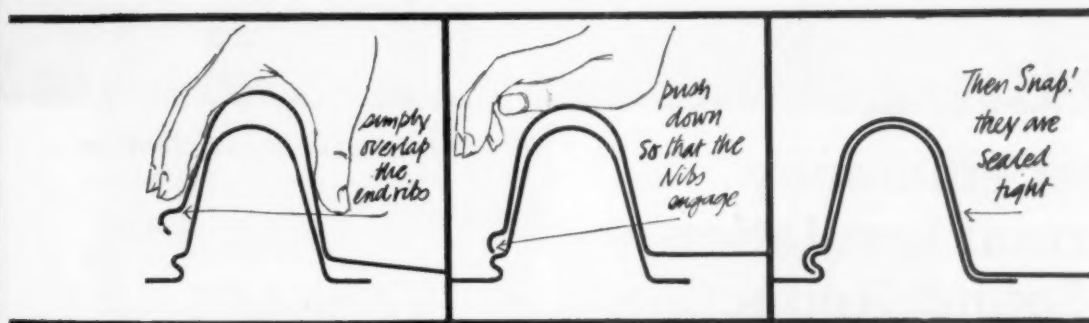
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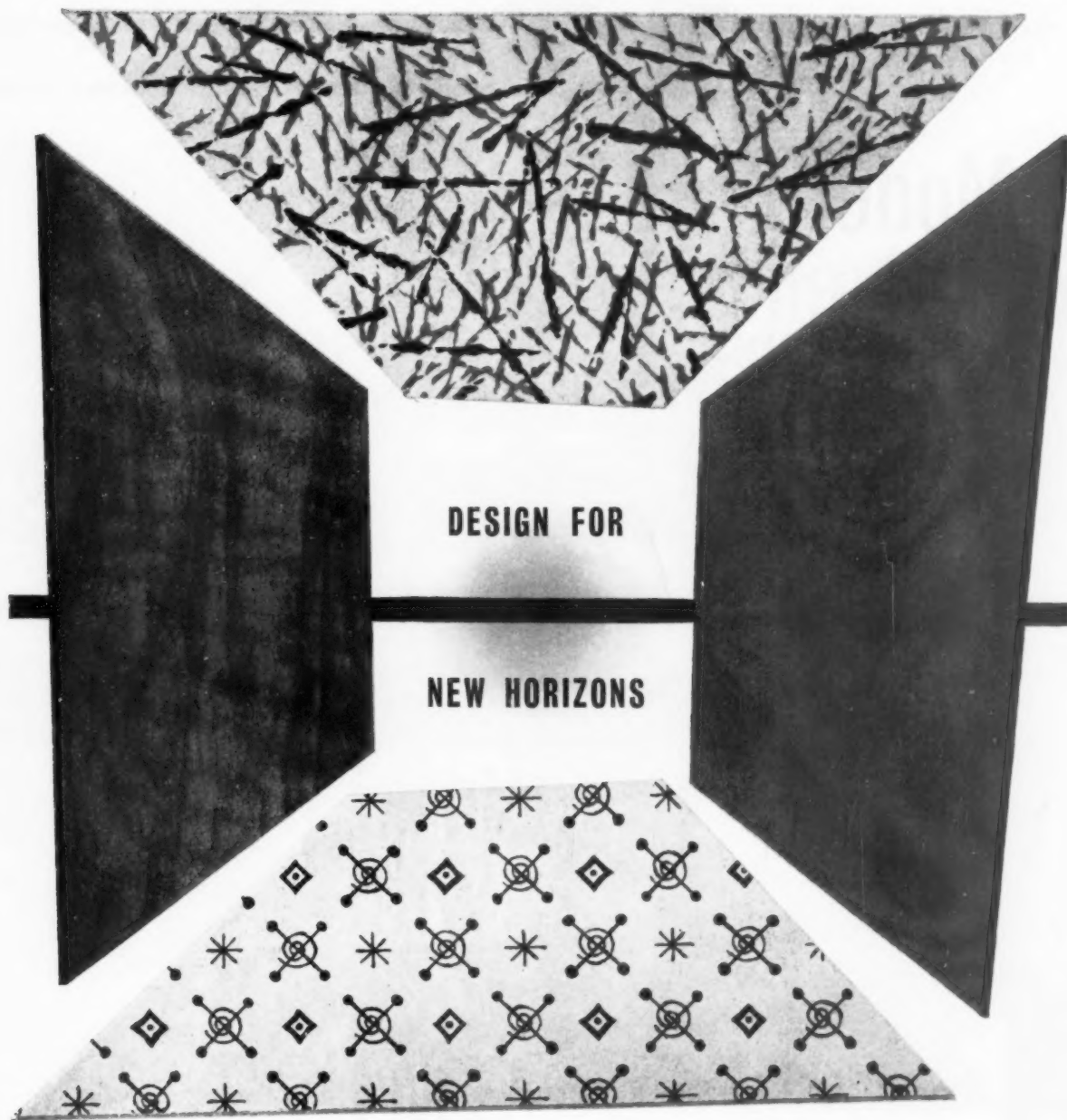
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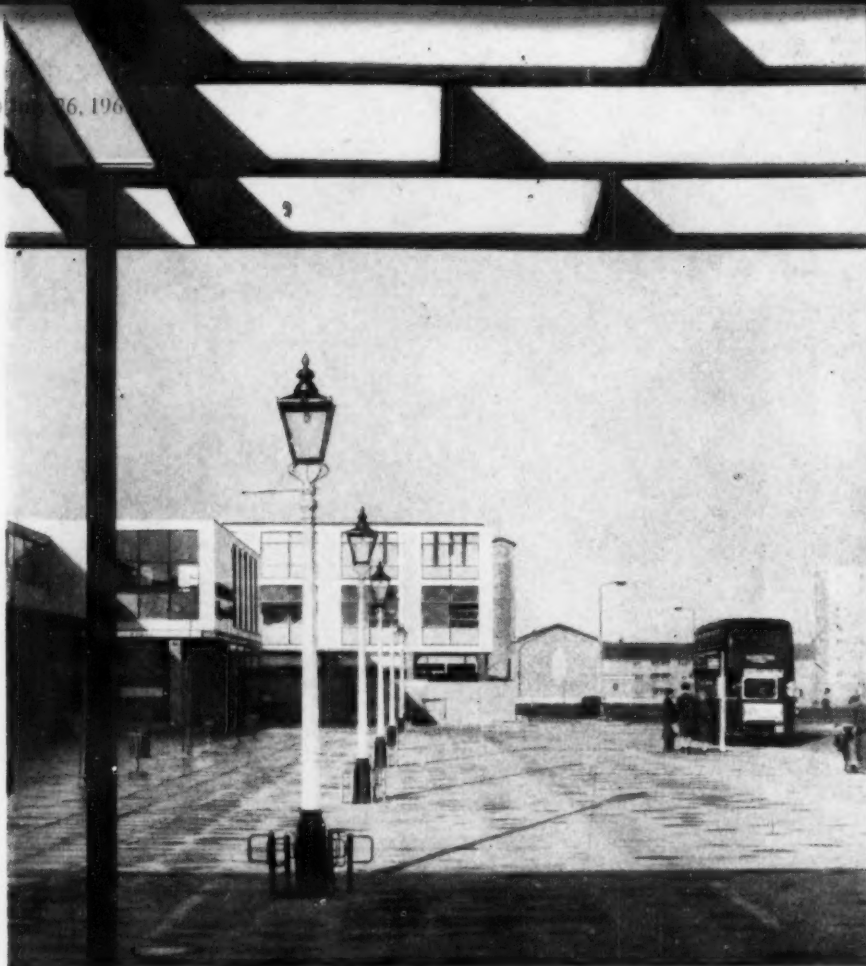


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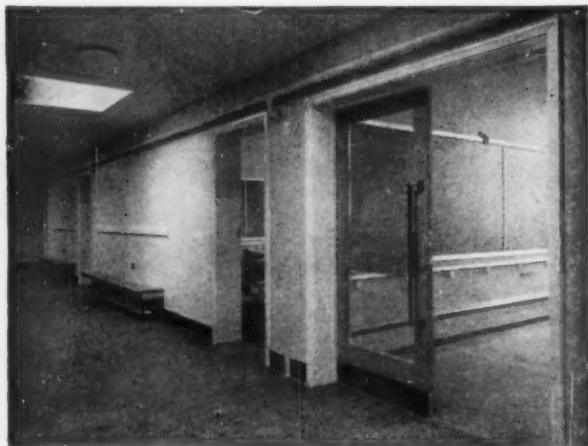
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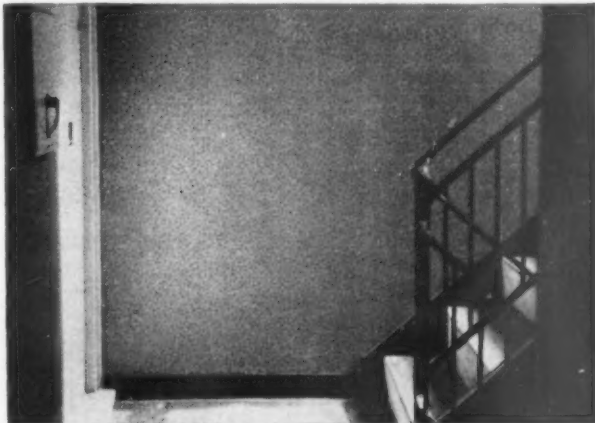
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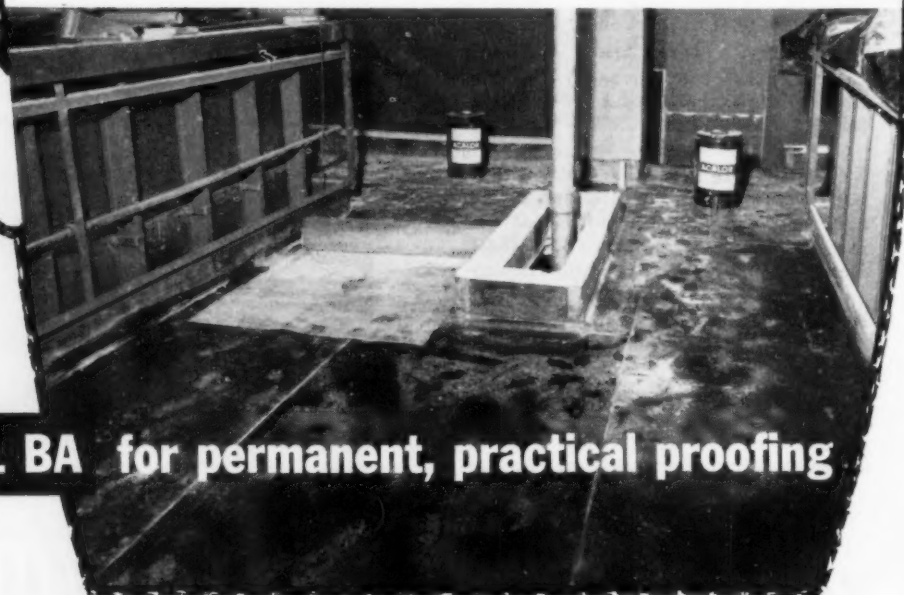
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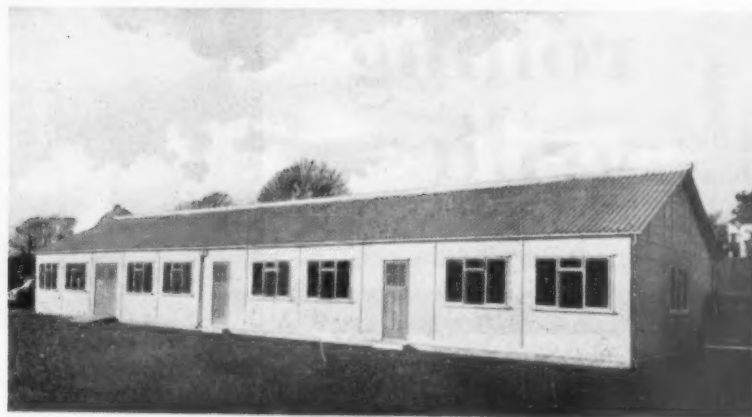
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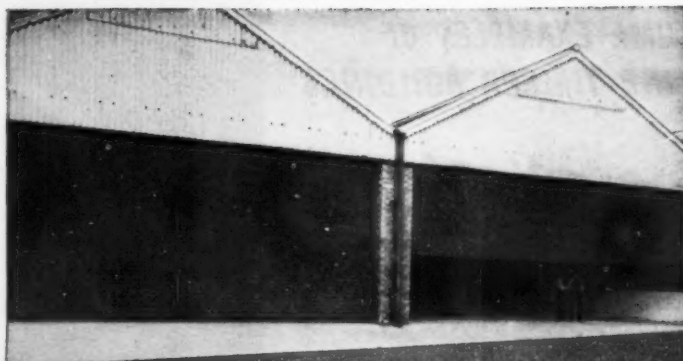
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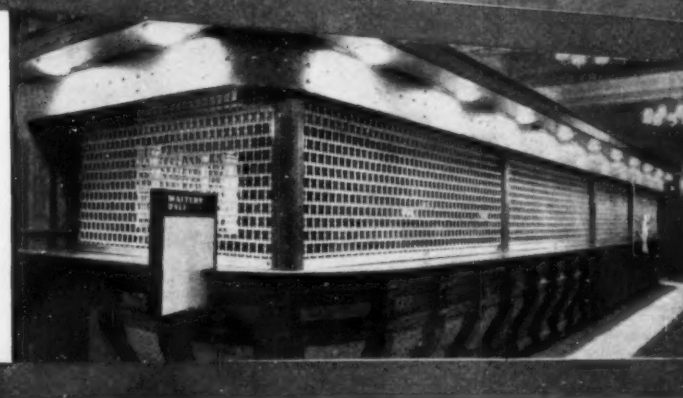
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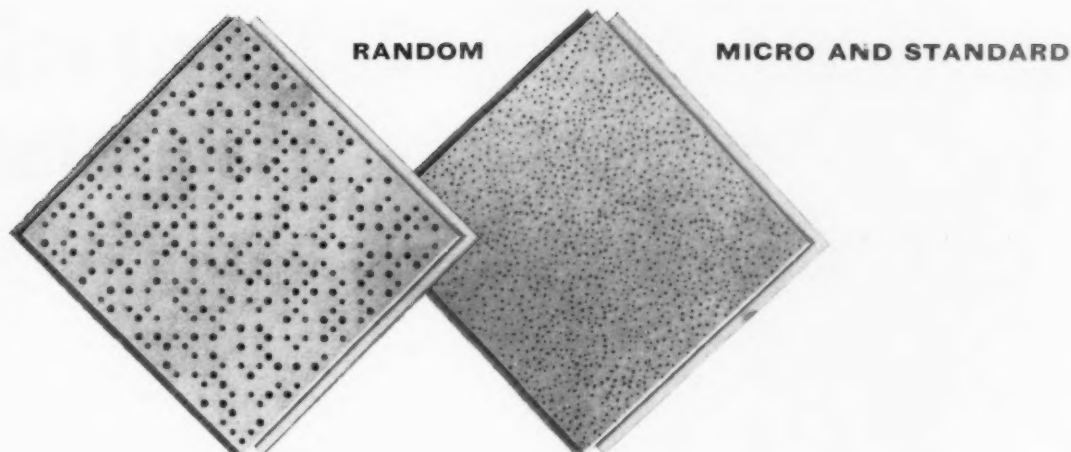
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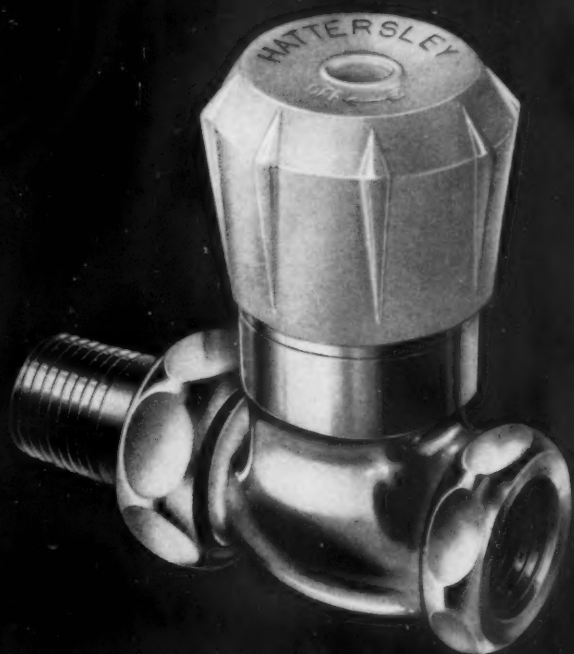
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*See the exhibits at the Building Centres,  
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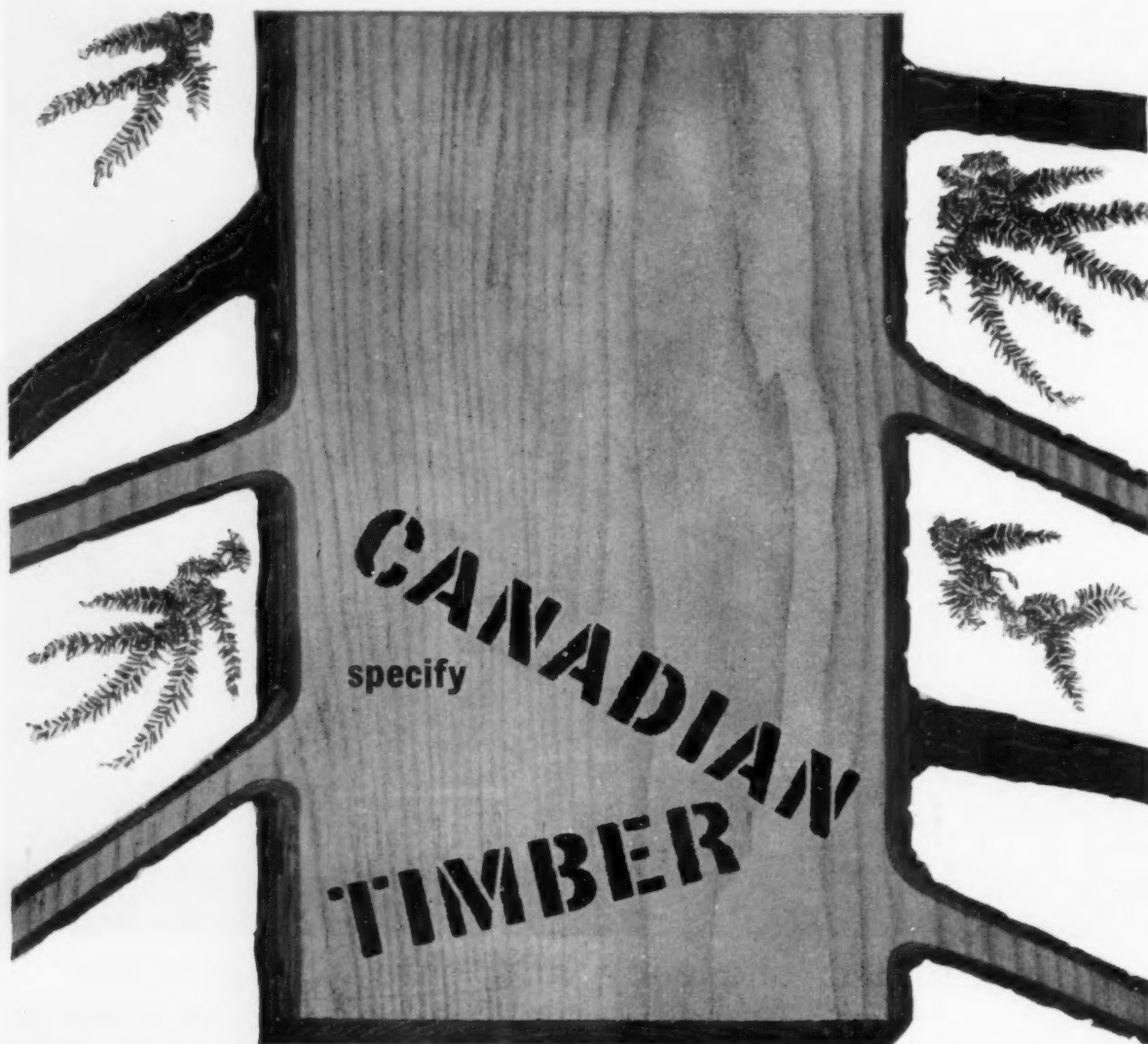
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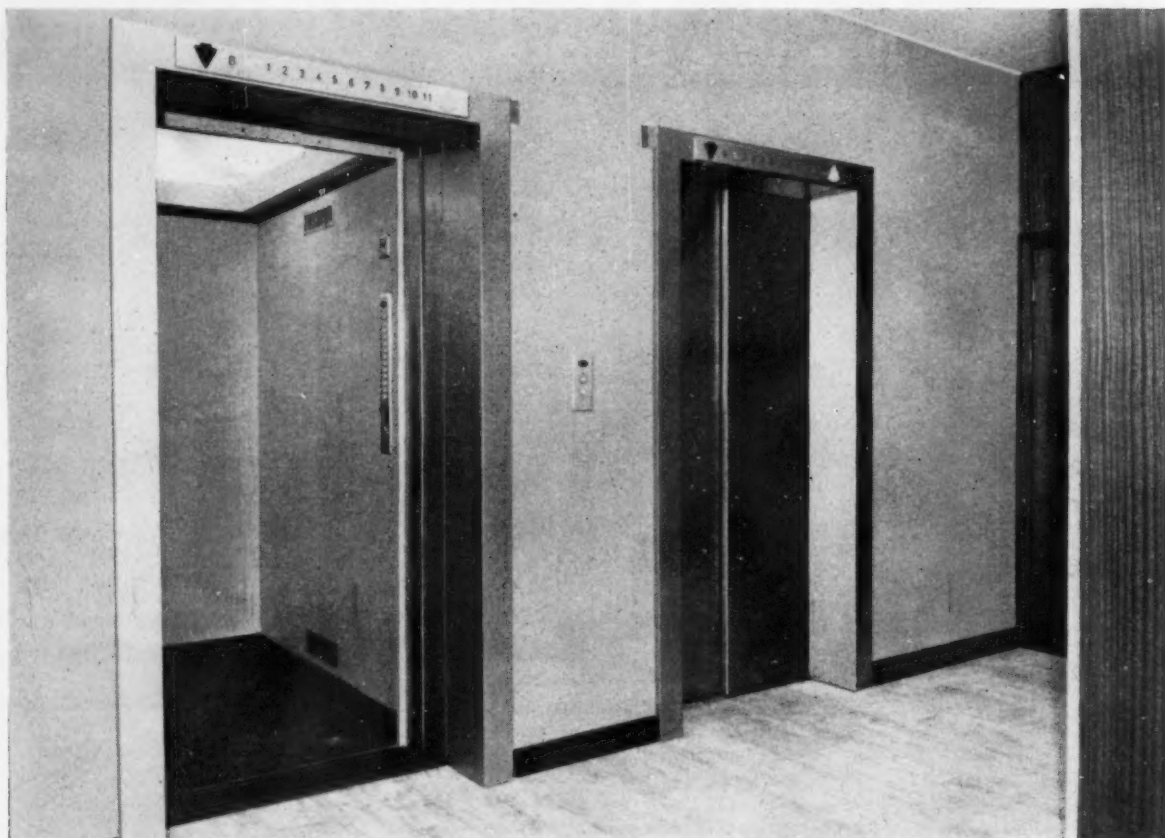
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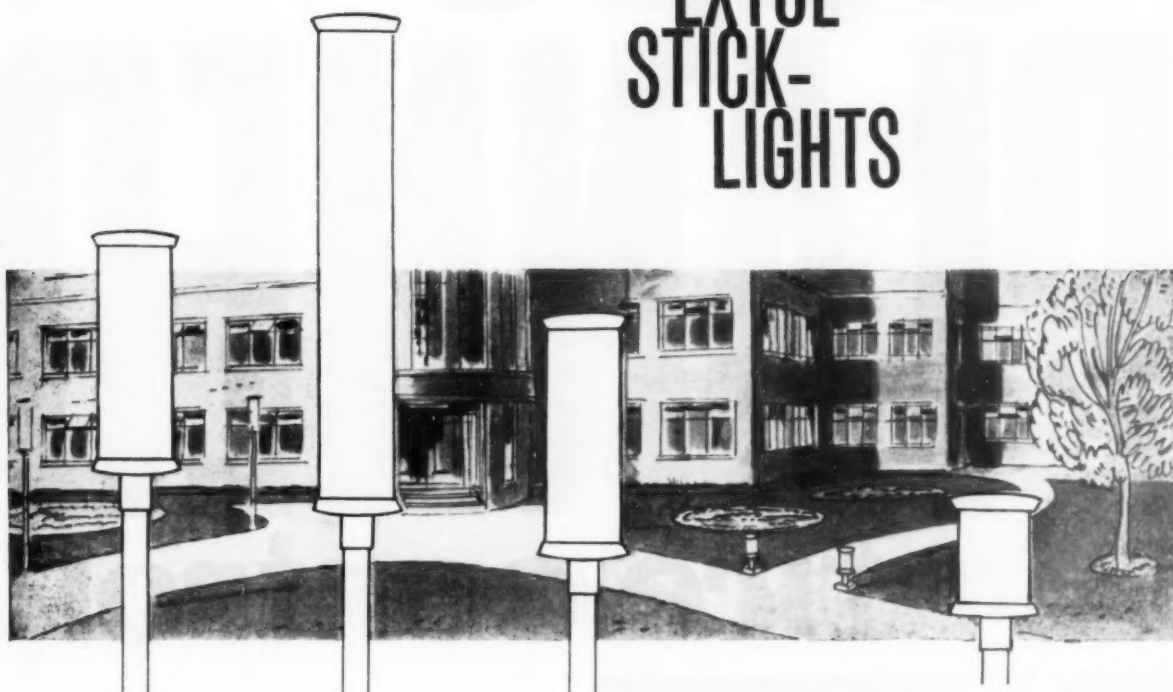
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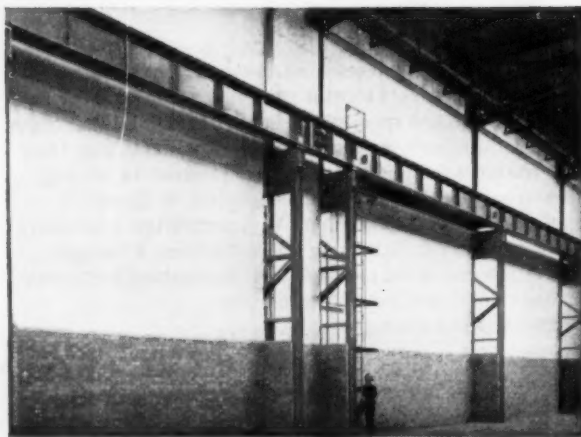
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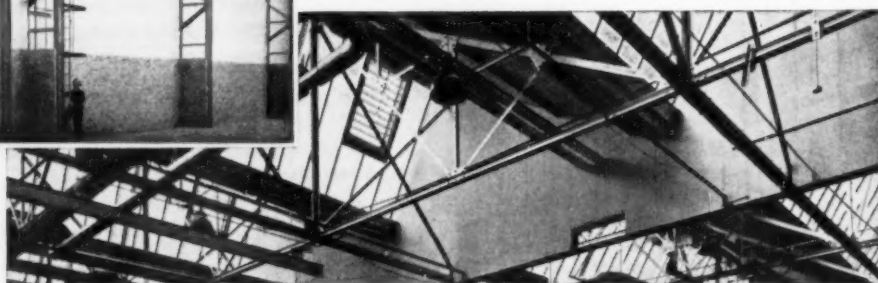
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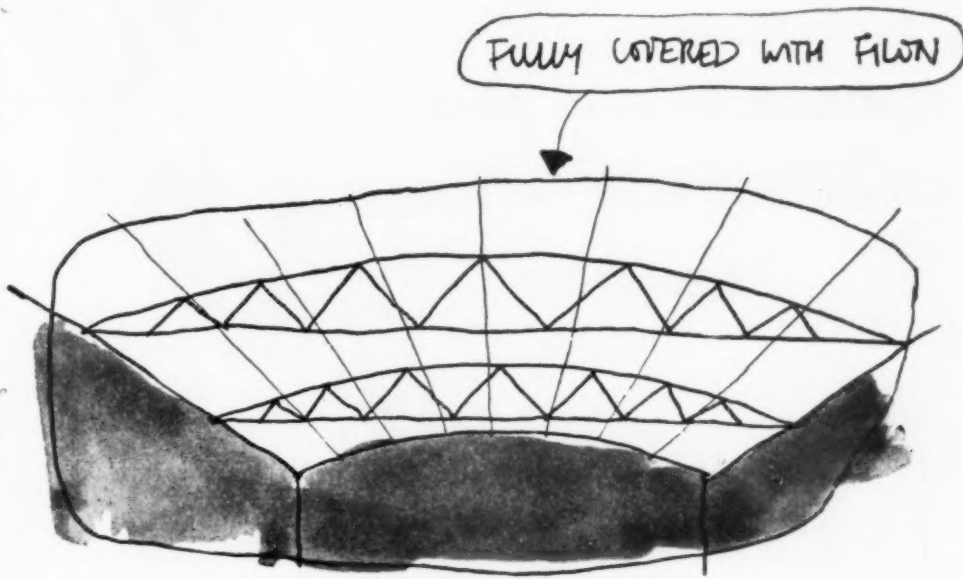
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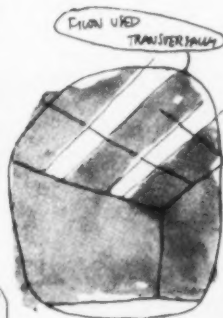
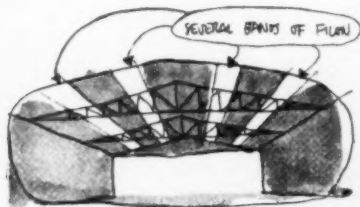
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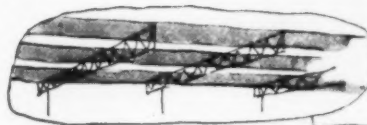
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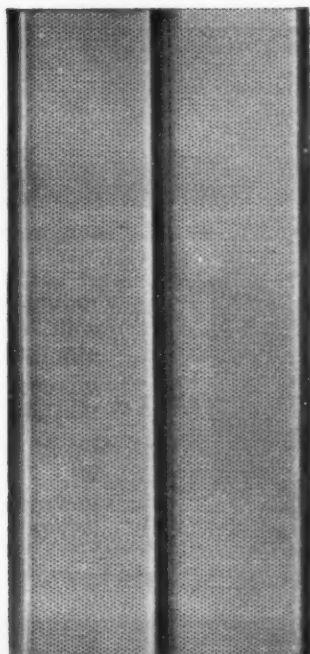


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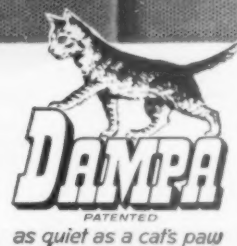


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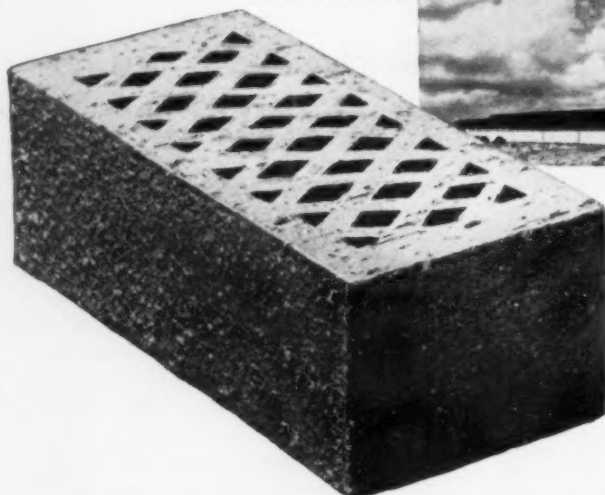
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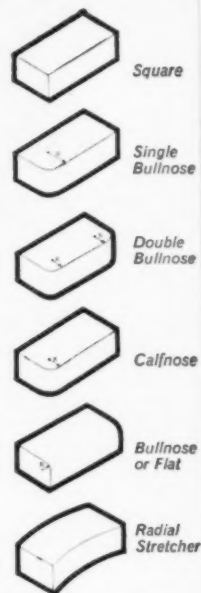
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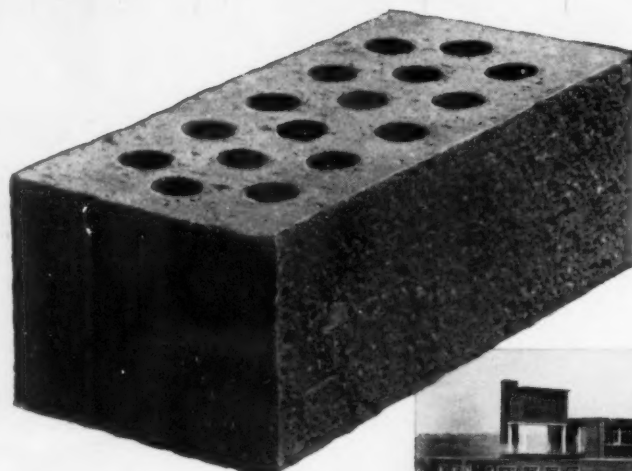


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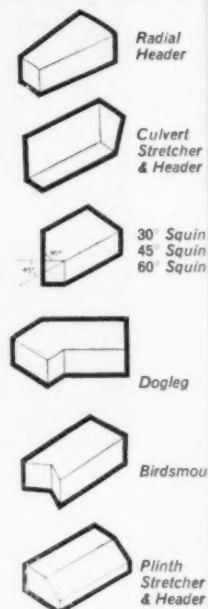


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### **FACING BRICKS—Perforated Wirecuts**

Smooth Red and Sandfaced Red  
Multi, Antique, Straw Thatch and  
Tudor. Specialities—Madeley  
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### **ENGINEERING BRICKS**

to British Standard Specification  
—Blue, Blue Brindled and Brown  
Brindled.

### **HOLLOW FLOOR and PARTITION BLOCKS**

Clay, standard sizes to British Standard  
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shapes available  
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order*

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THE ARCHITECTS' JOURNAL  
for July 26, 1961



Photographed at FROY'S

.....to In-Sink-Erator, America's first  
garbage disposer proved in more than  
a million kitchens

**madam won't be penalised by pedal bins . . .** Hygienically, she  
downs garbage in an instant under a running tap, feeding waste into  
the In-Sink-Erator, which automatically grinds and drains away peel-  
ings, fruit skins, stones, rinds, bones etc. In-Sink-Erator is economical to  
run, saves time and labour. Installation cost is low, with no mainten-  
ance required.

*now you'll want to know the score on these points*

IN-SINK-ERATOR'S FIVE YEAR WARRANTY covers all parts for 5 years.  
During the first year service is free.

IN-SINK-ERATOR'S AFTER-SALES SERVICE is speedily provided by  
authorised local In-Sink-Erator service agents.

IN-SINK-ERATOR'S SILENCE stems from sealed joints between the  
disposer, sink openings and drain connections and perfect balancing  
of rotary shredder. Grinding noise and motor hum is minimal.

IN-SINK-ERATOR AUTOMATIC REVERSING ACTION is *really* automatic—  
self-governing with no special controls of any kind—the built-in patented  
reversing mechanism "thinks for itself" reversing the direction of the

shredders if the load gets extra heavy. Shredding elements also reverse  
automatically every time machine is switched on. Jams are prevented,  
doubling the life of the shredding elements.

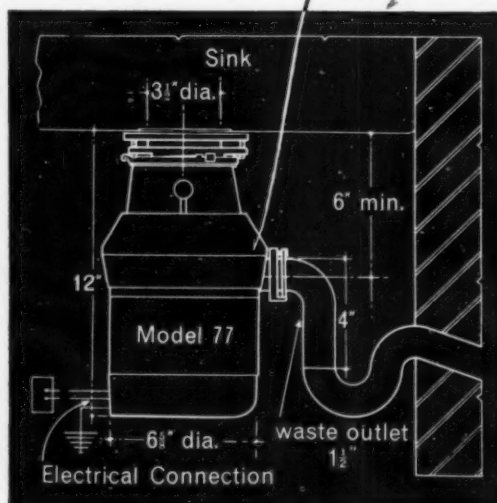
PRICES INC. P.T. Model 333 39½ gns. retail.

Model 77 47 gns. retail. (Automatic reversing action)

For complete specifications, contract details, prices and the name and  
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*undercover agent for hush-hush disposal proved in more than a million kitchens*



Judge the efficiency of hot water systems by the satisfaction or otherwise of the people who have to live with them. Ask any tenant of a Sadia equipped house or flat—you always get the same contented answers. Hot water by Sadia means no dirt, no work, negligible maintenance, and utter reliability—all at lowest running cost.

To the architect, hot water by Sadia means far easier planning and installation. Sadia water heaters—the range extends from 2.2 gallon sink units to 120 gallon industrial models—do not have to be located on outside walls. No flues, boilers or fuel stores. Pipe work is reduced to a minimum. Sadia is simplicity itself.

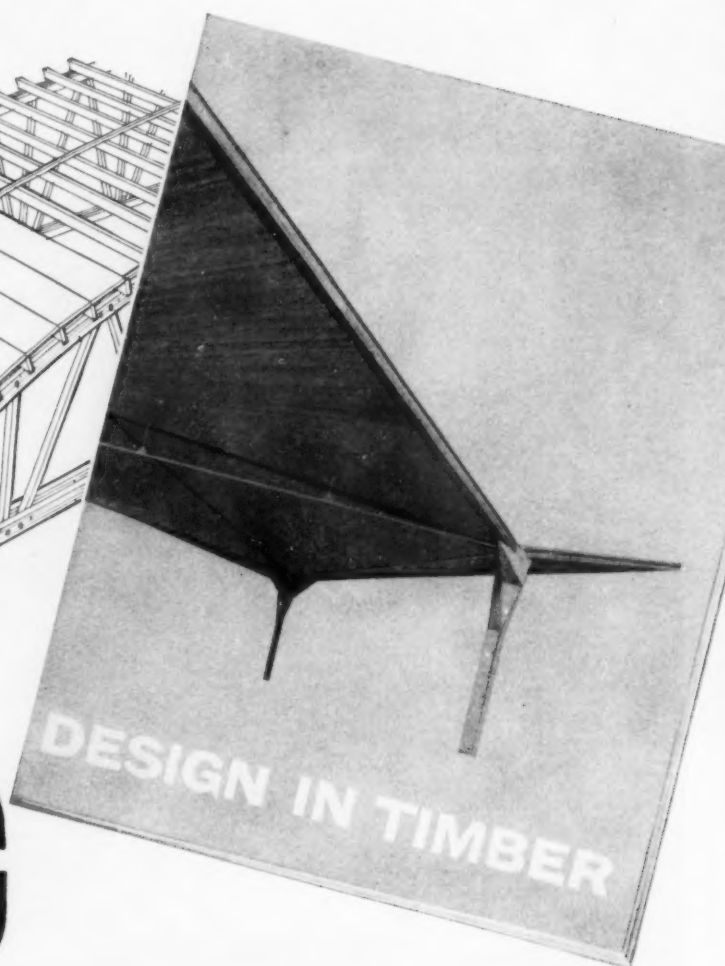
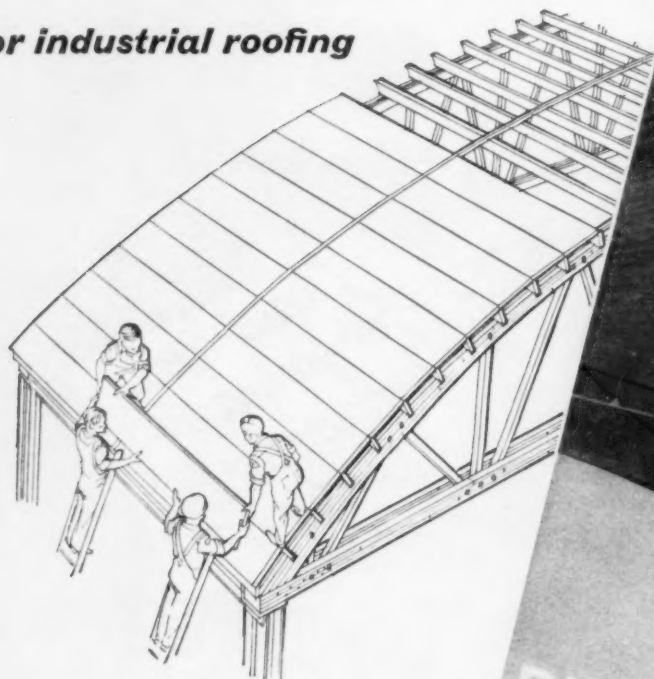
**SADIA**

HOT WATER BY ELECTRICITY

IN LOCAL AUTHORITY BUILDING

Aidas Electric Ltd., Sadia Works, Rowdell Road, Northolt, Middlesex  
SPECIALISTS IN HOT WATER BY ELECTRICITY SINCE 1923

**For industrial roofing**



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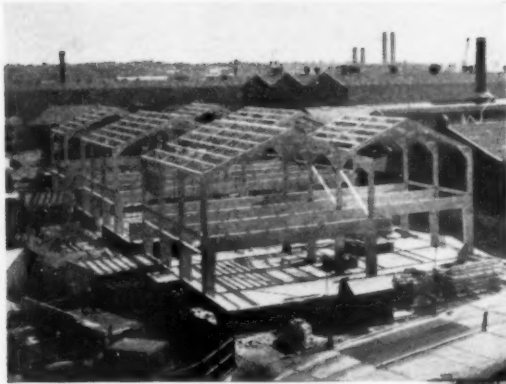
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Precast RC framework in process of erection



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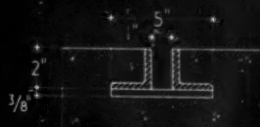
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# DOORS | COMPOSITE

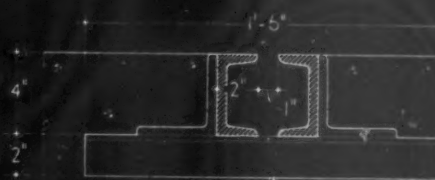
The Architects' Journal Library of Information Sheets 836. Editor: Cotterell Butler, A.R.I.B.A.



type no. 14

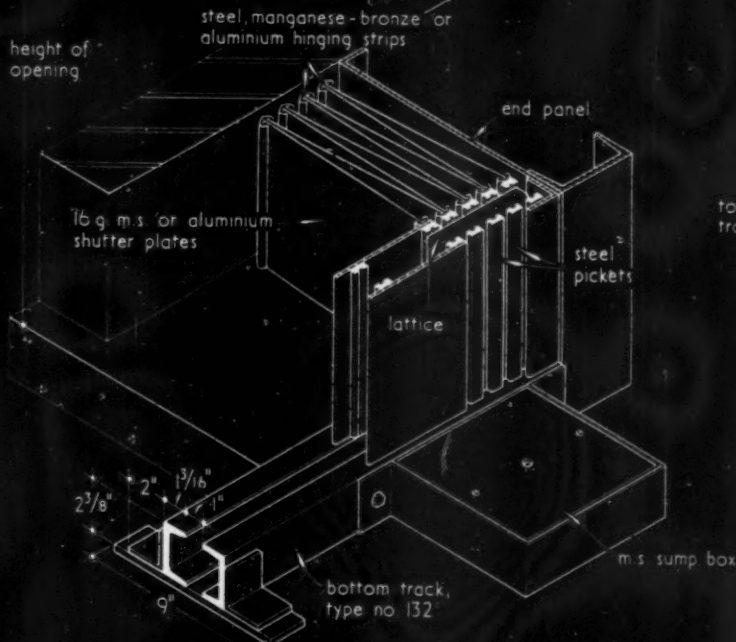
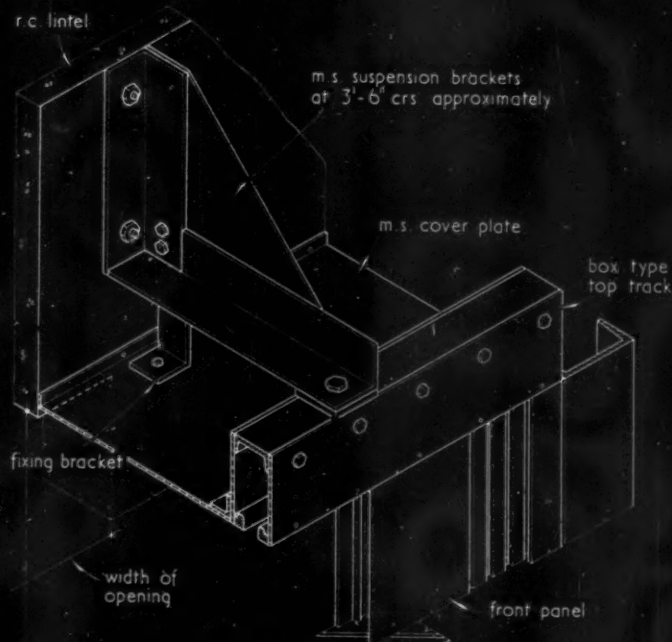


type no. 37



type no. 82

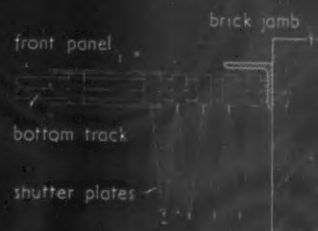
## ALTERNATIVE BOTTOM TRACKS



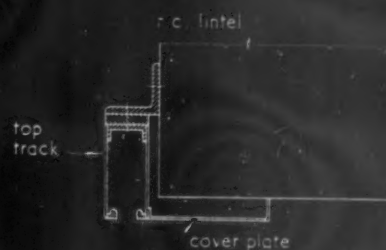
ISOMETRIC VIEW OF GENERAL ARRANGEMENT



type no. H S 21



type no. P S 21



type no. H S 29



type no. P S 29

TYPICAL HEAD AND JAMB DETAILS

## 23.E2 ·RAX· ROLLER LEAF SHUTTER DOORS

**This Sheet** describes Rax patent sliding folding shutter doors, which may be supplied singly or in pairs to suit any size of opening. The drawings on the face show a typical assembly, head and jamb details and alternative bottom tracks. In addition to the types shown, the manufacturer can supply electrically-operated doors, fireproof doors, multi-leaf doors, collapsible gates, rolling shutters and grilles.

### Design

The door consists of steel pickets, with collapsible lattice between, which together support the folding shutter leaves. There is a box type track at the top and a channel track at the bottom. Handles and locking devices are normally fitted to the front panels.

### Construction

**Top track:** This is a built-up steel box section and is  $4\frac{1}{2}$  in. high when used with doors up to 16 ft. high, and 6 in. high for those over 16 ft. high.

**Suspension brackets:** These are purpose-made to suit varying site conditions, but are usually constructed of heavy steel angle on to which is welded a steel gusset plate. They are fixed to the lintel at approximately 3 ft. 6 in. centres.

**Cover plate and end cover:** These are of mild steel and act as draught excluders. Where doors are folded back against piers or jambs, end covers are unnecessary.

**Pickets and lattices:** The sizes of pickets and lattices vary as follows:

For doors up to 16 ft. high,  $\frac{3}{4}$  in. pickets:  $\frac{3}{4}$  in. by  $\frac{1}{4}$  in. lattice up to 9 ft. high, 1 in. by  $\frac{1}{4}$  in. lattice from 9 ft. to 16 ft. high. For doors over 16 ft. high, 1 in. pickets:  $1\frac{1}{4}$  in. by  $\frac{1}{4}$  in. lattice up to 20 ft. high,  $1\frac{1}{4}$  in. by  $\frac{3}{8}$  in. lattice over 20 ft. high.

**Shutter leaves and hinging strips:** The shutter leaves are of 16 g. rust-proofed mild steel or aluminium and are available in widths from 6 in. up to 12 in. in multiples of  $\frac{1}{2}$  in. to suit the height and width of the door. The vertical edges of each shutter leaf are specially shaped so that they form a lock when the door is fully extended. The hinging strips into which the shutter leaves are housed are in manganese bronze, aluminium or rust-proofed steel.

**Front panels:** These form the front edge of the door and are built up from two pickets welded to two steel plates, not less than 4 in. by  $\frac{1}{2}$  in.

**Handles:** Handles of non-ferrous metal are fitted to the front panels.

**Locks:** Clutch bolt locks or thumb action locking latches fitted to the front panels are usually supplied, but any other type of lock can be fitted to suit particular requirements.

**Bottom track:** These vary according to the height of

the door and to the loads likely to be transported over them. The types used are:

No. 14 for light traffic; No. 37 for medium traffic; No. 132 for heavy traffic; and No. 82 for tracks over 36 ft. in length or where rail tracks are to be crossed.

**Sump box:** This is of mild steel and is normally fitted to all types of track except the single channel (No. 14) and the back-to-back angle (No. 37).

**Windows:** Windows up to 3 ft. in height and 9 in. in width can be fitted into the leaves.

### Sizes

Doors may be any height or width to suit requirements. The width of the door when folded varies according to the number and size of leaves, but can be generally taken as  $1\frac{3}{8}$  in. for every foot the door extends, plus 4 in. for the front panel.

### Weight

The weight of the total extended area of the door is approximately 9 lb./sq. ft.

### Fixing

The doors, being suspended, are usually fixed as shown in the drawings on the face of the Sheet, but fixings can be arranged to suit any special conditions.

### Ordering

When ordering the shutter doors the following information should be supplied:

- (a) The number of openings to be filled.
- (b) The width and height of the opening (see isometric sketch).
- (c) Whether the doors are to fit between, in front or behind the jambs.
- (d) Whether doors to be single or in pairs. In the case of a single door, which side it is to fold.
- (e) Specify type of lock and if windows are required.
- (f) A sketch or drawing of the opening giving details of the lintel.

### Further Information

The manufacturer maintains a technical advisory department available to answer questions dealing with the installation of the doors.

Compiled from information supplied by:

**Potter Rax Limited.**

Address: Wilton Works, 73-81, Shepperton Road,  
London, N.1.

Telephone: Canonbury 6455-60 (6 lines).

Telegrams: Encraxgat, Nordo, London.

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**working detail****FURNITURE AND FITTINGS: 114**

DISPLAY PANELS: OFFICE IN LEEDS

*Ardin and Brookes and Partners, architects*

*This series of panels, mounted on verticals fixed to floor and ceiling, creates a flexible and demountable method of display.*

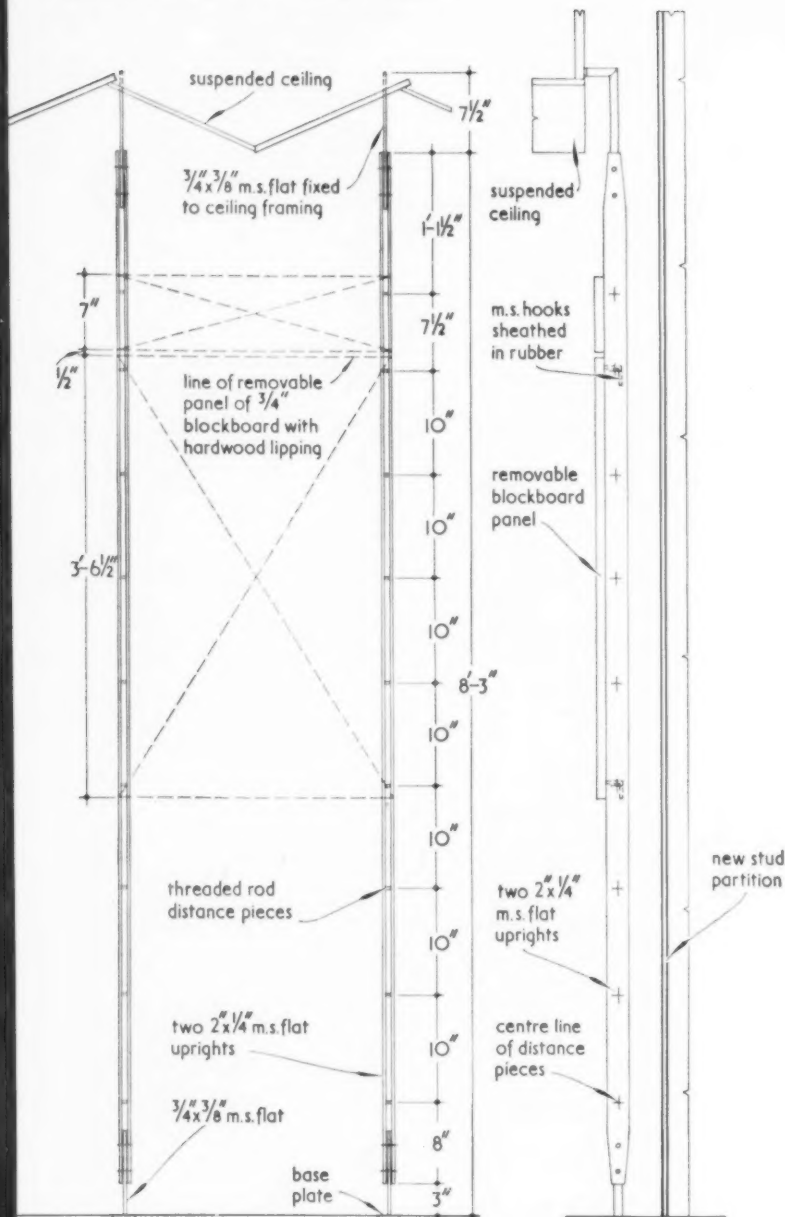


## working detail

## DISPLAY PANELS: OFFICE IN LEEDS

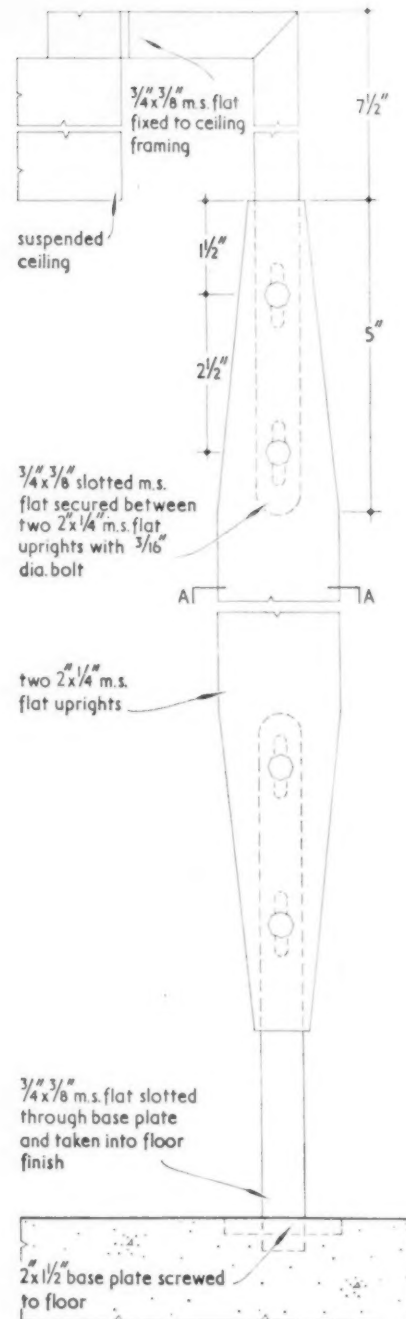
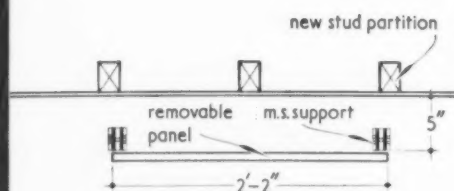
Ardin and Brookes and Partners, architects

## FURNITURE AND FITTINGS: 114

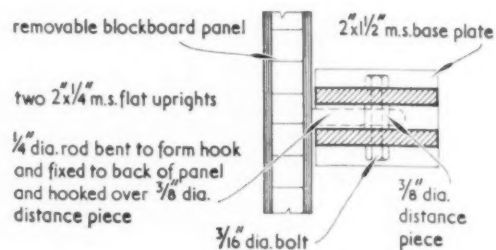


ELEVATION. scale 3/4" = 1'-0"

END ELEVATION.

DETAIL OF M.S. UPRIGHTS.  
scale 3/8 full size

PLAN. scale 3/4" = 1'-0"

PLAN AT A-A.  
scale 3/8 full size

something  
to shout  
about!

at low, low cost!

new standard Marley vinyl gutters & downpipes \*

Gutter-7/3 Pipe-9/9 six ft. lengths

At last, the most up to date rainwater goods you can buy, at prices that compete favourably with the lowest-cost gutters and downpipes. Smooth, sturdy, no-maintenance Marley Vinyl gutters and downpipes are now available at half the weight—half the price—you can't afford to use anything else!

• **EASIER TO TRANSPORT**

because these new gutters and downpipes are so light, so easy to handle.

\*Patents applied for

• **EASIER TO INSTALL**

No jointing compound to fix. The recessed socket comes fitted with a special neoprene gasket to hold the spigot flush in the socket.

Stop ends and swannecks are heavy grade vinyl, and all units are available in grey with vinyl coated brackets.



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## 23.E2 · RAX · ROLLER LEAF SHUTTER DOORS

**This Sheet** describes Rax patent sliding folding shutter doors, which may be supplied singly or in pairs to suit any size of opening. The drawings on the face show a typical assembly, head and jamb details and alternative bottom tracks. In addition to the types shown, the manufacturer can supply electrically-operated doors, fireproof doors, multi-leaf doors, collapsible gates, rolling shutters and grilles.

### Design

The door consists of steel pickets, with collapsible lattice between, which together support the folding shutter leaves. There is a box type track at the top and a channel track at the bottom. Handles and locking devices are normally fitted to the front panels.

### Construction

**Top track:** This is a built-up steel box section and is 4½ in. high when used with doors up to 16 ft. high, and 6 in. high for those over 16 ft. high.

**Suspension brackets:** These are purpose-made to suit varying site conditions, but are usually constructed of heavy steel angle on to which is welded a steel gusset plate. They are fixed to the lintel at approximately 3 ft. 6 in. centres.

**Cover plate and end cover:** These are of mild steel and act as draught excluders. Where doors are folded back against piers or jambs, end covers are unnecessary.

**Pickets and lattices:** The sizes of pickets and lattices vary as follows:

For doors up to 16 ft. high, ¾ in. pickets: ¾ in. by ¼ in. lattice up to 9 ft. high, 1 in. by ¼ in. lattice from 9 ft. to 16 ft. high. For doors over 16 ft. high, 1 in. pickets: 1½ in. by ¼ in. lattice up to 20 ft. high, 1½ in. by ⅝ in. lattice over 20 ft. high.

**Shutter leaves and hinging strips:** The shutter leaves are of 16 g. rust-proofed mild steel or aluminium and are available in widths from 6 in. up to 12 in. in multiples of ½ in. to suit the height and width of the door. The vertical edges of each shutter leaf are specially shaped so that they form a lock when the door is fully extended. The hinging strips into which the shutter leaves are housed are in manganese bronze, aluminium or rust-proofed steel.

**Front panels:** These form the front edge of the door and are built up from two pickets welded to two steel plates, not less than 4 in. by ½ in.

**Handles:** Handles of non-ferrous metal are fitted to the front plates.

**Locks:** Clutch bolt locks or thumb action locking latches fitted to the front panels are usually supplied, but any other type of lock can be fitted to suit particular requirements.

**Bottom track:** These vary according to the height of

the door and to the loads likely to be transported over them. The types used are:

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**Windows:** Windows up to 3 ft. in height and 9 in. in width can be fitted into the leaves.

### Sizes

Doors may be any height or width to suit requirements. The width of the door when folded varies according to the number and size of leaves, but can be generally taken as 1½ in. for every foot the door extends, plus 4 in. for the front panel.

### Weight

The weight of the total extended area of the door is approximately 9 lb./sq. ft.

### Fixing

The doors, being suspended, are usually fixed as shown in the drawings on the face of the Sheet, but fixings can be arranged to suit any special conditions.

### Ordering

When ordering the shutter doors the following information should be supplied:

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### Further Information

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working detail

(82)

FURNITURE AND FITTINGS: 114

DISPLAY PANELS: OFFICE IN LEEDS

*Ardin and Brookes and Partners, architects*



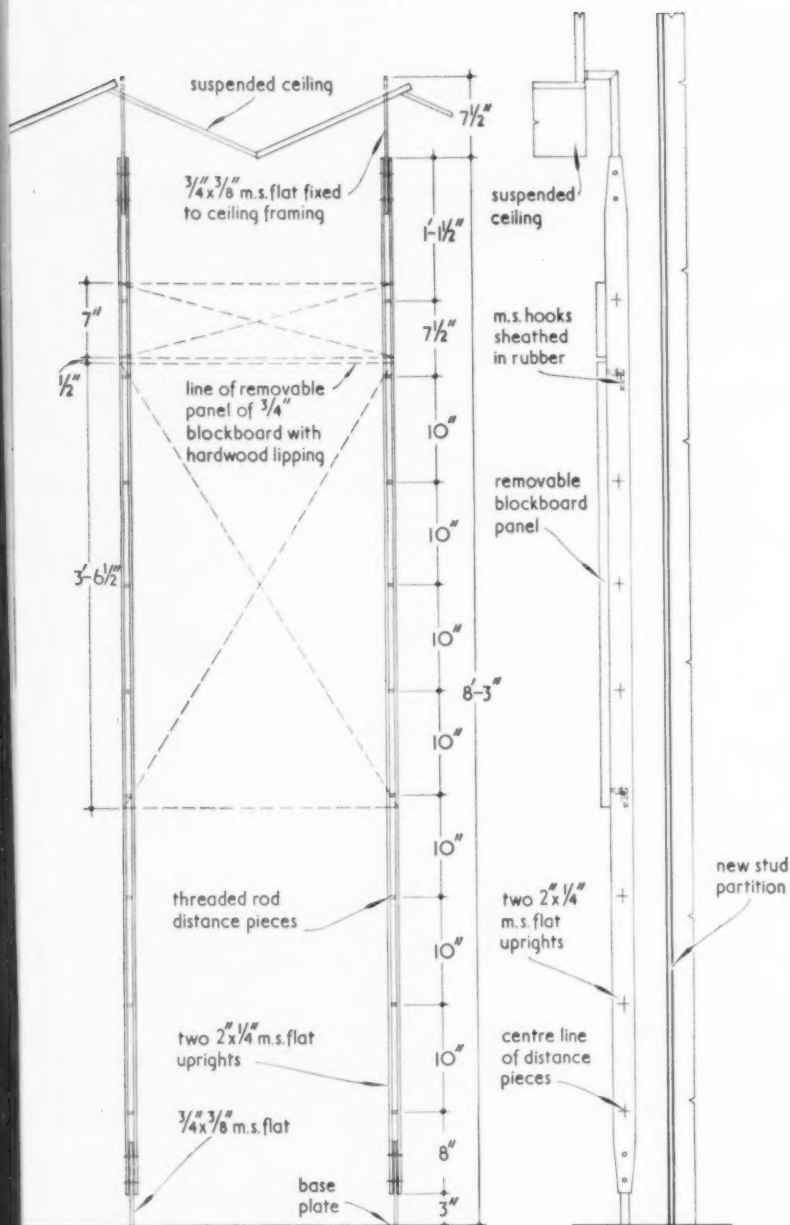
*This series of panels, mounted on verticals fixed to floor and ceiling, creates a flexible and demountable method of display.*



## working detail

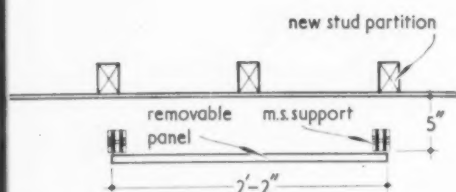
## DISPLAY PANELS: OFFICE IN LEEDS

Ardin and Brookes and Partners, architects

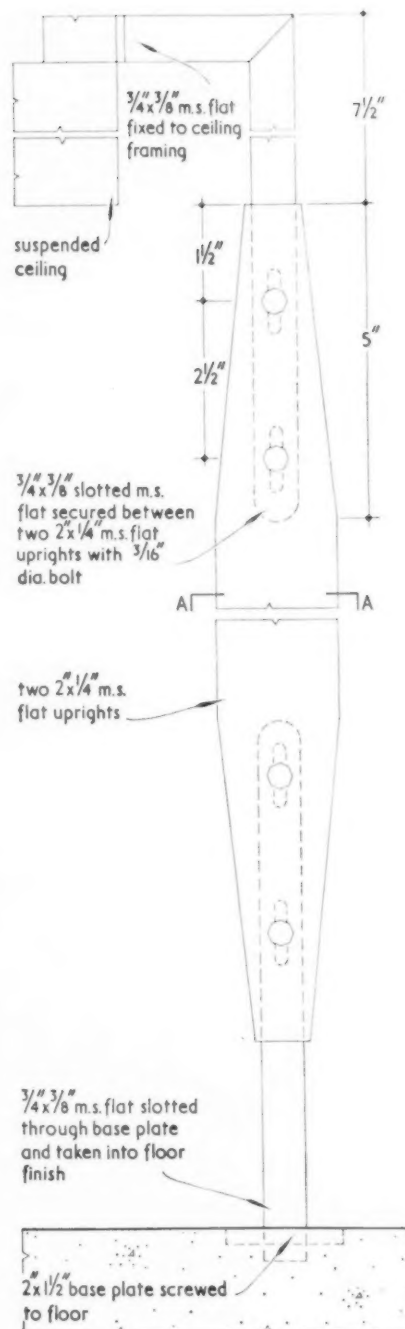
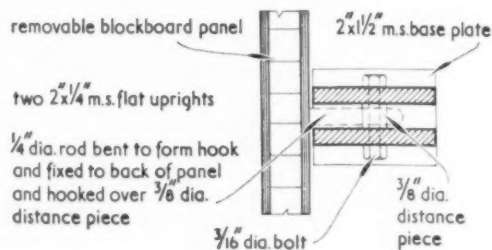


ELEVATION. scale 3/4" = 1'-0"

END ELEVATION.



PLAN. scale 3/4" = 1'-0"

DETAIL OF M.S. UPRIGHTS.  
scale 3/8 full sizePLAN AT A-A.  
scale 3/8 full size



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# Bostik

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The Architects' Journal

Vol. 134 No. 4 July 26, 1961

9-13 Queen Anne's Gate, London, SW1 Whitehall 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 17s. 6d.; carriage 2s. extra.

### NOT QUITE ARCHITECTURE

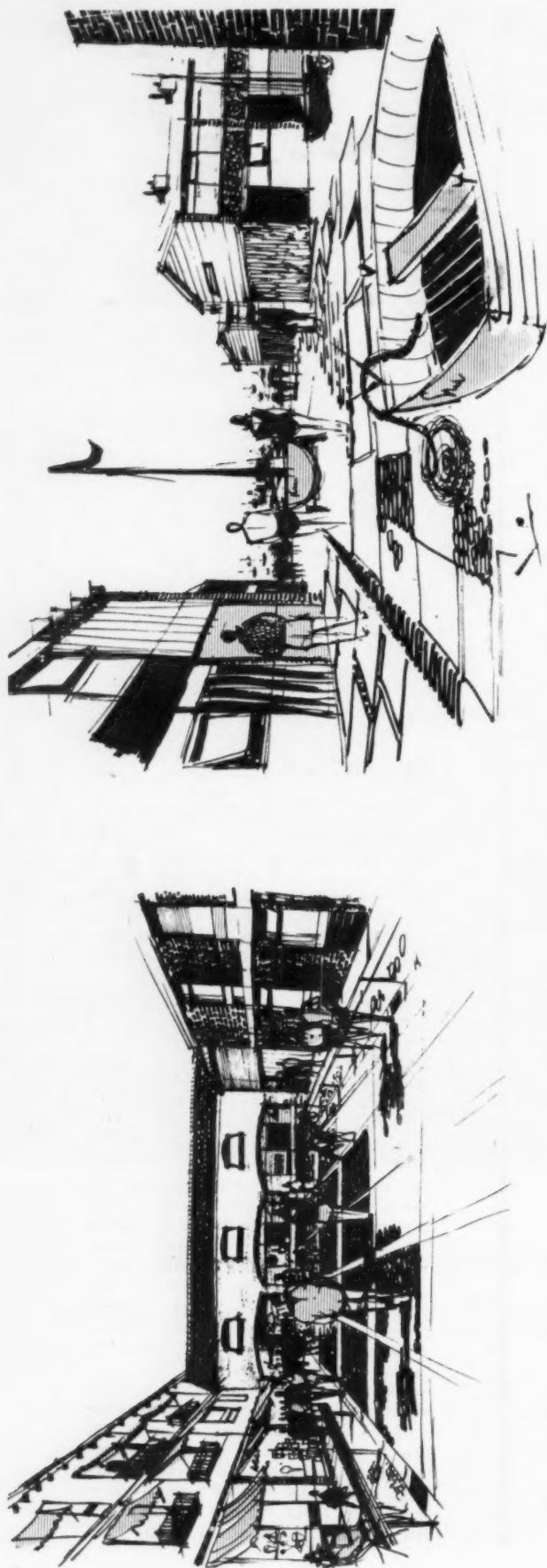
## On first looking into Warshawsky

Read Thoreau! Read Salinger! Galbraith! Mark Twain! Albert J. Lasker—the counsel showered down once it was known I was bound for the States. I narrowly avoided the ploymanship trap in "Re-read de Tocqueville!" and in the end I did no homework at all, though I did read Herbert Gold's *Love and Like* on the way back, to confirm some of my darker suspicions.

But if I ever feel the need to do anything preparatory for another trip Stateside, I shall read the current Warshawsky—though I must confess I knew nothing of this remarkable report on the state of the nation until my attention was drawn to it by the only Englishman at Southern Illinois University who can't do a four-minute mile.

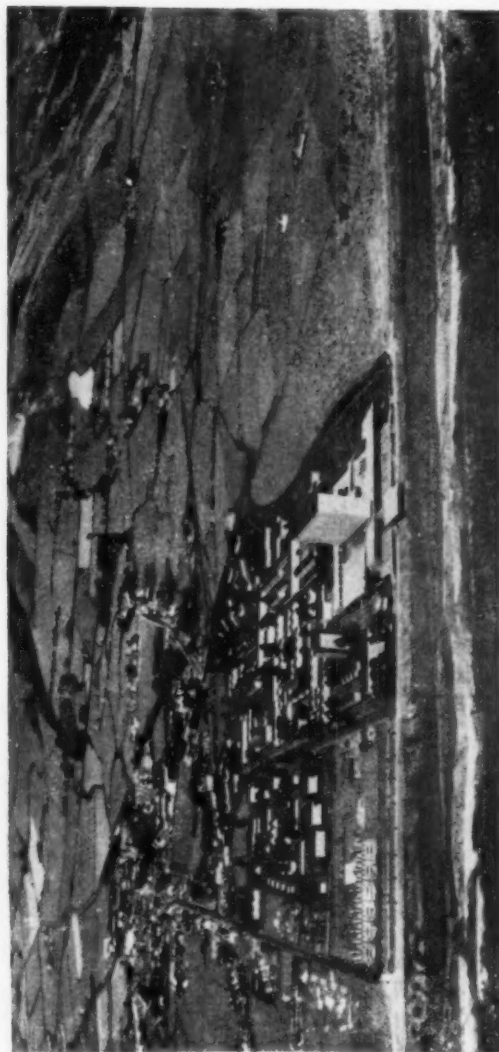
It would be tempting to compare Warshawsky with the Sears-Roebuck catalogue but S-R is too diffuse, too all-embracing, a half-continent seen through the wrong end of rose-tinted binoculars. Warshawsky bears upon the one sector of US culture that is crucial and specific—the automobile. The outside front cover says, simply, "Everything Automotive" and means "Everything automotive that matters" (rather like *all the news that's fit to print*).

So, Warshawsky isn't interested in fringe manifestations of automobilism like racing—it's no use looking anywhere in its 388 packed pages for, say, Ed Iskenderian's sanitary-engineered roller cams (no, I didn't make that up, Ed wrote it himself)—Warshawsky is about the real motoring that real Americans do, in all its aspects. Here



### *A new seaside resort for Wales*

Bron-y-Mor (which means "Sea Brink") is a project for a comprehensively planned seaside resort covering 40 acres of ground between the small Merionethshire town of Towyn and the mid-Wales coast. It has been planned by John H. D. Madin, the Birmingham architect, on behalf of Bishton Holding Ltd., and was launched this week by Lord Brecon, Minister of State for Welsh Affairs, with blessings from the Welsh Tourist Board and the Mid-Wales Industrial Development Association, which is looking into possibilities of more industry in the area. On left, the model superimposed on its site, with Towyn behind. The new town is designed as a series of pedestrian precincts, surrounded by restaurants, shops, houses and flats, with garages behind, leading through to an Entertainment Centre and a lido with a sliding roof, to be opened and closed by a photo-electric cell. The tower block rising above the centre will include a hotel and luxury flats overlooking Cardigan Bay. Two of the architect's sketches for the precincts are shown above.

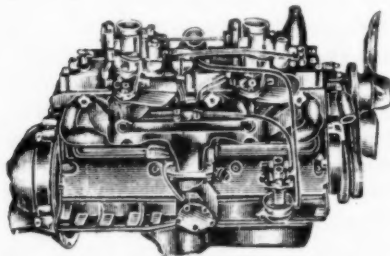




are pages of replacement hubcaps, seat-covers, floor mats, bumpers, and everything else you need to make good crimps, prangs and unintentional expendability. Here are the odds and sundries to mop up the difference between what Detroit supplies and what the heart desires—comfort cushions, safety-belts, car-snoozers, gear-lever extensions. Also for keeping a jump ahead of the Joneses—outside tail-pipes, simulated spot-lights, fender skirts, Custom grille sets, leather jackets, forward-look rear-view mirrors (no kidding), back-window tigers with stop-light eyes, and the rest of it.

Also weirdies, suggesting Paul Jennings-type depths of auto-neurosis—nut-busters, twin arm curb feelers, spring grease wedges, hole covers, 32-degree mason emblems, and all the usual "electronic waste recoverers," mini-superchargers, educated nuts, thinking spark-plugs and other faith-healing devices for turning jalopies into real going rods without actually curing any of their faults. Against this, the honest commercial cynicism of coil spring wedges that you hammer between the turns of the front springs to get the car to hold its head up a bit when you come to sell it, and not go round with its chin scraping on the road.

But the big shock of Warshawsky is that this grand conspectus of the automotive sub-culture is not illustrated with gooked-up Madison-Avenue type glamor-pics, but with plain homely old nineteenth-century wood-engraver's blocks, which are often extremely elegant and surprisingly apt to the metal surfaces of car accessories. This one is a brand new heavy-duty model 1956



Hudson Hornet 6-cyl. engine, but when you get a whole page of hub caps, it begins to look like the ethnographical section of the Imaginary Museum.

And that's it; the Warshawsky catalogue is an anthropological document. When you say "culture," "sub-culture," and all that, it's not a joke. This is a guide to the first folk-art of the do-it-yourself epoch, and that's why one must look somewhat askance at the Laird of Claverton riding around in a British Ford Minibus—the run-about of the American Museum in Britain should come right out of the folk-art section, and should, if possible, be a fully rodded '30 Ford pick-up on '32 Ford rails, chopped, channelled and Z-ded at the back, with a '55 Chevy motor, overbored, strokers, Jahn pistons, Duntov cams, Cragar 6-71 blower and kit, Olds rear axle grafting Lincoln rims shod in Inglewood flat slicks, Lakes pipes and plugs, tufted top and quilted head in white and red Naugahyde, tube shocks, Cadillac spinners for "design effect," pin-striping and horror decals.

REYNER BANHAM

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\* To preserve freedom of criticism these editors, as leaders in their respective fields, remain anonymous.

## The Editors

### CHANGING PATTERN OF BUILDING RESEARCH?

At first sight the new BRS report\* is little different from its predecessors. Yet there is a welcome shift of emphasis. The trouble with any research programme is how to draw a balance between the problems raised by existing (that is, traditional) building technique and the problems posed by the fresh application of scientific knowledge.

This trouble is made more difficult for a Government department like BRS by the fact that there will be a hundred people clamouring for more of the first to every one or two clamouring for more of the second. Yet the second is clearly much the more important and gives much the bigger rewards.

Traditional building technique has no outstanding major problems—apart, of course, from its site labour costs and recalcitrance to industrial processes. Yet, such is the influence of the brick industry, that as soon as some quite unimportant defect becomes widespread (such as the appearance of small cracks at re-entrant angles of brickwork) the grossly understaffed Research Station is forced to set aside an important part of its manpower to investigate.

Another trouble of the same sort arises from the influence which traditional norms exert on the research imagination. We have in this country a thing called the local authority dwelling. Though it has some sterling qualities, it is not an ultimate in housing excellence and, indeed, the most that can be said is that it represents a cheap way of making repetitive housing units using traditional construction.

It is very noticeable that this concept of a dwelling is being used as a yardstick at BRS in terms, not only of function but also of form, for all essays in non-traditional housing. In the 1959 report mention was made of an experiment which showed that, if you try to make a traditional type house using prefabricated components, it will cost more; and in this report there are signs that the more ambitious essays in

\* Building Research 1960. HMSO. 7s. 0d. See also news report on page 116.



prefabrication now under way (whole walls this time) are being set the same irrelevant task.

But if in some respects BRS is still no more than the help-mate of a backward industry, there are also signs that it plans to become the leader of a progressive one. It is good news that it is turning to that vital and neglected study, bioclimatology; that it has bought an analogue computer for measuring the thermal behaviour of structures and that it has invested in a new artificial sky. All of these represent basic studies which ought in logic to have been made before we worried about productivity: for what is the virtue of building fast if we build wrongly? But it is better late than never: our only anxiety is that these fundamental studies take a great many man-years to complete. Let us hope that now we have a Minister of Science he will have the good sense to put a great many more men on the job so that we have fewer years to wait.

## HOSPITALS RESEARCH

In their fifth annual report, the Nuffield Provincial Hospitals Trust pointed out that so much research on the Health Service is needed that Government finance must be forthcoming if the Health Service is to fulfil its potential; but they go on to question if such research is best done by the Ministry. "The very fact," they say, "that the outcome of such enquiries may not be exactly flattering to the established machinery of Government may inhibit boldness and candour." There is much truth in this. The British tradition of administration makes it very difficult indeed for a department to push on, with the required impartiality and vigour, enquiries which are likely to bring to light its own ineffectiveness; and, when this ineffectiveness has been proved, to publish the fact frankly enough to enable outsiders to believe in the authenticity of the enquiries. It seems, therefore, that in the English context there is as good a case for dividing research from the executive as there is for dividing the executive from the judicature, and for broadly the same reasons. It is not, of course, that a Ministry would fudge the results: only that it is easy for Ministers to find reasons why some results must be withheld and for their advisers so to design enquiries that the more important truths are not brought to light at all. There is no doubt that the great success of the Nuffield Foundation's contribution to hospital research is due in part to their independent status; but no privately financed body could put up the money which is now needed to put the Health Service on a basis of fact. In reality the natural custodians of research are not the administrators, still less the politicians, but the professional people. Could not a research body be set up, financed by Government, but directed by the professions concerned in implementing the Health Service?

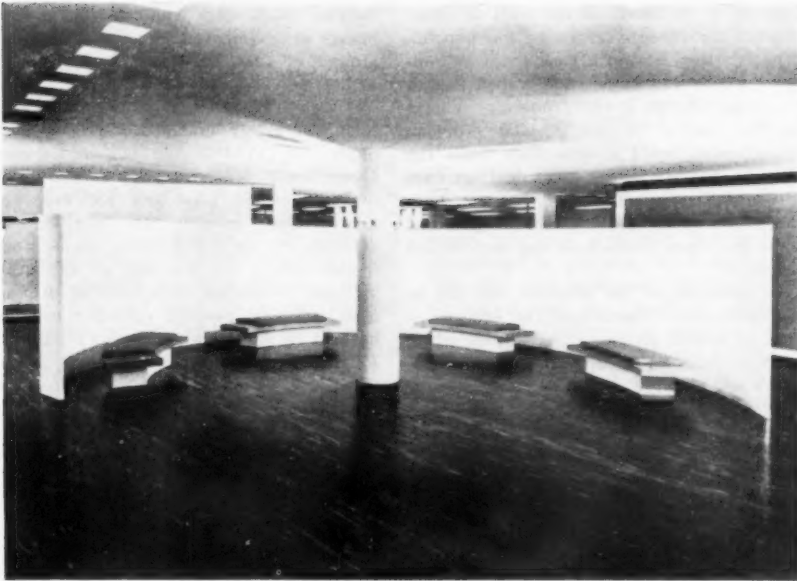


## DISINTEGRATED

Rampant individualism won the day at the ICA's discussion on "integration of Art and Architecture" in the IUA Buildings last Thursday. Industry in the guise of P. A. Denison of Cape Building Products longed for everyone to love one another and say how complete integration had been but architects and artists alike were apparently damned if they would admire it. Richard Hamilton said his picture was a "fragment on a fence" and that integration was a failure. John Ernest, designer of the scaffolding tower, said constructionists were architects in non-functional clothes but they must not submit to their functional colleagues.

Anthony Hill (constructor of one of the HQ Building panels) added a note of fantasy by explaining his work was not art at all but "space articulation" yet quoted a friend saying "I thought it was part of the architecture" to prove it was completely integrated. The architects got an innings after refreshments and opened with Maxwell Fry. He thought art adds the finishing touch to architecture but added he knew of only one fully integrated modern building.

Fortunately, Peter Smithson and Theo Crosby managed to draw things together. Crosby said the two buildings must be distinguished. The Exhibition Hall did not seek to integrate art and



Reception room at Barclay's first computer bank. (See "Machine for Bouncing in")

architecture at all. The HQ Building on the other hand did, and as a result of the artists' skill in grasping and manipulating new materials, it succeeded.

Peter Smithson, hesitating like a Hollywood cowboy of the Method school, seemed to deny the desirability of integration at all but thoroughly congratulated Crosby for an achievement far higher than the Festival of Britain. To illustrate this, he said the environment of the IUA Buildings was so rewarding that when you are in it, "you can smell something."

#### ROUSING SPEECH

Dr. A. L. Rouse spoiled an interesting lecture to the Society for the Preservation of Ancient Buildings last week with a spiteful attack on the new universities. Most of their students, he claimed, "ought not to be in universities at all." Would we rather see, he demanded, the maintenance of the first-rate buildings of our ancient universities, or the often second-rate new university buildings that are going up? The days of chivalry, the Renaissance, and the Romantic Age, had given place to "a mass civilisation with mass standards—if that is not prostitution of the word 'standards,'" to (with inexpressible contempt) "an Age of Technology"! Rousing cheers—or at least enthusiastic applause—greeted the Fellow of Some Souls. But did the applauders think what the future of our ancient towns and buildings might be if we do not achieve a more educated mass society?

#### ANOTHER TAKE-OVER?

It seems a pity to amalgamate the London Museum with the Guildhall Museum in new City premises. Who wants to slip along to the junction of London Wall and Aldersgate Street at the week-end? And, anyway, quite apart from the pleasure one had of visiting the London Museum in Kensington Palace, just across the gardens, it was appropriate to have the Queen Victoria relics in her birth-place and childhood home.

\*

I suppose it is true that the move will allow adequate accommodation for the two collections. But aren't most museums too big? There is a lot to be said in a place like the Geffrye, where half an hour is enough to see almost anything without getting worn out.

#### MACHINE FOR BOUNCING IN

When the typography of my rather well-designed cheques went to pieces, Barclays explained that the yawning gap at the bottom of each was to make room for magnetic printing for computers to read. All very exciting and it seemed worth waiting two years for the first bank computer to rumble (click? bleep? twitter?) into action. But I suppose even a computer can jib occasionally and I now find that it is passing over the actual reading to old-fashioned human beings and taking the job on from there. It sounds a formidable machine; in fact to read the hand-out about the premises that house it (in

Drummond Street, London), you might assume it had taken over everything, including the staff architects. It seems that the design of the area housing the computer "was subordinated to this equipment," while the design of the reception and office area "allowed for a more abstract approach." Who would be bank clerks if they could be a computer and have the design of the place subordinated to them? My picture shows what sort of "abstract approach" the visiting bank staff receive in the reception area. Brighton members of Barclays are already calling it the "instant Chapter-house."

#### BLUNTED SPUR

"We are bored in the towns because there are no more temples of the sun," says a Frenchman in SPUR. No, *not* that one. I refer, as *avant-gardists* will know, to the other SPUR—the organ of a German Group connected with the Lettristic International which, together with the movement for an Image-Bauhaus (are you still with me?), formed the Situationist International. This particular issue of the publication was devoted to a new art form (hurrah) called Unitarian Urbanism, and from it we learn that "the sole end of architecture is to serve the passions of man." The solution to boredom in urbanity, it seems, is something called "incidental architecture." This is *against* tiled bathrooms and perfection rationalism and *for* emotion, poverty, un-practicality, truth and the use of foundlings (maritime, fluvial, forestal and urban). Just to rub the point home let me tell you that the Lettrist International disapproves of the rumoured demolition of London's China Town and of Dada. Over to you.

#### MORE ANON

It is, presumably, in the correct tradition of anonymity that the authors of the latest MOE Bulletin should not be named any more than the authors of previous Bulletins have been given. Yet it is knowledge common to many that it was David Medd and Mary Crowley from the MOE who visited the United States and who prepared this excellent report. Because memories are short, and for the benefit of future architectural historians, ASTRAGAL believes the authorship should be publicly recorded.

ASTRAGAL

## LETTERS

Roger Coombs

John Weeks, ARIBA

R. Pater

John R. G. Wheatley, ARIBA

Frederick Hill, FRIBA, AMPTI

Ewart B. Redfern, ARIBA

Kenneth Claxton

G. L. Thompson, FRIBA

Wilfrid Bailey

SIR: In suggesting, without detailed knowledge, that the use of Portland stone on the new *Economist* building might be "a placatory gesture to the clubmen," isn't *ASTRAGAL* being less than just to the architects, to clubmen (if there is such a race) and to the material?

If he would prefer the frame not to be clad at all, has he any idea what it would look like in 20 years time? And if honesty in expressing structure simply means the rejection of all cladding materials, I for one do not look forward to the day when clubmen discard their Savile Row suits and go about naked.

ROGER COOMBS

Bath

*ASTRAGAL* replies: No harm in cladding, and no harm in Portland stone. All I meant to express was surprise that the Smithsons should find it a sympathetic cladding material.

### Hospital costs

SIR: I cannot see why James Nisbet should be so surprised that the *AJ* failed to receive the hospital building note on cost with enthusiasm when it had previously supported the MOE cost control system.

The circumstances are entirely different and the editorial explained that it was considered that the MOE system could not be applied at this moment in the much less charted and more fluid hospital situation.

The editorial did not "wish the Ministry to embark on a £500 million programme without a system of cost control"; it said that we wanted to know more about the background to the present proposals so that the system could be properly assessed. The *AJ* was indeed critical but it should not be expected to be enthusiastic for a system when the published information about its basis is so inadequate; the prognosis for the success of a system which

appears to be based on the costs of obsolescent departments cannot be too hopeful. The fact that Musgrave Park could be built now, bigger and better, and with a margin of some £25,730, is really not very helpful in the context of the hospital problem. Adult acute ward designs have been the subject of study (and a great deal has happened since Musgrave Park) but there are hospital departments which are being studied now, and many which have not been studied at all.

The intention of the editorial was not to be carping and obstructive. The Ministry is full of helpful people at every level, many with a deep knowledge of hospitals, and there was no wish implied to be uncooperative with them. This would be pointless. The plea was for more information, which could lead to a proper discussion. After all, hospital architects and their clients will now have to cost their projects at the sketch plan stage and be expected to keep within the determined cost limit from that time on. We want to know more about the cause we are to support and not be asked merely to have faith that it is a just one. On the evidence of the Note alone, the system could be analogous to a cost limiting system fixed by the Air Ministry at the beginning of the jet age, applied at the design stage to 200-passenger jet aircraft, but extrapolated from the cost of propeller aircraft and one or two single jet experiments. It does not seem a very good idea.

JOHN WEEKS

London, N6

SIR: I was nauseated by *Astragal's* comments on the RIBA/Arts Council Exhibition (*AJ*, July 5). His phrases: "truly elegant," "nicely disposed," "charming folly," "naughty" and so on were typical of some women's magazines. An imitation of a Japanese house is the act contrary to the whole spirit of modern architecture and Howell and Killick have put themselves in the same category as Richardson, McMorran and Curtis Green. *Astragal's* note made me feel sick.

R. PATER

Northwood

*ASTRAGAL* replies: It was meant to.

### Unfair to fair

SIR: *ASTRAGAL* complained in the *AJ* (12.7.61) that the Soviet Industrial Exhibition at Earls Court used no exhibition technique and that the descriptions pertaining to certain exhibits were amateurishly carried out.

With the latter contention I have no quarrel. Obviously little thought or design had been exercised during their preparation. But it makes me feel very anti-*ASTRAGAL* when he applies his own highly sophisticated and Western ideas (no doubt born of a high exhibition attendance index) on display technique to an exhibition that never could be and certainly does not wish to be subject to the same aesthetic criteria.

Who, indeed, would want to examine atomic-powered ice-breakers, nuclear-

thermal exchangers and the engineering beauty of sputnik satellites against a background of slick black and white screens, natural softwood and "Grot 9"?

Yet the Russians have evolved their own brand of highly dramatised display technique. For instance the tall, dark-domed Outer Space section is approached by a low illuminated glass-fibre archway, and many other sections are vitalised by vigorous and suggestive colour symbols and murals. These are the sort of exhibition methods considered unfashionable in England, but what possible relevance can this have to an exhibition of Russian industry? I found this antithesis of furniture exhibition frippery stimulatingly right for the stark engineering and scientific genius of the Soviet Union.

JOHN R. G. WHEATLEY

London, SW5

### Hill v. MacEwen

SIR: Mr. MacEwen's reply to my letter (*AJ* 22.6.61), in which I took him to task for his statement that an architect may be unable to recover fees if the resulting building exceeds his client's cost limit, does not really clear the air at all. In fact, after repeating what I said he then says that he meant something different, and, so far as I can see, says the same thing again.

I think we have got to be very clear about this and the RIBA should reword the Scale of Charges and Conditions of Engagement so as to leave no possible doubt as to when such a case would apply and when it would not.

It all hinges on the question as to whether the extra cost, however small, could have been foreseen by the architect. In the *RIBA Journal* for May 1961, I have already given an actual example of a quite frightening increase in cost over a quantity surveyor's estimate. I have been further informed by another quantity surveyor that a large city department is finding that tenders are some 25 per cent higher for housing and school work. It seems incredible to me that under such circumstances a client could then turn round and say that the architect was not entitled to any fee at all. But that is surely what Mr. MacEwen's statement does in fact imply.

May I take up another inch or two of your space to give some publicity to another hidden danger, namely, the basis of charging fees when work is abandoned at the contract stage when it has been found that tenders are too high? The official ruling is that the Scale states the "estimated cost of the works"—and I am assured that this means the architect's estimate—including that of an independent quantity surveyor, since the latter is virtually a consultant employed by him—no matter what the actual lowest tender may be.

Since the lowest tender reveals the current building cost (which is the time honoured basis for charging accounts), this puts the onus for the accuracy of an estimate very squarely on the architect's shoulders. Few would quarrel with this responsibility in



general terms so long as the architect can indeed charge a fee.

On the other hand, I see from the current Scale of Charges of the RICS that a quantity surveyor's fees under similar circumstances are unreservedly charged upon the amount of the lowest tender and, furthermore, if he and the architect are given the opportunity of arranging savings and omissions to bring the cost within the client's budget, the quantity surveyor still charges on the amount of the lowest tender and then something extra for the trouble in cutting down.

This does not seem to me to be very equitable between the two professions. I think I will go and raise chickens—at least it should be more profitable than Cain.

FREDERICK HILL

London, SW1

## Poll on architectural education

SIR: Having been away on holiday I missed ASTRAGAL's reference to a "pretty silly poll," and I presume his other comments were based on notes sent to him by the RIBA staff.

He asks "why does he want two-thirds of the board to be elected members of the RIBA?" and the obvious answer in a democratic country is "why not?" Why have RIBA elections at all if those elected are not used to run the most important Committees?

There is hardly an architect in the country who believes architectural education is as it should be, and I believe that the deficiencies arise because "practising and elected" members have been denied an effective say in their own affairs. I also believe that most architects are sufficiently adult and responsible to be allowed to vote on the subject. ASTRAGAL's comments about "a back entrance" to the profession, and "a supply of practical Architectural Assistants" are inaccurate and typically irresponsible, but I am content to let the members decide for themselves.

What is unfair, however, is that ASTRAGAL should make these (RIBA) comments, and you refuse to print the explanatory notes I sent to you. Are you afraid to let your readers judge for themselves?

EWART B. REDFERN

ASTRAGAL replies: Unfortunately I had not got the RIBA's notes when I commented on Mr. Redfern's proposal, but I don't disagree with them. The purpose of the RIBA Council is not to run committees but to represent the varied facets of the profession and to exercise judgment when alternative courses are suggested by committees or RIBA staff. If elected members feel that they have been denied an effective say in their own affairs the remedy is in their own hands. As regards Mr. Redfern's explanatory notes, they take up more space than the project is worth, as no doubt the AJ editors would agree.

SIR: I wonder if Mr. Ewart B. Redfern is not rather jumping the gun? One would

gather that he wishes to retain or revert to a system of education geared to a static philosophy of architecture and its consequent practice.

Many organisations and committees are working on this fundamental problem. To force a poll relating to education based only upon personal feelings and the truly doubtful findings of Mr. Redfern's "questionnaire" (RIBA Journal, October 1960), seems not only premature but positively constructed to prejudice such findings before they are published. Perhaps the inference is that Mr. Redfern wishes the present office structure to remain.

Does he not realise, whatever the findings, that architecture is a progressive, dynamic process. It is not static but a function of an everchanging society affected by economics, politics and technology. Not only does the resulting development change but also the office structure from which it springs.

The profession is at present suffering from these pains of change, which can either be approached positively or in a frame of mind which seeks only to preserve and regularise the *status quo*. Mr. Redfern attacks the "academic" approach; before trying to pull a fast one let us try and achieve a profession that can read, write and think rationally and not only in terms of practicality and expedience. Let me repeat that architecture and its process is dynamic. Mr. Redfern must only answer one question and note its logical results. Mr. Redfern, what is architecture?

KENNETH CLAXTON

Hon. Secretary

BASA

SIR: Referring to Mr. Redfern's letter in the June 15 issue of THE ARCHITECTS' JOURNAL, and ASTRAGAL's comments, I should not have thought that £500 was a very excessive sum to expend if it will help to clear up misgivings which many members may have about the decisions of the Council on the subject of architectural education.

Mr. Redfern's effort is surely truly democratic, and I support it for that reason, although I am not one of the signatories.

G. L. THOMPSON

York

## Heating local authority flats

SIR: The articles by Mr. P. T. Loader and Miss E. A. Milroy in the issues of your JOURNAL of June 1 and 8, provide information on a survey carried out by the Building Research Station on certain heat services and local authority flats.

Unfortunately this was based on information derived from systems operating as far back as 1957. Technical progress in heating since then has been so rapid that this report cannot be used to give general guidance on the type of installation which should be used in flats in 1961.

The survey was started four years ago and the installations had been planned earlier than that. It was not possible, therefore, for the gas installations to include selective warm air heating or the use of high efficiency convector fires installed with controlled ventilation. It is against such installations that the gas industry would now wish to be compared with other heating systems.

In considering the scope of the report, it should be noted that it deals with six central heating installations, four of individual solid fuel appliances, six of electric floor warming, two of individual gas fires and one of electric fires.

The conclusions of the report mention improvements in heating systems which have taken place since the survey was started, but these provisos could be overlooked by a casual reading.

Attention is drawn to the particular directions in which the survey, while excellent in itself, is not representative of what the gas industry can do and is doing for heating local authority flats.

1. Only two examples out of the 19 are gas systems, and these use convector gas fires of which the practical efficiency has now been increased.

2. Gas fires are now available of improved efficiency and ventilation control to an extent that the practical efficiency has increased by about 25 per cent, in comparison with those dealt with in this present survey. In fact, at one of the blocks of flats examined the original fires have been replaced by more modern ones and it is understood a greater satisfaction has resulted.

3. Gas-fired selective warm-air heating systems which provide a standard of service at least equivalent to that of electric floor warming should be included in any consideration of modern gas systems. Examples of such systems were not available in blocks of flats in 1957 when the Building Research Station investigation was begun, but there are now a large number of installations in houses, and data are also now available for flats. As far as gas systems are concerned, conclusions based on installations for heating local authority flats are misleading if warm-air heating is excluded.

4. Branched flues and Se-ducts are forms of common flueing affecting space and cost advantages over individual flues in blocks of flats, and a considerable body of practical experience has now been obtained.

5. Revisions of gas tariffs and methods of charge in the last two years have aided the competitive position of gas heating.

6. It is not clear whether or not the figures in Table 8 include purchase tax as operating at the time of the survey. The purchase tax position on individual gas and electric water heaters has now changed, and gas warm-air heaters, like electric floor warming, are not subject to purchase tax.

It is hoped that the results of this survey will be followed up by the Building Research Station in an examination of the latest systems of gas heating, certainly including selective warm-air heating.

WILFRID BAILEY

Secretary

The Gas Council, SW1



# NEWS

## BRS

### *Building Research 1960*

Pride of place must be given this year, in considering the latest report of the Building Research Station\* (and leaving aside matters which either have been or are about to be published *in extenso* in the AJ), to the station's work on building economics.

This work has many aspects. The investigation of the cost of high flats has revealed that the speed of construction varies between 3 and 25 working days per storey and that finishes take half as long again as structure.

Earlier studies had shown that the difference in cost between high blocks and low was greater in the provinces than in London; but last year's workings show that provincial costs of high blocks are now beginning to come down.

Another finding is that the decisive factor is not the choice of precast as against *in situ* concrete (or *vice versa*) but the efficiency of site organisation.

#### Hospitals

During the past year the Ministry of Health has called on the station's help with the hospital building programme. One study has shown that, of the total cost of building, maintaining and running a hospital, 5 per cent is accountable to maintenance and repairs, 5 per cent to heat, light and power and 20 per cent to the first cost of the building.

The main effort of the station on this question of hospital costs has been spent on trying to find an answer to the vexed question of how much the different parts of a hospital ought to cost. On this point it is interesting to note that the report (which, of course, only states the position at the end of last year) records their study as being only at a comparatively early stage. This substantiates the AJ's fear that the Ministry of Health's cost targets have been scrambled together in a rather make-shift way.

"The variety of buildings constituting a hospital," the report says, "and the scarcity of examples of new buildings, make it impracticable to rely on the cost analysis of recently constructed buildings. It may thus be necessary to make use of data from other building types for the cost of planning of hospitals, and studies are being made of the problems involved by comparison of the price level of hospital buildings with similar work in other building types."

The first of these studies, a survey of 30 nurses' homes, revealed the disturbing fact that tender prices per sq. ft. gross area showed a range of more than 2:1.

#### Operational bills

This wide variation in prices indicates a wide variation in efficiency and also in the

method of pricing. In order to assist in this last respect the station have been working on bills of quantities. If the standard bill helps nobody, the elemental bill helps only the architect.

The station have now invented an "operation bill" in which the items are gathered under their operational headings, the object of which is to help the builder to plan his work and to predict the cost more accurately.

#### Maintenance costs

The last aspect of building economics to get attention is maintenance costs. An investigation of the maintenance costs of local authority housing gives some reason to believe that non-traditional building gives rise to slightly higher maintenance costs than traditional.

Thus the average annual maintenance costs (excluding painting) for traditional houses of 1957-58 were £5 per house, for non-traditional £5 6s. per house.

Prefabricated post-war bungalows cost £11 8s. per house, a figure which is substantially the same as that for traditional houses built in the period 1924-39.

#### Building construction

In the field of building construction the report notes three developments in respect of foundations. Confronted with the problem of damage to the foundations of boiler houses through the drying of the sub-soil and through direct thermal damage to the structure itself, the station has worked out a method of ventilating and insulating the foundations.

Second, there is bad news on the problem of building in clay. Hitherto it has been assumed that, when there are tree roots in clay, it is sufficient to cut them out and to wait one year before building; but experience now shows that it takes several years for the clay to reach a normal water content.

Third, the station's development of short bored piles has not been a great success owing to the difficulty of manoeuvring the equipment and getting it in exactly the right spot. The station has now developed equipment for boring cylindrical piles of 2 ft. 6 in. diameter to a depth of up to 20 ft., mounted on a pneumatic tyred agricultural tractor.

Work on curtain walls has established a maximum clearance of  $\frac{1}{4}$  in. for glass panels in aluminium frames and accelerated weathering tests have shown an improved performance by butyl mastics.

Bitumen roofing felt surfaced with aluminium foil has failed to pass muster and has been withdrawn by the manufacturers. Tests on plastic rainwater goods have brought to light a colour problem. Glass-fibre-reinforced polyester gutters change colour differently from brackets and from p.v.c. downpipes made originally to match them. Glass fibre polyester roofing sheets do not weather well if they contain fire-retardant additives.

#### Services

Internal bathrooms have been the subject of a social survey and have been found

acceptable: they are warmer, are not subject to condensation and their use gives better room shapes. Those mechanically ventilated were uniformly satisfactory, but one scheme with natural ventilation was found to circulate kitchen smells.

In single stack plumbing installations of up to four storeys, w.c. inlets need not be swept in the direction of flow. The drive to save water continues: a dual flow cistern for w.c.s, which will deliver a small or a larger quantity of water, has been developed, but the spray tap has been found to give rise to a rather unexpected trouble if the pipes serving it are too large. In this event they are not self-cleansing so that deposits build up and eventually choke them. A 1-in. pipe is satisfactory, provided it is ventilated.

#### Structures

In the field of structures, the long-term work on composite construction goes on and the findings to date, as the report says, call for "a new approach to the overall design of beams and slabs." Work is also beginning both on a statistical survey of roof and floor loads and on the effect of wind on tall buildings.

Work has also been resumed on large panel construction (i.e., factory-made concrete walls complete with windows and doors, large floor panels, etc.). This is something which was initiated many years ago but was dropped as a result of the general post-war loss of confidence in large-scale prefabrication.

#### Heat, light and sound

In sound, apart from the station's monumental work on the sound proofing of walls and floors (finished some time ago and published last year) and the survey of noise in London (which has only just begun), the main concern has been with aircraft noise. A study of the horizontal propagation of aircraft noise over the ground has achieved the useful result of upsetting all existing theories, but without setting any new theory in their place.

Lighting has seen little more than practical applications of PSALI to actual buildings but a new artificial sky has been set up for studying the effects of changes in sky brightness, external obstructions, etc.; also the station has put out a new design for clip-on louvres to fluorescent lights to meet the requirements of MOE.

On heating there has been a change in the station's work which is likely to prove of great importance as the years go by. Up to now we have based our concept of heating of buildings on steady state heat loss computations; in other words, on a consideration of U values.

We now know that, though these computations are satisfactory for estimating yearly averages, they are insufficient for calculating the detailed response which a building makes from hour to hour as temperatures change outside and as the heat input varies. To calculate this it is necessary to know not only U values but thermal capacities. When this added consideration is applied to fieldwork, matters become very complicated and for this reason the station has

\* Building Research 1960. HMSO. 7s.

THE ARCHITECTS' JOURNAL for July 26, 1961

# HOPE'S Reversible Windows



SUMMIT COURT, Shoot-up Hill, Willesden

*J. C. Morris, B.Sc., M.I.C.E., M.I.Struct.E., M.I.Mun.E., F.R.S.H., Boro' Engineer & Surveyor*

*T. N. T'Anson/R. W. Hallam, A/A.R.I.B.A., Chief and Deputy Architect*

Casements are reversible through 180° for easy cleaning and painting from inside and fitted with a patent releasable safety arm which will restrict the opening to a few inches for ventilation and also secure the casement in the reversed position. Fixed sublights below casements provide additional safety and convenience.

**HOPE'S WINDOWS**  
*The Name Guarantees*



*Send for List 380*

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Carlite Plaster...

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Tel: Wetheral 345.

Thomas McGhie & Sons Ltd., Kirkby Thore,  
Westmorland.  
Tel: Kirkby Thore 204.



acquired an analogue computer. The immediate objectives are to study the effect of structural design on the daytime fall of temperature with off-peak floor heating and to study the optimum heating cycles with intermittent heating and with summer ventilation.

One last and important piece of news contained in this report is that Volume 2 of the Principles of Modern Building is with the printers. Volume 1, as our readers will remember, first came out over 20 years ago and was so good that we have been gasping for the second volume ever since.

## PRISON ARCHITECTURE

### *International Study Group*

A successful study group on prison architecture was held at the AA from July 10 to 14. Thirteen countries were represented, but the typical delegation consisted only of one senior administrator and one senior architect associated with the prison building programme, so that the total number was kept down to forty.

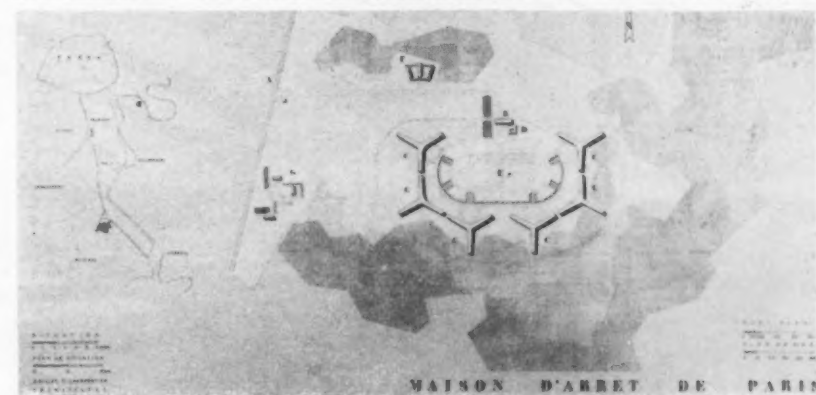
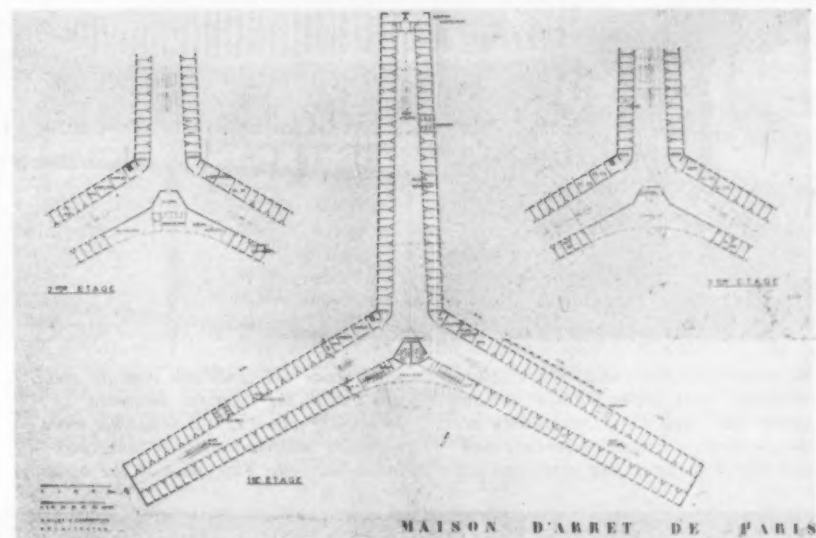
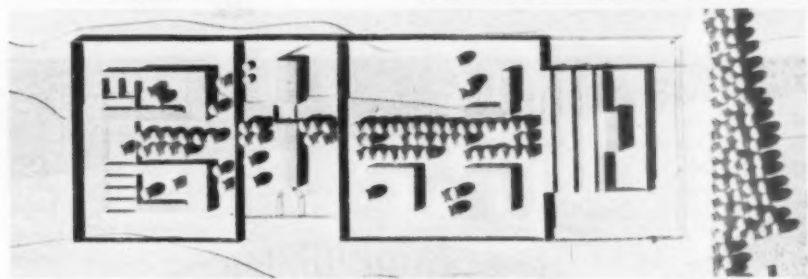
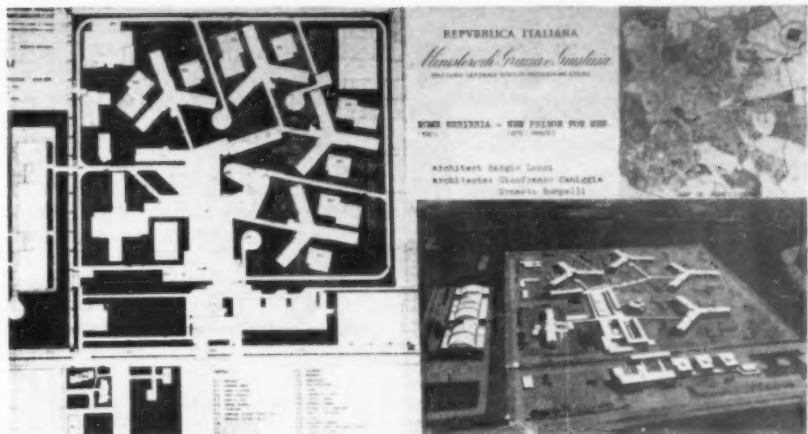
Big names in prison administration were there, including Torsten Eriksson, Director General of the National Swedish Prisons Board, Marcel van Helmont, Inspector General of Belgian Prisons, and Myrl E. Alexander, Assistant Director of the US Federal Bureau of Prisons.

Architects included Clarence E. Litchfield and George F. Hellmuth of the USA, Tor Bunner of Sweden, Claude Charpentier of France, Frank Sevenhuisen of Holland, Sergio Lenci of Italy.

Although this was a private venture, it was energetically backed by the Prison Commission, almost all of whose top men—including the Chairman, the Chief Director and the Director of Works—took part in one capacity or another, and by the Ministry of Works, who sent R. Turner, Director of Works, and several of his associates. There was plenty of evidence of new ideas, both in penal policy and in prison architecture. At the meetings, the emphasis was firmly on reclamation rather than punishment, and it was generally agreed that this policy implied adopting the small group principle, according to which inmates are gathered together in small units—typical

*Layout of project at Rome—Rebibbia on the outskirts of the city, designed by Sergio Lenci, a long-stay institution. Each cell block has a basic capacity of 50 inmates, divided into rooms of varying sizes. Every prisoner has direct access to sanitary facilities*

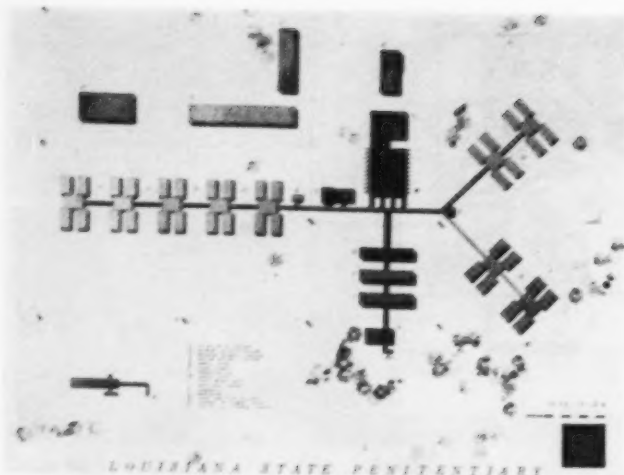
*Model of a new central prison in Sweden, designed by the National Swedish Prison Board (Architect: Tor Bunner) to house 435 inmates. The size is dictated by the need for specialist services and fully equipped workshops*



*Layout of new remand centre near Paris (architects: Gillet and Charpentier) is dominated by six 3-storey cell blocks surrounding a recreation area. A central*

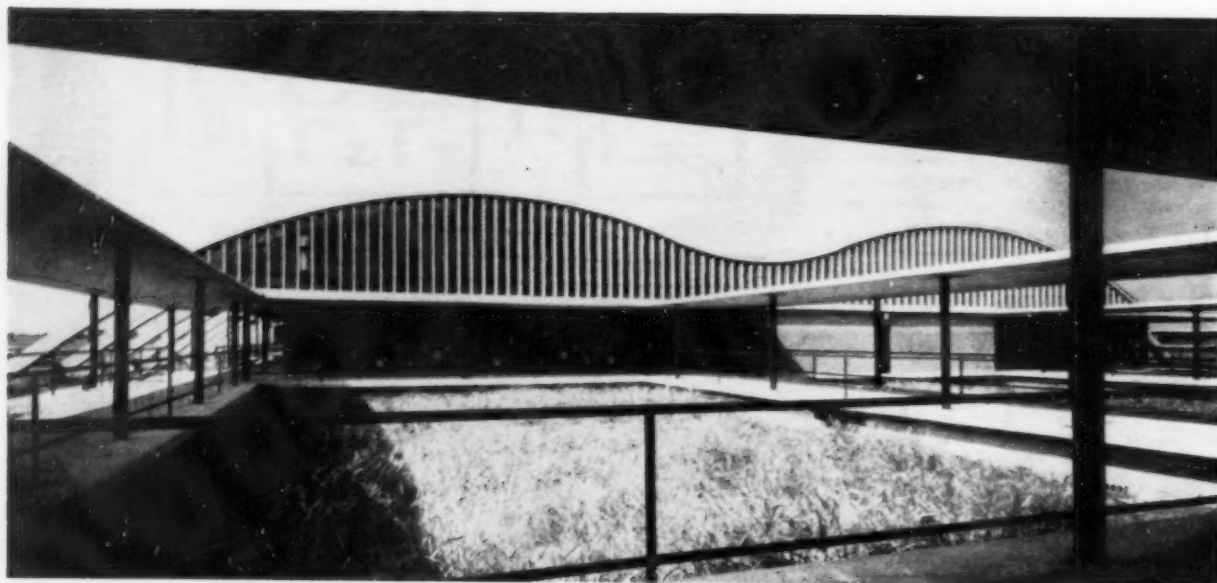
*prison would give greater prominence to workshops but prisoners here have not been sentenced and cannot therefore be required to work*





sizes varied from 7 to 15 men—regularly supervised by the same prison officer. This is a far cry from the great flocks of prisoners that are herded around traditional prisons, and naturally it calls for entirely different types of building.

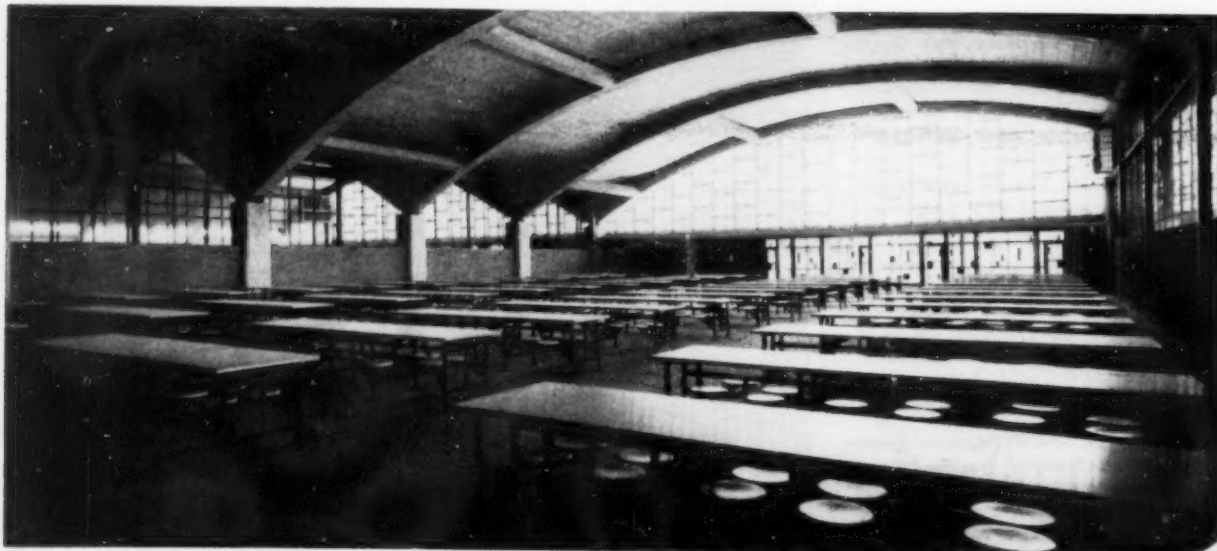
In most countries, a clear distinction is now being made between remand centres, used to accommodate prisoners before sentence, and various kinds of long-stay institutions. In the latter, there is increasing emphasis on useful work, and some new institutions are built round their well-equipped workshops. Modern methods also require much more provision for counselling interviews and for group discussions. One of the difficulties with such specialised staffing and equipment is that the very small institution, such as has been advocated for some time, cannot afford the full range of



*Louisiana State Penitentiary, by Curtis and Davis, incorporates the new so-called "clover-leaf" cell blocks, consisting of four dormitories linked by sanitary and other shared facilities. The same unit is*

*used inside the fence for medium security and outside the fence for minimum security. There is also a somewhat more orthodox maximum security wing with individual cells. Top, plan of the building;*

*centre, front view; below, the dining hall. Many modern American institutions provide more informal layouts than this one*



facilities. The Swedes, who have built many institutions for 100 inmates or less, are now planning two central prisons for 450 inmates. Simultaneously the Americans, who have built many gigantic prisons, are now talking in terms of 500-600 inmates, so on this point there is surprising agreement. Many detailed points remained to be argued about. The UK is the only surviving advocate of the "stopping-out" routine; some other countries agree that a bed-sitting cell is rather spoilt by a w.c. pan but get over the difficulty by an open-door policy or by installing in each cell a private telephone to the guardroom.

The much-criticised perimeter wall seems to be generally on the way out, to be replaced by fences and certain electronic warning devices. In some cases it seems to be harder to keep strangers out than to keep the inmates in.

There was also an exhibition, from which some of the more interesting designs are reproduced here.

JOHN MADGE

## NPL CONFERENCE

### Control of noise

"Acousticians," administrators, aeronautical engineers, architects, automobile engineers, civil engineers, consulting engineers, doctors, "do-gooders," electrical engineers, physicists, physiologists, sociologists, town clerks and town planners. The list broadly covers the interests of the 400 or so people who attended or contributed to the Control of Noise Conference, organised jointly by the NPL, the BRS and the NEL (National Engineering Laboratory of the DSIR—it's not on the cover) and held at the National Physical Laboratory at the end of last month.

The papers read at the conference ranged from "Hearing and the Ear" (Professor W. Burns) to "Community Reaction Criteria for External Noises" (Professor C. W. Kosten and Mr. G. J. van Os) and took in at least six or seven on subjects of direct concern to architects and town planners.

To attempt to summarise or even mention all the aspects of noise control would be too difficult, but among the important points which affect building design were:

1. It was agreed that noise is going to increase. This is not necessarily to say that louder noise sources will be introduced, although even this is possible in the case of aircraft, but that there will be more noise sources; more cars and lorries, more radios, domestic machines and dogs, more fans and factories, more aeroplanes and babies next door so that there is certain to be more total noise.

2. Reduction of noise at the source is often difficult and sometimes impossible. To quote Dr. A. J. King, "it is well to appreciate at the outset the minuteness of the vibration which can cause a loud sound, in order to understand the lengths to which it is sometimes necessary to go

to achieve an inherently quiet machine.

"As an example, a surface which is vibrating at 1,000 c/s with an amplitude of one twentieth of one thousandth of an inch can give rise to a noise of nearly 100 dB. . . . No wonder it is so difficult to produce machines that are inherently quiet."

Or, to quote W. C. Copeland, "reduction of noise from aircraft on the ground to the same extent as from engines on the test bed is not feasible, particularly for the large modern airliners."

3. The only solution will very often be more sound insulation, either by structure or by planning. H. R. Humphreys said that "noise problems bear some resemblance to road accidents. People get really worried about them only after they have happened instead of trying to take the necessary steps to ensure that they do not occur. This criticism applies not only to industrialists and other owners of noise sources but unfortunately to some architects and engineers who are at least in part responsible for solving the problem in physical terms."

It also appeared that some speakers suspected that far too little is known of the fundamentals of building acoustics. H. J. Purkiss said, "It cannot be emphasised too strongly that most common types of absorbing materials are very ineffective insulators against sound (although their thermal insulation may be good)."

4. Noise in many factories must be reduced. "Industry has shown little collective interest and concern for the noise it produces daily, although it is at work for eight hours a day and some persons are exposed to the most hideous noises. It seems we have become so familiar with noise as to be contemptuous of it" (David Lloyd Davies).

A. Glorig *et al.* presented a paper in which they claimed that hearing impairment occurs at even lower levels than those given in the paper quoted above. Moreover, it was suggested in discussion that the day may not be far off when damage to hearing will be included in this

country in the list of industrial injuries for which employers are liable to pay compensation, as already obtains in the USA.

5. More use should be made of criteria to assess noise nuisance. C. W. Costin and G. T. van Os spoke of an "impressive list of variables" which seemed to dash all expectations of ever arriving at a scientific establishment of criteria. "To sit down in despair" is not realistic however. Cases of noise control are judged daily, with or without the help of acousticians. The only possibility in any specific case seems to be to gather as much experience as we can as to the influence of these variables . . . and to decide as best we can."

W. A. Allen said, "A particular value of having criteria, even based only on estimates, is that the attempt to attain them in practice provides valuable cases for the laboratory investigator. A great deal of work needs doing, some of it urgently, and the proposal is made that there should be more international planning of the necessary studies."

It was therefore good to know that the International Standardisation Organisation for Acoustics is actively at work on this subject and it is hoped will shortly publish a criterion method of wide application to a great many noise problems in all types of buildings.

It would be nice to be able to report that the argument over units for noise measurement (decibels, phons, sones, noys etc.) which was raised by several speakers, had been cleared up. Unfortunately this is not the case and D. W. Robinson reported that "apart from determining factors which are primarily acoustical, there are various psychological effects, and one can say categorically that no meter yet devised (or possibly ever to be devised) takes these into account at all."

This is also a subject to which the ISO is giving considerable thought and it may be hoped that at least some of the confusion will be dispelled in the not-too-distant future.

## COMPETITION

### AJ Working Details: winners' names

The following are the winners of this year's Working Detail Competition:

Name	School	Amount £	Country
M. G. Brady	Northern Polytechnic*	25	Holland
J. Carlsen	Birmingham	30	Norway
G. Dukes	Birmingham	25	Sweden
P. J. Flynn	AA	40	Western Germany
D. I. C. Lea	Cambridge	40	Finland
C. J. Rolfe	RWA, Bristol	30	Sweden
H. S. Sami	Northern Polytechnic†	50	Finland
G. W. Smith	Hull	35	Western Germany
Miss D. Tait	Birmingham‡	20	Sweden
Garbis Uregian	Birmingham	40	Sweden, Greece
C. Wilcher	RWA, Bristol	30	Sweden
D. Wiseman	Hammersmith§	20	Italy

\* With David Stern

† With T. H. Birks

‡ With Coventry Architectural and Planning Department

§ With C. H. Elsom and Partners

In closing the conference Sir Alan Wilson described how the growth of public opinion over the past 30 years has prompted such conferences as this one and the Government Committee on noise of which he is chairman. In commenting on the fact that these committees appear slow in operation, he pointed out that they are only set up to deal with very difficult subjects.

There were exact parts, such as physics and inexact parts, such as psychology, and parts which are not science at all, such as sociology and the legal aspects. Although the papers presented showed that a large amount of work is being done all over the world on the subject, it also highlighted the lack of knowledge on certain aspects. Scientists tended to work on problems which looked capable of some satisfactory outcome from the point of view of their careers. This was an understandable human tendency but had obvious defects as far as the pursuit of knowledge is concerned.

## MANCHESTER UNIVERSITY

### *Professor appointed*

The Council of the University of Manchester has appointed Roy Herman Kantorowich, BArch(Witwatersrand), ARIBA, AMPTI, as Professor of Town and Country Planning in succession to the late Professor Clifford Holliday.

## SPAB

### *Close loopholes in planning*

An appeal for legislation to close the loopholes in the Town Planning Acts which should protect and preserve our streets and buildings of historic beauty and interest was made by Lord Euston as chairman of the Society for the Preservation of Ancient Buildings, at the Society's annual meeting in the Orangery at Hampton Court last Wednesday.

Pointing out that there had never been such a spate of destruction as is now going on, Lord Euston welcomed the fact that it is now possible to put a preservation order upon a whole group or street of buildings, but said there were still serious gaps that had to be closed.

A Building Preservation Order, he suggested, should force the local authority concerned to carry out essential repairs and exercise its powers under the Ancient Monuments Act to make grants for this purpose. As it was, a building protected from demolition under an Order could still be left to fall down from neglect.

"More buildings are being sacrificed to (a) the motor car and (b) the developer than ever before," said Lord Euston. Daily we were watching the irrevocable destruction of the centres of our old towns for the temporary alleviation of traffic problems. He instanced what is happening in Tonbridge, and said the whole centre of Salisbury was causing great alarm.

The SPAB is holding a series of conferences with "as many local authorities as will listen" on the reconditioning of cottages, and Lord Euston recorded some small successes in the repair of old mills.

## SYMPOSIUM

### *Building high with a steel frame*

Although the IUA Congress is now over, its headquarters building is still with us on the South Bank. Last week Cape Building Products, one of the firms whose generosity made it possible for the IUA buildings to be built in the first place, took the opportunity of organising a symposium there on the subject of "Building High with a Steel Frame."

The first part of the evening was devoted to a report by John Davidson, leader of a group of LCC architects who have been studying the use of a steel frame in point block housing. The subject was introduced by Kenneth Campbell, Principal Housing Architect to the LCC, who pointed out that, whilst most people assume that a steel frame is more costly than *in situ* or precast concrete, the group considered that steel could prove economical if three conditions were satisfied: (i) rigid standardisation of spans; (ii) use of a lightweight external cladding unit, and (iii) the repetitive use of standard lightweight fireproof casings.

The task of the group was to examine means of reducing the cost of building with a steel frame by actually designing a 21-storey point block. The approach taken by the group was to design a building capable of being constructed either as a simple steel frame with dry casings and precast floors or as a precast concrete frame with internal *in situ* walls as wind-bracing. The alternatives were sent out for tender to a number of steel and concrete specialists who were free to incorporate into the structural design any reasonable modifications that would result in a reduction in cost. Steel schemes assumed a wall cladding of not more than 25 lb. per sq. ft. and both schemes a maximum wind loading of 18 lb. per sq. ft. The preliminary results of the enquiry showed that a precast frame system making use of a rigid standardisation of spans and maximum repetition of units was directly comparable in cost with an *in situ* frame with brick infilling. With certain provisos a steel frame was equally competitive.

The provisos are (i) that a satisfactory lightweight cladding unit giving full weather, fire and insulation protection can be devised at not more than 25 lb. per sq. ft. super and costing no more than 14s. per sq. ft. super; (ii) that this cladding can be suitably jointed with permanent material; (iii) that the clients would agree in a tall block of this type to omit balconies, and (iv) that adequate stability against wind pressure can be obtained without heavy structural members. The study made by the group was directed

at the various elements—structural, floors, external wall, casings to steel element, staircase/lift enclosure, partitions, services, fittings and finishes, foundations.

The study of the external wall element was aimed at finding a construction which, apart from the basic requirements of weather protection, fire resistance, U value of 0.2 and so on, could be built for 14s. per sq. ft. of surface area. A number of cladding panels were tried. One which consisted of 2-in. woodwool slabs faced with sheet asbestos, the external facing being a proprietary material composed of compressed granite dust came within the target figure. But the most promising consisted of a "tray" comprising a laminate of glass fibre mats and pigmented polyester having a 3-in. return edge around the panel and window aperture. The laminate was not in itself rigid and various forms of filling were tried. One tray was filled with foam lightweight concrete. This successfully stiffened the panel but, due to poor adhesion and shrinkage, the concrete bond to the glass fibre failed at the edges and cracked across the narrow sections at each side of the window opening because of insufficient reinforcement at these points. Accurate costs for this panel were difficult to obtain, but manufacturers were confident that an assessed figure of 25s. per sq. ft. could be reduced considerably if sufficiently large quantities were involved.

The second part of the evening consisted of a description of the construction of the new Centre Administratif de l'Europe in Brussels, headquarters of the European Common Market. The description was given by M. Jean Gilson, one of the architects, and illustrated with a number of slides.

## HOSPITAL PROJECTS

### *Nuffield Provincial Hospitals Trust*

The Nuffield Provincial Hospitals Trust in their fifth report just published announce two new projects. The first is an enquiry into the planning of engineering services for hospitals which is to be carried out in the Faculty of Engineering in Glasgow University. An initial reconnaissance has already taken place and has established the haphazard way in which demands for water, electricity, gas and steam are met, and, as a result, studies have begun on hot and cold water consumption in wards and on the use of medical gas services.

The second project is the building of an experimental "pre-discharge" ward at Dryburn Hospital, Durham. The object of this "pre-discharge" ward is to provide a new method of providing accommodation for emergency cases. At present the various specialist departments have either to reserve a bed for these cases, which is wasteful, or to put up an extra bed, which is makeshift and inconvenient. With a "pre-discharge" ward, on the arrival of an emergency case, a patient nearing the time of discharge will be moved into the "pre-discharge" ward to make room for the new arrival.

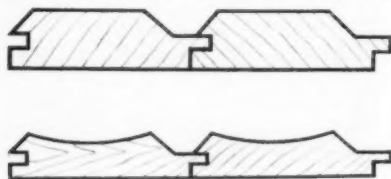


## THE INDUSTRY

*This week Brian Grant describes timber cladding, a fire alarm system, furniture for laboratories, roofing in aluminium, dome lights, a kitchen sink, partitioning for offices, and a booklet on the use of foamed plastics for insulation*

**Timber cladding**

MB timber cladding is made in various patterns and widths from 2½ to 4 in. and can be used both for inside and outside work or for counter fronts or ceilings. It can



Two of MB's several patterns

be fixed vertically, horizontally or diagonally, secret nailed, and is usually supplied in random lengths of 3 ft. or more, though exact lengths can be cut if necessary. Special patterns can be made to architects' designs. (Mitchell Bros. Ltd., Mark Street, Liverpool 5.)

**New fire alarm system**

The Pyrene Co. have recently evolved a fire detection and alarm system based on a series of detector heads placed at various strategic points throughout the building to register any sudden temperature rise. Two types of detector head are made, one with a twin bi-metallic element to give a combined rate of rise and fixed temperature detector, the other a head which depends on the fusion of a low melting point alloy at a pre-determined temperature. The detector heads are wired to an indicating panel in which

different parts of the building are outlined, so that the source of any outbreak is known and can if necessary be transmitted by GPO cable direct to the local fire brigade.

Each zone indicator unit has three signal lamps, green to show that the electrical circuit is in order, amber for a fault, and red for an actual fire, a separate switch allowing the circuits to be tested daily. The whole system works off the mains, but is also equipped with a standby battery plant which will give an emergency supply for seven days.

The results of a survey carried out in one city showed that although there were fewer fires at night the losses per fire were about four times heavier than those starting in daylight, a likely explanation being that alarms are not given as quickly when premises are empty. There would seem to be a case for a system connected direct to the fire station. (The Pyrene Co. Ltd., 9, Grosvenor Gardens, London, SW1.)

**Laboratory furniture**

Cygnal Joinery have a considerable range of standardised laboratory furniture made in widths of 18 in. and 3 ft., and with a depth of 21 in., the height varying in accordance with the material used for the bench top, which may be anything from teak to stainless steel or acid resisting tiles. Softwood is used for the interior framing of the units, any exposed framing being in oak or mahogany, with most of the panelling in plywood. Almost any arrangement of cupboards or drawers is possible, and the makers will also put forward lay-

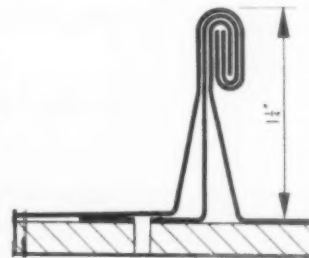


Cygnal 3-ft.-wide five-drawer unit

out schemes if required, as well as carrying out the installation. (Cygnal Joinery Ltd., Higher Swan Lane, Bolton, Lancs.)

**Aluminium roofing**

The Alstrip system of roofing has been developed in New Zealand, where something like 2½ million square feet have already been laid, and it seems that about ¼ million feet are now completed in this country. It is a fully supported system laid over felt on boards, wood wool or similar slabs, concrete slabs, or metal or asbestos cement decking. The roof is laid in a series of strips, continuous from ridge to eaves, so that cross joints are not used. Coiled aluminium strip 18 in. wide is machine formed on site with an upturn at each side to allow for the formation of standing seams over a series of fixing clips, each

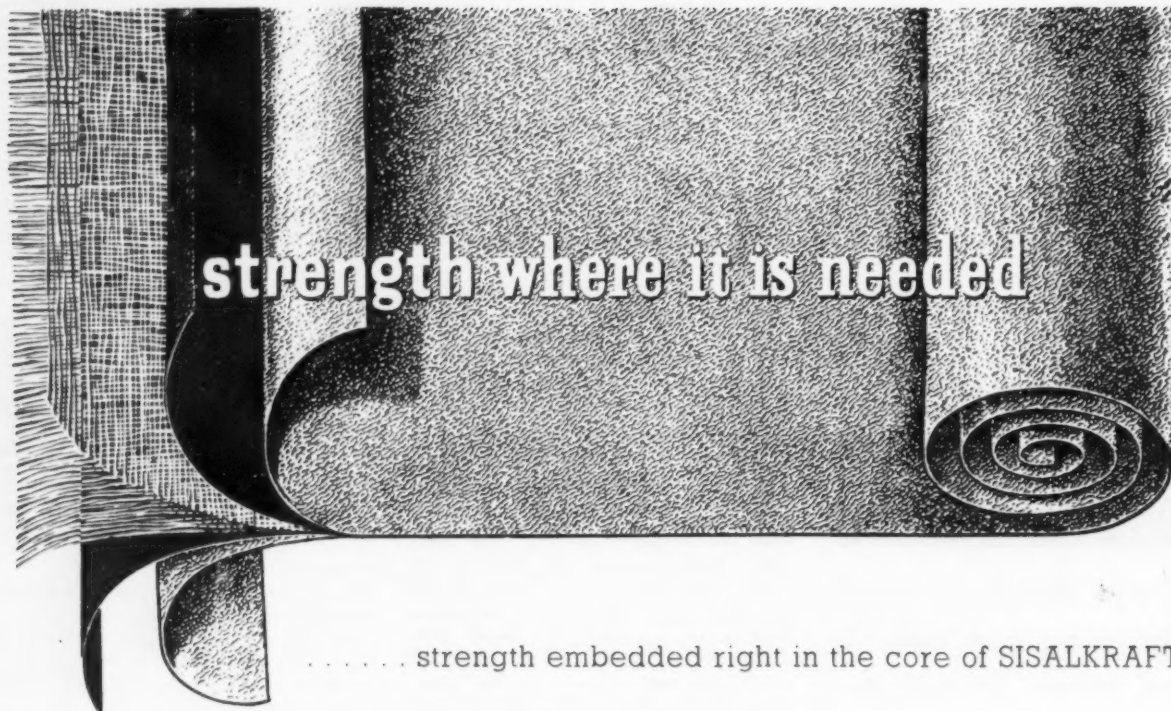


Section of Alstrip

upturn being slightly less than vertical to allow for lateral expansion between adjacent strips. End movement must also be allowed for if the strips are more than 10 ft. long, and it is claimed that this can be taken care of by holding the fixing clips down with saddle strips and allowing them to slide, a method which would appear to demand a pretty careful standard of workmanship.

The standing seams between the strips are formed on the roof by a special hand-operated tool. In appearance the roof is very neat, and where possible cover strips and flashings are pre-formed to give straight and clean edges. The system is suitable for low and near-flat roofs, and if anyone wants to have a look there are some houses at Hatfield designed by the architects' divi-





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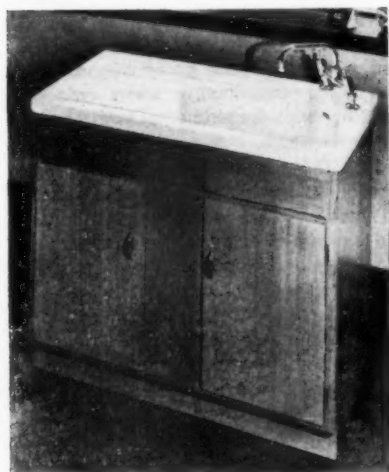
sion of BRS. (Manchester Slate Co. Ltd., Lancaster Road, Didsbury, Manchester 20.)

#### Unilux dome lights

The original Unilux dome light has now been superseded by a new version with a spheroidal dome and made in four types. Plain domes with a flange for setting direct on a flat roof with the felt dressed up over the flange, or without the flange if fixing is to be to an up-standing kerb, are made in five standard sizes from 30 in. to 5 ft. square, though other sizes can be made to order. The two other versions have a plastic kerb, flanged at the base, and either plain or with permanent ventilating louvres. Both these types are made 2, 3 or 4 ft. square inside kerbs, and metal kerbs with adjustable louvres are also available. All the domes are made in a range of colours, and in standard or fire-retardant material. Prices start at 90s. (UAM Plastics Ltd., Tolpits, Watford, Herts.)

#### Kitchen equipment

The Arcadia kitchen sink fits on a standard type of cabinet but has an unusual oval shape of sink bowl with the taps set in the right-hand back corner so that the space round

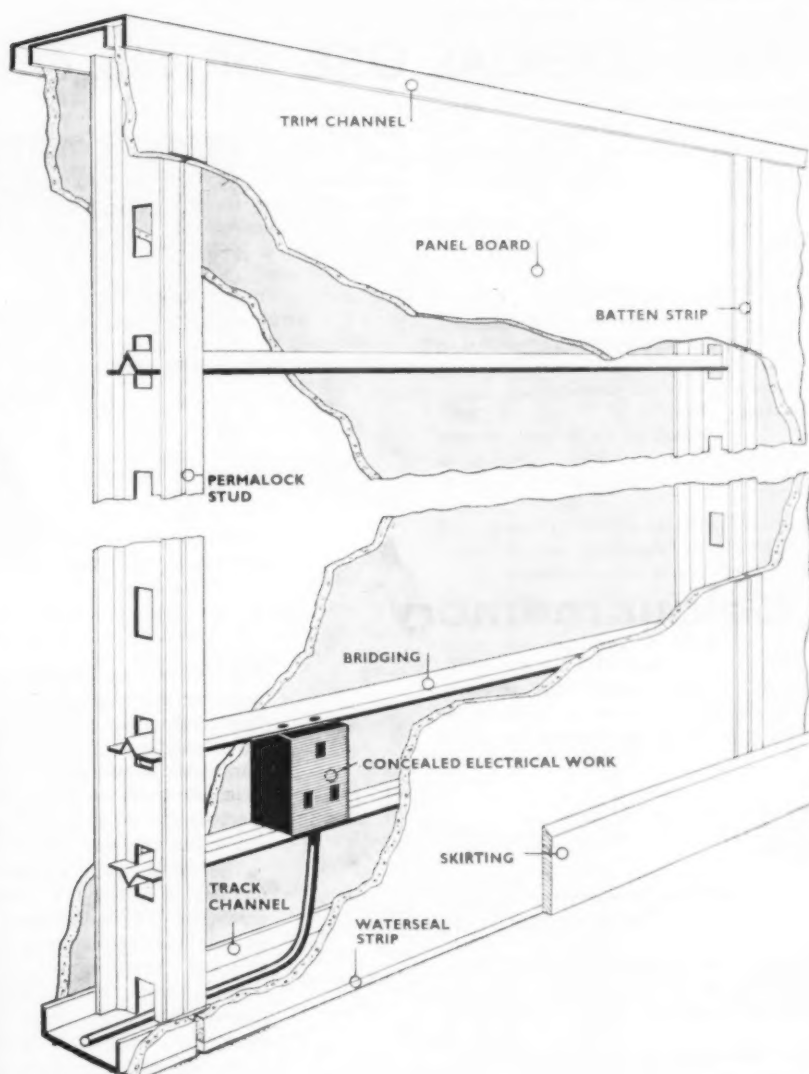


Arcadia kitchen sink

them is easier to clean. The sink is made of ceramic glazed fireclay in white or in a choice of ten colours, and with a right- or left-hand drainer. (John Slater (Stoke) Ltd., Berry Hill, Stoke-on-Trent, Staffs.)

#### Office partitioning

Permalock demountable partitioning makes use of  $\frac{1}{2}$ -in. plasterboard assembled in a galvanised steel framework with fixing channels at floor and ceiling and vertical posts from floor to ceiling at 2-ft. centres to take panels on each side, giving a total thickness of  $3\frac{1}{2}$  in. The partitions have a sound reduction of 36.5 decibels at frequencies from 100 to 3,200 c.p.s., though it will naturally vary if other panelling materials are used. The 2-ft.-wide panels are held to the posts by a T batten strip which snaps into position and covers the joint; 4-ft.-wide panels can also be used, fixed by the battens down both edges and with countersunk



Permalock office partitions

screws down the centre. Doors and windows can be arranged where needed, and the whole system can be arranged to give a  $\frac{1}{2}$ - or one-hour fire rating.

The cost is about 6s. a square foot using emulsion painted plasterboard, but can be anything up to double this figure if it is necessary to include doors and windows, and if more expensive panelling is used. The system was developed in America and is being marketed in this country by Expanded Metal, who provide a design and fixing service. (The Expanded Metal Co., Ltd., Burwood House, Caxton Street, London, SW1.)

#### Foamed plastics for insulation

A recent booklet from Flamingo Foam gives some interesting figures on the considerable degree of insulation obtainable by its use. The material is a foamed polystyrene which is very light as 98 per cent of it is air. Weight varies from 16 to 20 oz. per cubic foot, and water absorption is very low, only 2 per cent by volume after complete immersion for six months. If used with brick foundations the board should be applied with a bitumastic

adhesive and finished with a protective coat of sand and cement. With concrete foundations the boards are applied to the shuttering. It is also possible to use the boards for the insulation of cavity walls, as holes are easily made to take the ties if the boards are used in fairly small sizes, and there is no danger of making a bridge for moisture if the boards are kept against the inner face of the cavity. This seems a better system than using a loose fill, and the degree of insulation provided is high, a thickness of  $\frac{1}{2}$  in. improving an 11-in. wall from a U figure of 0.31 to 0.15. (Flamingo Foam Ltd., 34 Victoria Street, London, SW1.)

## THE LOGICAL USE OF COLOUR IN BUILDING



### Colour memory

Experimental work which has been carried out upon the reception and discrimination of colour has shown that reception of the basic hues, red-green, blue-yellow and light-dark (the degree of light reflection), is a clue to the mechanism of colour reception. If each parameter is mutually exclusive, that is, red and green cannot be received together, and so on, then experiments upon colour memory are of great interest. Many such experiments have been made, but only one series will be given here.

The experiment was planned in this way. In the first place the colours of a large number of common coloured objects were measured. The measurements made by other workers upon these objects were also collected and a group of average measurements selected. The average of the measurements made and those collected from other workers were remarkably close. The subjects chosen were blue sky, red bricks, green grass, evergreen and deciduous foliage, sandy soil and tanned and untanned human flesh. Fifty willing subjects were selected, the great majority laymen, a few technically trained, and a very few scientists. Each was casually asked to give from memory the colours of the objects enumerated above and to locate them in a Munsell Colour Atlas provided for all subjects. (The correct colours of the objects selected were well within the Atlas used.) After careful analysis the results showed that colour memory of hue is correct; the memory hue of green grass is green, the memory hue of a red brick is red, and so on. In all cases the basic hues, blue, green, yellow and red were chosen, but the saturation or chroma was invariably too high — indeed very much too high.

Colour memory, therefore, is a hue memory only and is related to the four basic hues, blue, green, yellow and red. The degree of saturation is determined by comparison and is invariably selected far too high, or, to put it simply, true colour memory is both faulty and short, hue only remaining.

One immediate conclusion from these experiments is that colour selection can only be made by comparison of the colour wanted and the one chosen. It also explains, in colour selection of paints, the universal habit of choosing a saturated high chroma colour and diluting it heavily with white before use.

*This is one of a series by Goodlass Wall and Co. Ltd., paint specialists since 1840 and manufacturers of the famous Combinol and Valspar paints — who will be pleased to give free advice on colour schemes and painting specifications. Goodlass Wall and Co. Limited, Corn Exchange, Liverpool 2, and 179/185 Gt. Portland St. London W.1.*



## 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*

Ac7

72-003

10.216 design: building types

### MASONRY VAULT CONSTRUCTION

*The Construction of Gothic Cathedrals* by Professor John Fitchen. Published by Clarendon Press: Oxford University Press. Price 63s.

The first book to be published on any subject is bound to be of interest not only for the facts and information which it brings together, but also for the incentive it can give to research in a new field. In addition, when the book, as in the present case, is well written, the interest is considerably heightened.

*The Construction of Gothic Cathedrals* is not a completely definitive work and may not remain as a standard work of reference, but it is an attempt to present a practical, though often hypothetical, review of the problems, and their solutions, which were encountered in the erection of the major Gothic cathedrals, mainly those in France.

The author admits that, due to the almost complete lack of documentary evidence, this work is largely one of hypothesis. However, the research and study which he has obviously carried out enable him to produce convincing conclusions which only further, detailed research can confirm or deny.

In his preface the author apologises for the form of the book, the notes and references being collected together at the end of the text, thus causing the volume to be much like two separate books. The argument is that laymen can read the main text, omitting the notes; whereas scholars, who will require to read everything, are used to searching for facts and will not mind turning back and forth. This may be a sound theory, but, when the notes are often so informative and interesting that one wonders why they were relegated to their position, it is rather maddening to keep turning to the back.

To say that this volume is in the form of two books is an understatement, there being 16 appendixes (sic) which almost form another book dealing with specific examples. These appendixes are not an appendage to

be thought of as "optional": they are as essential as the main body of the text. Unfortunately the author's diagrams and sketches are not consistently up to the standard of the written work.

In the rare event of this book releasing a flood of others on the subject nothing but good would result. Monographs by those responsible for the care and maintenance of our great cathedrals, giving their own conclusions on the structural system from their close contact with the buildings in their charge, could only begin to form a basis from which future students and scholars might be able to arrive at a more sound knowledge of the actual constructional methods used in these great buildings.

Ab3

624-014-7

18.226 construction: theory

### ALUMINIUM STRUCTURE

*Structural Aluminium Design* by Karl Augemeyer. Published by Reynolds Metal Co. Dept. PR-42 Richmond 18 Virginia, U.S.A. Free.

This is a design handbook for aluminium structures prepared by the chief designer of Reynolds Metal Co.

Its 208 pages provide a description of the features of aluminium as a building material, a list of the products obtainable in aluminium, a series of property and use tables applicable to products of Reynolds Metal Co., relating those materials to the specifications employed in other countries, basis of design and section properties and a reprint of the second report of the American Society of Civil Engineers on design in lightweight structural alloys.

Ab3

624-012-46

18.227 construction: theory

### PRESTRESSED CONCRETE DESIGN

*Prestressed Concrete. Volume II. Statically Indeterminate Structures.* Guyon. Published by Contractors Record Ltd. 1960. Price 95s.

This is the second volume of Monsieur Guyon's contribution to the libraries of prestressed concrete and with the earlier volume provides a work as massive in value as it is in weight. The second volume, perhaps more than the first, must be described as essentially for engineers and the author's style tends to restrict the field even further to engineers with a practising knowledge of prestressed concrete design. This is a book which requires a great deal of thorough reading and perhaps this gives some excuse for once again omitting a subject index. The 700 or so pages cover under two main headings the elastic analysis of statically indeterminate systems and tests. The subject is limited to structural systems of beam and slab form or assemblies of beams and columns. The

chapter on economy in design is rather disappointing as it deals only with quantities of materials, the author's paper to the Institution of Civil Engineers in 1957 provided a more practical approach. Certainly as wage increases outstrip material price increases the economic answer approaches more the simple method with few labour processes.

(56)

697-35

23.235 heating and ventilating

### ELECTRICAL UNDER-FLOOR HEATING

*The Installation of Directly Embedded Electric Floor Warming Systems*

A pamphlet issued by the Electrical Floor Warming Association, 83-86 Saffron Hill, London, E.C.1.

This pamphlet will be issued free on application to the Chairman of the EFWA, R. F. Weaire, at the above address. It gives sound, although limited, advice on structural considerations, the installation of cables and screeding. It shows every sign of having been drafted by a committee which was given terms of reference too wide to enable it to produce anything very definite, but it is all right so far as it goes.

(53)

696-11

25.139 water supply and sanitation

### POLYTHENE PIPES

*Specification for Polythene Pipe (Type 710) for Cold Water Services.* BS 3284:1961. Published by British Standards Institution. Price 6s.

This specification is complementary to BS 1972, published in 1953, but covers a newer type of polythene which, though basically similar to that in BS 1972, has different mechanical characteristics. When new ways of converting ethylene gas to a thermoplastic polymer were developed in Germany, a new BS was commenced. An interim Booklet 42, published in 1958, included tests designed to predict the suitability of a polythene pipe to withstand long term internal pressures. Since this a full programme of work has been carried out in an effort to ensure that the performance required by the stress rupture test is adequate for a 50-year life.

The specification BS 3284 covers composition, classification in terms of working pressures, dimensions, hydraulic, stress and reversion tests, marking and packing. The appendices include notes on the use of polythene pipe, stating that it is not liable to attack from any potable water or soils corrosive to metals; that it has a slight permeability to gases, is flexible, elastic and an insulator to heat and electricity. Polythene pipe is adversely affected by a rise in temperature and cannot be used for hot water services. There are also notes on jointing, bending and fixing.



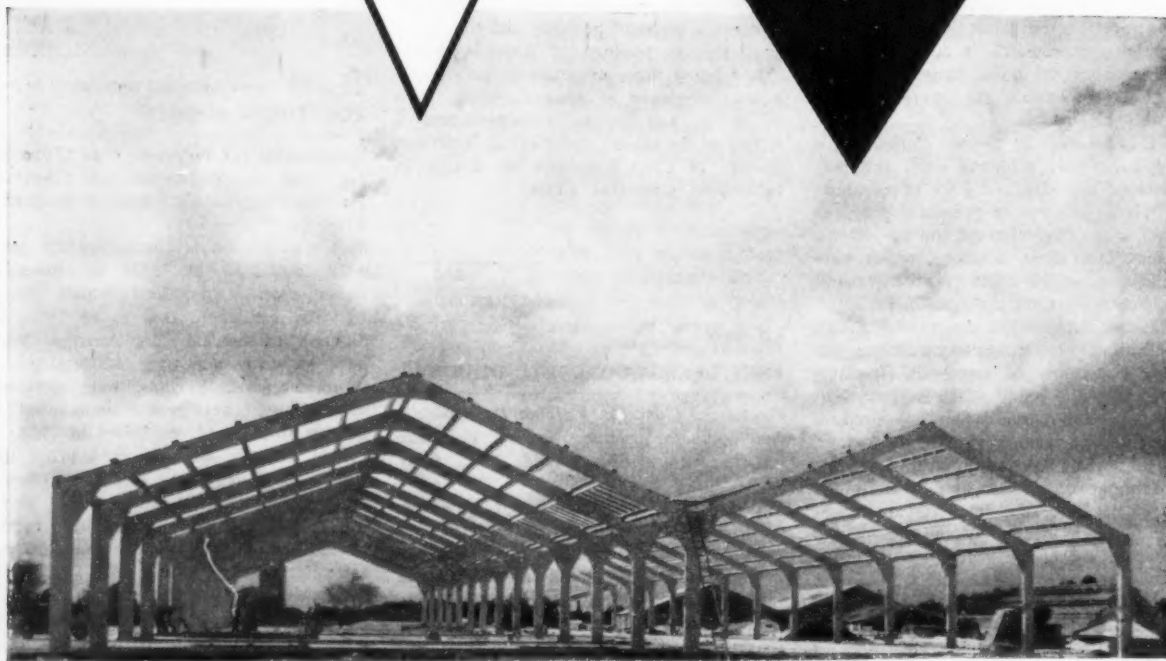
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London Showrooms: 251 Tottenham Court Road, W.1

technical section

STB No.

(52)

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











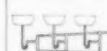

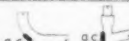
696.122

## 7 PRACTICE

## Check lists 3: waste and soil plumbing installations

This is the third of a series of check lists\* for services, prepared by Peter Burberry. The lists are intended primarily to assist the architect in planning and detailing services installations and should be used throughout the whole process of detailed design and working out and the preparation of drawings and schedules and, when applicable, specifications.

\*Water supply installations, May 4, 1961; drainage installations, May 25.

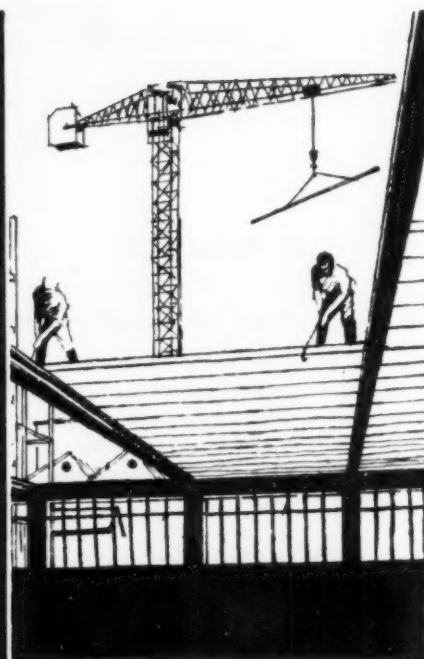
CHECK LIST: WASTE AND SOIL PLUMBING INSTALLATIONS								
ITEM	DRAWING		ANNOTATIONS	SCHEDULES	Specification or Bills of Quantities		RELATED BUILDERS WORK	NOTE
	CONVENTION				INFORMATION	BRITISH STANDARDS		
	PLAN	elevation or three dimensional (prop.)						
WASTES				in san appl sch diameter material, finish, joint to trap or waste pipe plug and chain or pop-up standing tube	bedding for flange and back nut			
TRAPS:	P	dia" seal p-trap 		diameter* seal* description	in san appl sch diameter, seal, type, material, finish, cleaning eye or union conn, inlet & outlet joints		copper 1184, lead 504, iron bath 1291	trap seals (for wastes) ventilated traps 1 1/2" single stack 3" discharging to external gully 1 1/2"
	S							
	Bottle							
	Re-sealing							
WASTE PIPES	dia" waste 		dia" falls 		material, fittings, support, * finish or decoration, connections to soil stack, sleeves wall or floor plates	copper 659, copper fittings 864, plastics 1972, steel 1387, lead 602, 603, 1085, asbestos cement 582	chases, holes, ducts, casings.	in large scale drawings a scale outline of pipe fittings may be appropriate.
BRANCH OR MAIN TRAP VENTILATING PIPES (ANTI-SYPHON PIPES)	dia" BVP (or MVP) 							
ACCESS PLUG FOR CLEARING WASTE	dia" waste 				description or manufacturers reference			
WASTE RANGES								
discharging to floor channel			see traps and wastes 	see traps	see wastes	see traps and wastes	pipe casings	some I. A's do not permit trunk wastes
trunk waste and running trap								
individual traps								
SOIL PIPES			diameter soil, s.v., vent, fall, (if not vertical)		material, jointing, support, * connection to w.c.s and drain	asbestos cement 582, cast iron 416, copper 659	holes, ducts, casings.	
(including soil and vent pipes, drain ventilating pipes and large waste stacks)								
SOIL PIPE ACCESS					rectangular or oval rubber washer gunmetal screws			

\* for spacing of supports see table 1 C P 304

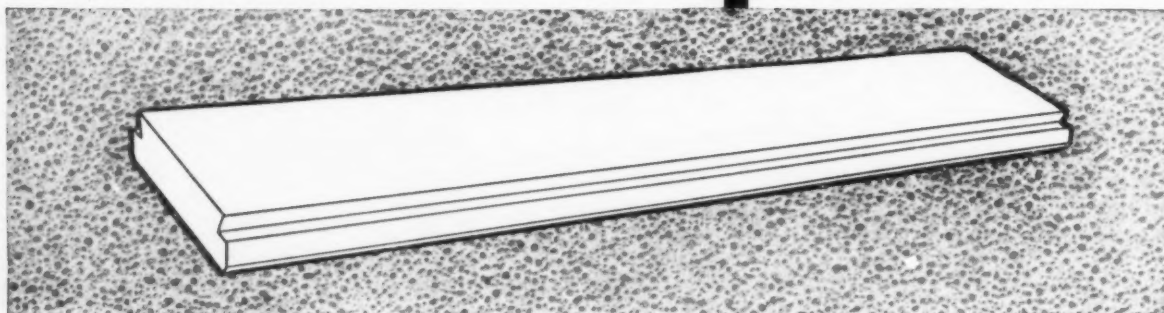
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SIB No. (97)

UDC No. 727.3

## Agricultural College

If one can overlook the slightly eclectic character of this building, it reveals itself as a highly workable and economical design for the school, which functions as a completely separate entity within the campus. The cost analysis is of particular interest, since it has been possible to break down the costs of the various blocks separately.

*Approach to the building from the north-west*

at	EDINBURGH UNIVERSITY,
architects	REIACH & COWAN
staff	GEORGE A. MACNAB
	LAWRIE NISBET
quantity surveyors	DAVID REID & GIBSON
consultants	
electrical and heating	RAMSAY & PRIMROSE
engineering	W. T. MARSHALL
	Regius Professor of Civil
	Engineering





**APPRAISAL:** Originally designed in 1948 as a load-bearing structure because of the shortage of materials at that time, the commission was suspended during the working drawing stage due to cuts in capital expenditure and was not started again until 1954. At this stage the architects decided to retain the load-bearing appearance of the building, but to use an *in situ* reinforced concrete frame. The building might have been rather more successful, and less under the influence of a slight feeling of Swedish empiricism, if it had been reasonable, or even possible, to throw aside several years' work, and start afresh when the project was revived in the middle 50s. The building nevertheless successfully avoids the fashionable, which makes so much current architecture in Scotland seem devoid of identifiable regional characteristics. If its slightly eclectic character is set on one side the building emerges as an extremely carefully thought out and workable exercise in planning.

The aim to produce a school of the University which can function as a separate entity, within which the various departments can each carry on the multiple functions of teaching, research and advisory service, has been very successful. Bearing in mind the complexity of the various spaces, the circulation system of the building is both simple and direct, in particular, the use of half levels, which have resulted from the slope of the site, have been turned to advantage in achieving a compact plan. At the same time the spaciousness of the staircases, their associated halls and half landings work extremely well in handling not only the inter-departmental circulation, but the flow of students between classes at period changes.

The subjects which need to be placed on the ground floor, such as the engineering, veterinary and chemistry departments, are obviously correctly placed, with the upper levels occupied by other departments, each of which has ready access to the lecture theatres on the north side of the building. The plan is particularly neat in the way in which the various departments are set out with one floor level per department or related departments. The administration block has direct and simple access for visitors and is single sided so that all offices face south to enjoy a quite magnificent view. Close to this in the teaching block is the library which thus has an excellent central position near the main entrance, but with a relatively quiet outlook over the courtyard opposite the recreation block.

The hall has seating for 300 including 100 in the gallery, with full projection and stage facilities. Closely linked to this is the refectory which provides 300 meals in two sittings by cafeteria service. A large folding screen enables the hall and canteen floors to be thrown together for large functions. The structural frame of the teaching block is *in situ* reinforced concrete with a 15-ft. structural grid. Generally the piers between the windows in the teaching block are on a 5 ft. module to give freedom of planning in the laboratory. This has apparently worked well, being used dimensionally in conjunction with a 1 ft. 8 in. multiple for benching fittings and suspended ceilings. This latter module seems well chosen since it is a suitable knee space size, can accommodate the normal bench sink and has a suitable draw width. Larger storage is provided in the benches by double module cupboards 3 ft. 4 in. wide.

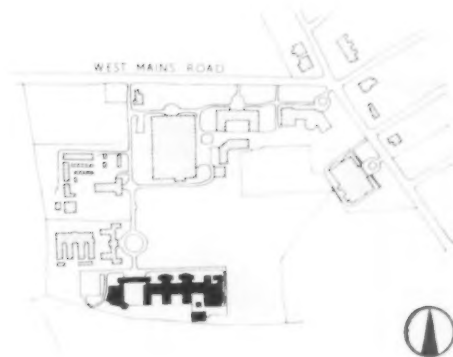
In settling the bench heights for the building, it was found

that the different requirements of the various departmental heads did not allow the adoption of a standard 3 ft. 0 in. high bench top since some activities include microscope or other analytical work needing a table top height of about 2 ft. 6 in. The teak veneered blockboard, which has been used almost throughout, is highly satisfactory in most of the laboratories, but may not perhaps survive the rougher use that occurs in the junior students' practical laboratories, or the fiercer experimental work of ovens, furnaces and the like.

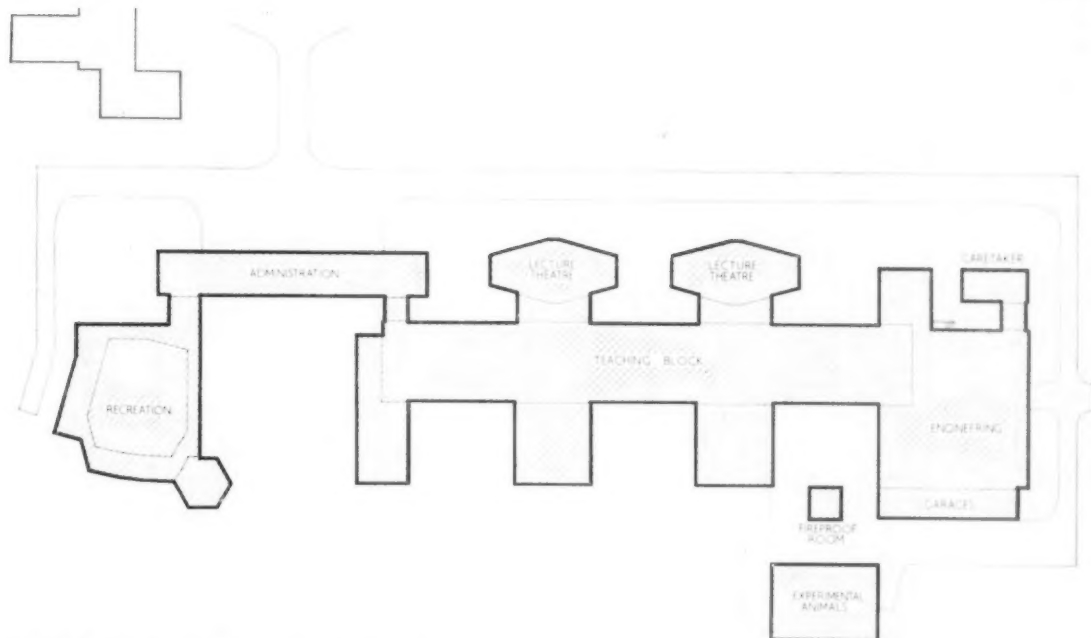
Service runs through the building have been generally carried in the space above the suspended ceiling, usually 12 in. deep, but increased over corridors to 2 ft. 6 in. At the same time waste stacks occur at 15-ft. centres together with vertical risers, built into the corridor wall fittings used for storage. As a further measure, electrical-under-floor heating has been used. These various steps have ensured that there are hardly any exposed pipes anywhere in the building. In view of the heating method, the additional capital cost of £4,000 for double glazing is well justified.

This building suffered from its false start at the design stage and there is, in addition, evidence of the scheme being pared to meet stringent financial restrictions. In particular, there would seem to be an insufficiency of storage space throughout the building and of such ancillaries as cleaners' sinks and stores. The same problem seems to have arisen with regard to the common room space which is too small to meet the requirements. It must be remembered, however, that the building was designed before the UGC policy with regard to building design had crystallised into its present form, at a time also of stringent cost restrictions. It remains as a very successful and workable plan which does not necessarily emerge immediately from a casual visit. The close grouping of the various blocks, hinged round the central court, emphasises the self-contained nature of the school, which does not share facilities with the other departments in the campus. One modification which has recently been made to further this objective of enclosure, whilst providing additional common room space, has been to glaze in the ground floor of the administration block.

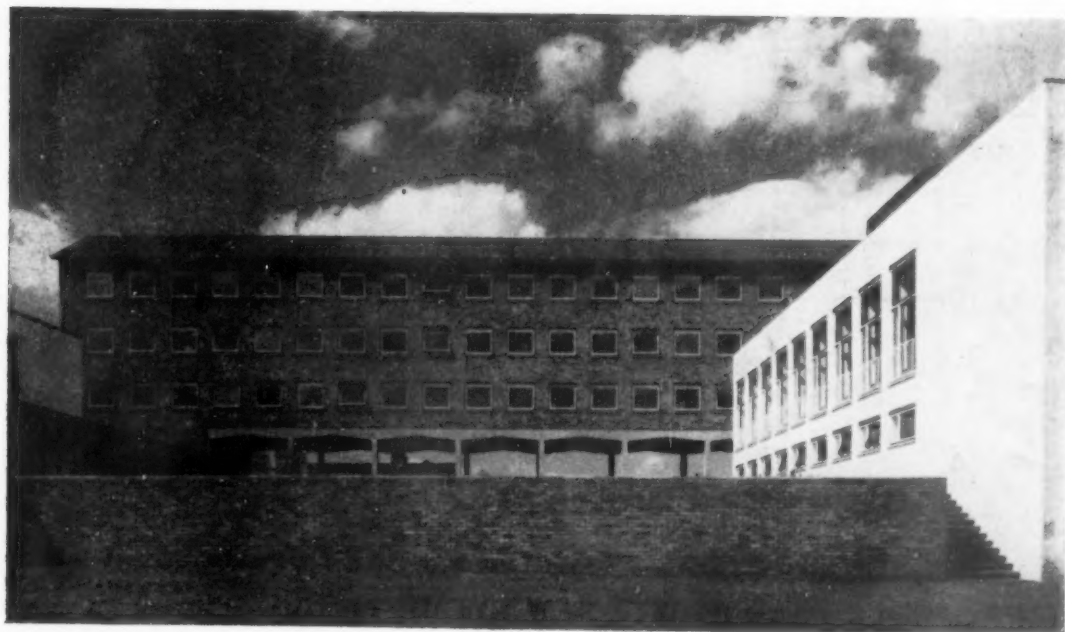
*Block plan* [Scale:  $\frac{1}{800}$  = 1" 0"]

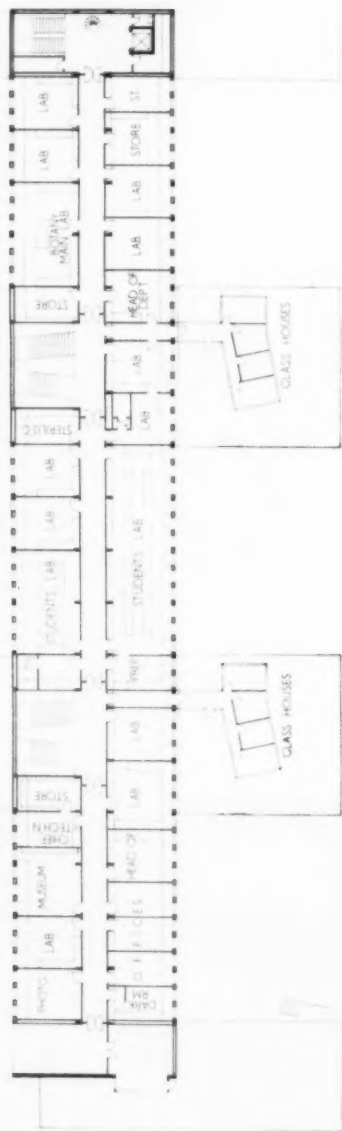


*Site plan* [Scale:  $\frac{1}{100}$  = 1" 0"]



*Focal point of the layout is the semi-enclosed court between the recreation and teaching blocks*









## CLIENT'S REQUIREMENTS

A building to provide accommodation for the School of Agriculture including a teaching block with lecture theatres, administrative offices, assembly hall and canteen, laboratories and engineering workshops. It was required to function not only for teaching, but for research and to provide an advisory service, each department tending, for many purposes, to operate separately.

## SITE

The site is within the present University campus as a rectangular area set along the contours of a south-easterly slope, with no natural features of any particular interest.

## PLANNING AIMS

The plan has been developed in terms of five basic blocks for teaching, administration, experimental animals, engineering workshops and recreation block and these five have been laid out so that they can function in correct relation to one another. The engineering department, on the lower ground floor, is so placed to allow easy access for heavy farm machinery and to cope with heavy floor loads and vibration. The veterinary department, also at this level, allows experimental examinations and post-mortems to be carried out easily without interfering with the rest of the building. The chemistry department on the ground floor also has heavy floor loads, complicated drainage and supply service, and at the same time it has large teaching laboratories which must be closely linked to the main circulation. The main teaching block is formed of laboratories and other accommodation on either side of a central spine corridor. Projecting out from this on the other side are smaller specialist laboratories and lecture theatres in pairs on the north side. Each department or group of related departments in this main block is placed on a separate floor. The library is placed in a key position at the west end of the teaching block, and the administrative offices form a link between the teaching area and the recreation block, consisting of assembly hall and dining hall, which, since it is separate, can function as an independent unit at evenings and week-ends when the rest of the building is closed.

## COST ANALYSES

Based on tender. (AJ revised elemental breakdown in use from November 10, 1960.)

Type of contract: Separate trades under General Conditions of Contract—Scotland 1954.

Tender date: May 1955 (frame), August 1956 (main contract).

Work began: August 1955 (frame), September 1956 (main contract).

Work finished: March 1960.

## (1) TEACHING BLOCK

### SUMMARY

Ground floor area: 34,140 sq. ft.

Total floor area: 86,338 sq. ft.

Tender price of foundations, superstructure, installation and finishes including drainage to collecting manhole: £411,726.

Final contract price: £423,590 (approximate).

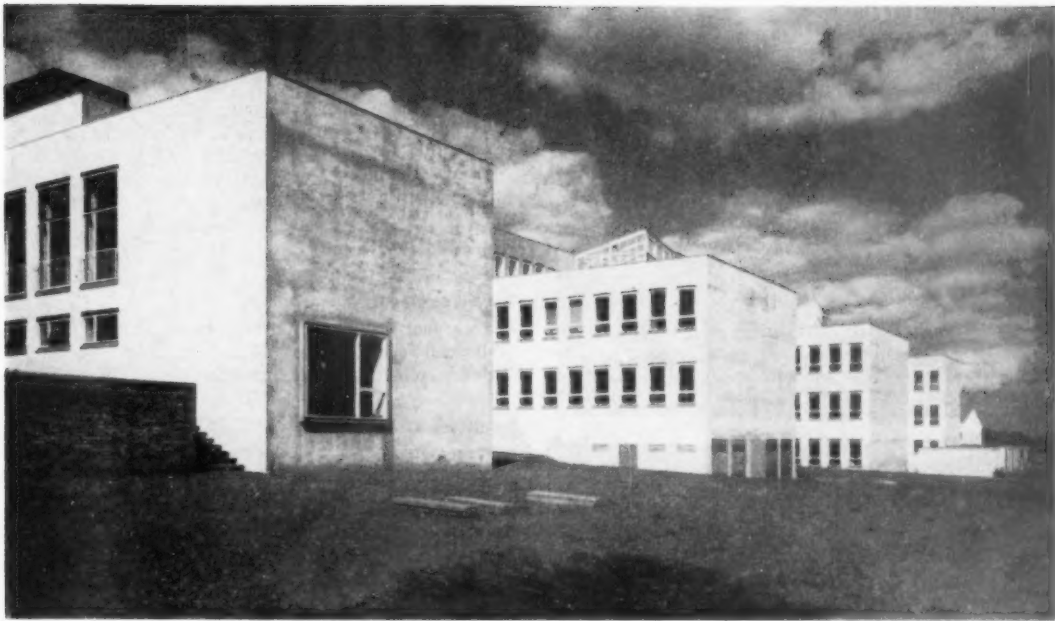
Tender price of external works and ancillary buildings, including drainage beyond collecting manhole: £22,863.

Final contract price: £24,553 (approximate).

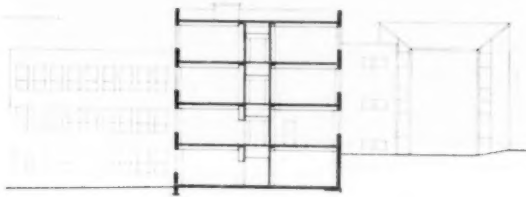
Total (complete contract): £574,644.

### COST ANALYSIS

	Cost per sq. ft.
£	d
<b>Preliminaries and insurances</b>	3 4
4 per cent of remainder of contract.	
<b>Work below lowest floor finish</b>	3 8½
Excavations, concrete foundations to walls and columns, asphalt, concrete basement floor, weed-killer treatment to soil below suspended concrete floor.	
<b>STRUCTURAL ELEMENTS</b>	
<b>Frame</b>	4 9½
<i>In situ</i> reinforced concrete columns, beams, steel frame roof in workshop.	
<b>Upper floors</b>	4 9½
<i>In situ</i> reinforced concrete floors, including suspended concrete ground floor: 2,601 sq. yds., 50s. per sq. yd.	
First and second floors: 3,743 sq. yds., 50s. per sq. yd.	
<b>Roof</b>	5 11½
<i>In situ</i> reinforced concrete covered with lightweight screed and 3 layers felt and chippings: 2,420 sq. yds., 75s. per sq. yd.	
Pitched concrete finished with insulating board and copper: 478 sq. yds., 130s. per sq. yd.	
Patent aluminium corrugated sheeting: 265 sq. yds., 49s. per sq. yd.	
<b>Rooflights</b>	6½
Patent glazing: 211 sq. yds., 38s. 3d. per sq. yd.	
Domelights: 44 sq. yds., 450s. per sq. yd.	
Lantern lights flat area: 47 sq. yds., 380s. 6d. per sq. yd.	



Teaching block from the south-west



Section through teaching block

**Staircases**

Two of *in situ* reinforced concrete with hardwood treads and landings; width 5 ft. 6 in.; total rise—one 35 ft. 3 in., one 23 ft. 6 in.  
One of *in situ* reinforced concrete with terrazzo treads and landings; width 4 ft. 6 in.; total rise 35 ft. 3 in.

**External walls**

11-in. and 14-in. cavity walls Tyrolean rendered on outer face: 4,676 sq. yds., 35s. 2d. per sq. yd.  
11-in. and 14-in. cavity walls with facings: 901 sq. yds., 61s. per sq. yd.  
9-in. reinforced concrete: 289 sq. yds., 65s. per sq. yd.

**Windows**

Mainly softwood double glazed opening casements: 12,996 sq. ft., 16s. 8½d. per sq. ft.

**External doors**

Mainly softwood framed and lined.  
6 single } 149 sq. ft., 25s. 10d. per sq. ft.  
1 pair of double }  
10 sliding } 718 sq. ft., 17s. per sq. ft.

s d  
1 5**Partitions**

4½-in. brick: 5,014 sq. yds., 14s. 4d. per sq. yd.  
9-in. brick: 95 sq. yds., 28s. 8d. per sq. yd.  
4-in. lightweight concrete block: 2,729 sq. yds., 11s. 6d. per sq. yd.  
Metal faced partitions: 175 sq. yds., 100s. per sq. yd.

s d  
1 10½

4 8

**Internal doors**

Hardwood and softwood glazed and flush doors.  
36 hardwood, double; 1,161 sq. ft., 28s. 8d. per sq. ft.  
Softwood glazed single: 131 } 4,022 sq. ft., 21s. 6d.  
Softwood flush single: 76 } per sq. ft.

1 4½

**Ironmongery**

Generally chromium plated, matt.

8½

2 5½

**Total of structural elements: 28s 10½d**

2½

## FINISHES AND FITTINGS

## Wall finishes

Beech lining: 950 sq. yds., 44s. per sq. yd.  
Plaster: 14,201 sq. yds., 5s. 6d. per sq. yd.  
Tiles: 56 sq. yds., 56s. per sq. yd.

## Floor finishes

1-in. granolithic: 550 sq. yds., 7s. per sq. yd.  
Quarry tiles: 350 sq. yds., 27s. per sq. yd.  
Mastic asphalt flooring: 603 sq. yds., 12s. 4d. per sq. yd.  
Hardwood: 1,107 sq. yds., 40s. per sq. yd.  
P.v.c. tiles: 2,260 sq. yds., 21s. 6d. per sq. yd.  
Linoleum: 3,065 sq. yds., 18s. 10d. per sq. yd.

## Ceiling finishes

Asbestos insulation board panels and framing:  
955 sq. yds., 42s. 8d. per sq. yd.  
Fibre board panels and framing: 7,089 sq. yds.,  
33s. per sq. yd.

## Decorations

## Fittings

2 large greenhouses on roof: 10½d.  
Cupboard and duct fitment 10 ft. high, full length  
of building on all floors (cost per ft. run 102s.):  
1s. 0½d.  
Fire gear: ½d.  
Laboratory fittings: 18s. 6d. including plumbing  
and electrical work.  
Mahogany benches with teak tops and cupboards  
and drawers under, average 3 ft. 0 in. high and  
2 ft. 6 in. broad, 195s. per ft. run.  
Includes laboratory sinks: 237 with polythene  
wastes, copper water pipe.  
Water draw-off points: 560  
Gas bench points: 992.

Total of finishes and fittings: 32s 7½d

## SERVICES

## Sanitary fittings

Type of fitting	No. of each type
W.c.s	36
Urinals	6
Basins	36
Sinks	5
Wash fountain	1
Drinking fountains	12
Bath	1
Sink and tub set	1

## Waste, soil and overflow pipes

Copper wastes from domestic fittings, cast iron  
stacks to drain.

## Cold water services

Cast iron external main, 3,200-gallon pressed steel  
tank.  
Copper internal piping with preformed magnesia  
section insulation.  
Domestic draw-off points: 132.  
(Cost includes mains for laboratory fittings.)  
Includes builder's work, less than ¼d.

## Hot water services

Copper pipe with preformed magnesia section  
insulation.  
300 kW. electrode boiler supplying calorifier.  
30 kW. immersion heater for use in holiday period.  
Domestic draw-off points: 45.  
(Cost includes mains for laboratory fittings.)  
Boilers: 600 k.w. electrode boiler.  
300 kW. electrode boiler with all controls, etc.  
Includes builder's work in connection.

## Heating services

Electric floor heating: load over 3 phases, 660 kW.  
Wall panel heaters: load 24 kW.  
Includes builder's work in connection.

## Ventilation services

Plenum system.  
Includes builder's work in connection.

## Gas services

Mains services for laboratory fittings  
Includes builder's work less than ¼d.

## Electrical services

Mains 1s. 4½d.  
Lighting 1s. 8d.  
Power 2s. 2½d.  
Fittings 1s. 1d.  
Builder's work 2d.  
Lighting points 1,084  
One-way switch points 519  
Two-way switch points 92  
Intermediate switch points 4  
13-amp. switch sockets 932  
13-amp. sockets 240  
2-amp. switch sockets 239  
Load, lighting: 195 kW.  
Load, power: 206 kW.

## Special services

1 lift, load 10 cwt., speed 80 ft. per minute.  
serving 4 floors: 4½d.  
Builder's work: 1½d.  
Telephone: 2½d.  
Period bells: 5½d.  
Refrigeration equipment: 2d.

## Drainage

Fireclay drains, with cast iron under buildings.

Total of services: 29s 7½d

## External works

Tarmac roads, yard and car park.  
Concrete slab and whinstone sett terrace.  
Concrete slab paths.  
Retaining walls.  
Grass sowing and general site clearing.  
Fireclay 9-in. diameter main drain.  
Lighting of roads.

Total cost per sq. ft. of floor area:

£423,590 (net cost, excluding external works)

86,338 sq. ft. (measured inside external walls)

s d  
2 8½

s d  
2 3½

4 5

3 6½

1 10½

20 5½

6 2½

8 6½

2½

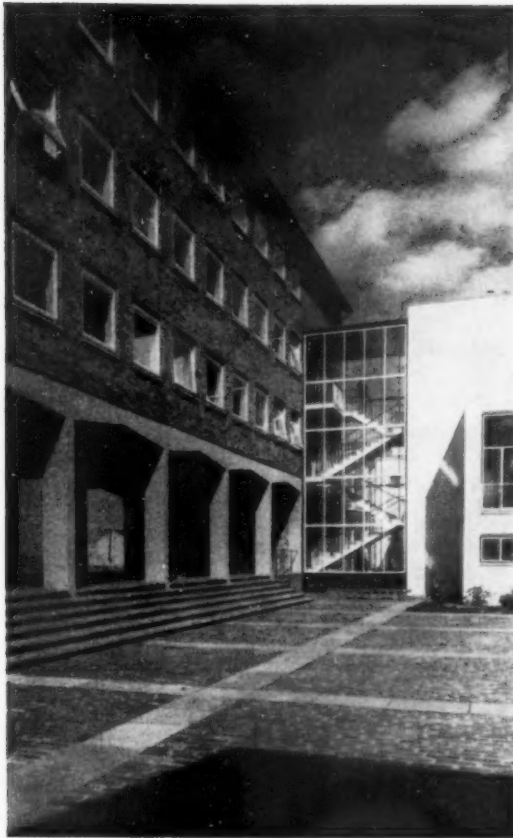
6 6½

1 4½

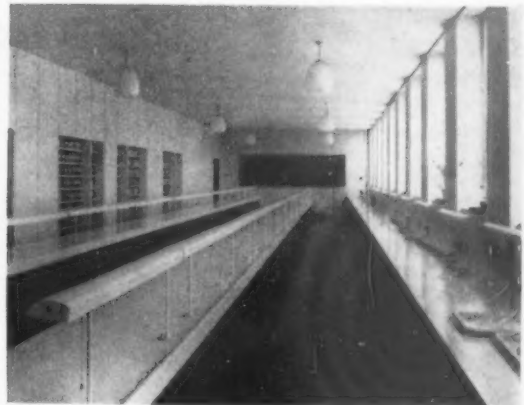
1 9½

4 3½

= 98 1½

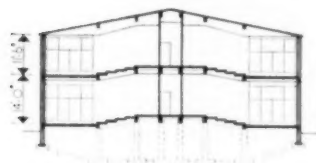


Connecting staircase between the administrative and teaching blocks

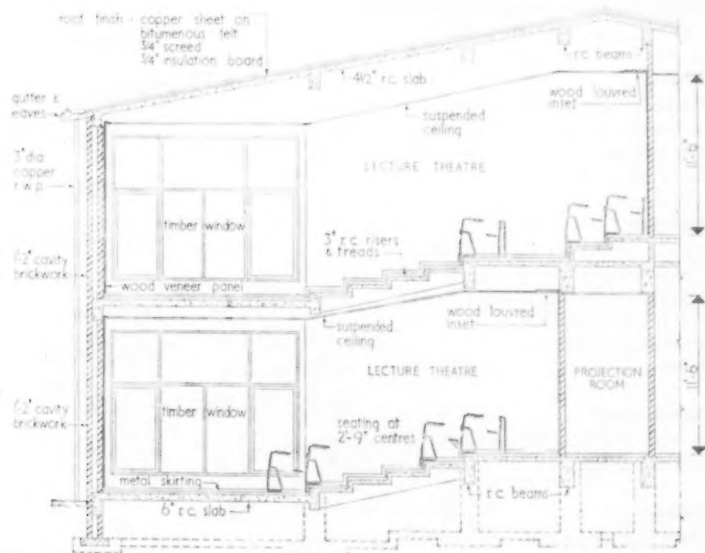


Special light fittings have been designed for the laboratory benching

One of the lecture theatres



Section through lecture theatre wings



Section through lecture theatres  
[Scale:  $\frac{1}{16}'' = 1' 0''$ ]



**(2) ADMINISTRATION BLOCK****SUMMARY**

Ground floor area: 3,796 sq. ft.  
 Total floor area: 15,182 sq. ft.  
 Tender price of foundations, superstructure, installation and finishes, including drainage to collecting manhole: £61,887.  
 Final contract price: £60,862 (approximate).  
 Tender price of external works and ancillary buildings, including drainage beyond collecting manhole: £22,863.  
 Final contract price: £24,553 (approximate).  
 Total (complete contract): £574,644.

**COST ANALYSIS**

	Cost per sq. ft.
<b>Preliminaries and insurances</b>	<b>2 8½</b>
Approximately 4½ per cent of remainder of contract.	
<b>Work below lowest floor finish</b>	<b>3 8½</b>
Excavations, foundations to walls and columns, part suspended and part solid concrete ground floor and steps.	

**STRUCTURAL ELEMENTS**

<b>Frame</b>	<b>5 6½</b>																
<i>In situ</i> reinforced concrete columns and beams and steel frame roof.																	
<b>Upper floors</b>	<b>4 2½</b>																
<i>In situ</i> reinforced concrete floor (3 upper): 1,310 sq. yds., 50s. per sq. yd.																	
<b>Roof</b>	<b>5 10½</b>																
Pitched timber copper covered (steel truss included in frame): 607 sq. yds., 158s. 3d. per sq. yd. Flat reinforced <i>in situ</i> concrete, felt covered: 24 sq. yds., 75s. per sq. yd.																	
<b>Staircases</b>	<b>1 9½</b>																
<table><tr><td>Type</td><td>Width</td><td>Rise</td></tr><tr><td>2 <i>in situ</i> concrete with</td><td rowspan="2">} 5 ft. 6 in.</td><td rowspan="2">28 ft.</td></tr><tr><td>terrazzo treads and risers</td></tr><tr><td>1 <i>in situ</i> concrete with</td><td>4 ft. 6 in.</td><td>9 ft. 8 in.</td></tr><tr><td>granolithic treads and</td><td></td><td></td></tr><tr><td>risers</td><td>3 ft. 6 in.</td><td>32 ft.</td></tr></table>	Type	Width	Rise	2 <i>in situ</i> concrete with	} 5 ft. 6 in.	28 ft.	terrazzo treads and risers	1 <i>in situ</i> concrete with	4 ft. 6 in.	9 ft. 8 in.	granolithic treads and			risers	3 ft. 6 in.	32 ft.	
Type	Width	Rise															
2 <i>in situ</i> concrete with	} 5 ft. 6 in.	28 ft.															
terrazzo treads and risers																	
1 <i>in situ</i> concrete with	4 ft. 6 in.	9 ft. 8 in.															
granolithic treads and																	
risers	3 ft. 6 in.	32 ft.															
<b>External walls</b>	<b>6 8½</b>																
11-in. cavity walls with facings: 1,170 sq. yds., 61s. per sq. yd.																	
<b>Windows</b>	<b>3 3½</b>																
Mainly softwood double glazed opening casements: 2,070 sq. ft., 24s. 2d. per sq. ft.																	
<b>External doors</b>	<b>4½</b>																
4 mahogany double leaf glazed: 135 sq. ft., 44s. 4d. per sq. ft.																	

**Partitions**

4½-in. brick: 348 sq. yds., 14s. 4d. per sq. yd.  
 4-in. lightweight concrete block: 720 sq. yds., 113s. 6d. per sq. yd.  
 Timber screens: 103 sq. yds., 95s. 4d. per sq. yd.  
 Metal-faced partitions: 72 sq. yds., 100s. per sq. yd.

**Internal doors**

Hardwood and softwood glazed and flush doors.  
 Hardwood double, 3: 86 sq. ft., 21s. 2d. per sq. ft.  
 Softwood glazed single, 1: 20 sq. ft. } 17s. 4d.  
 Softwood flush, 43: 835 sq. ft. } per sq. ft.

**Ironmongery**

Generally chromium plated, matt.

**Total of structural elements: 31s 6½d**

**FINISHES AND FITTINGS**

<b>Wall finishes</b>	<b>1 11½</b>
Mahogany veneered ply lining: 77 sq. yds., 28s. 6d. per sq. yd. Plaster: 3,081 sq. yds., 5s. 6d. per sq. yd. Tiles: 5 sq. yds., 56s. per sq. yd.	
<b>Floor finishes</b>	<b>4 10½</b>
1-in. granolithic: 8 sq. yds., 7s. per sq. yd. Quarry tiles: 97 sq. yds., 27s. per sq. yd. Hardwood: 46 sq. yds., 40s. per sq. yd. Linoleum: 1,032 sq. yds., 18s. 10d. per sq. yd. Precast granite faced slabs: 515 sq. yds., 28s. 6d. per sq. yd.	
<b>Ceiling finishes</b>	<b>3 3½</b>
Asbestos insulation board panels fixed direct to strapping on concrete: 265 sq. yds., 23s. 6d. per sq. yd. Fibre board and framing: 618 sq. yds., 33s. per sq. yd. Plaster on concrete: 665 sq. yds., 5s. 6d. per sq. yd.	
<b>Decoration</b>	<b>2 6½</b>
<b>Fittings</b>	<b>1½</b>
Cupboard and duct fitment 10 ft. high full length of building on all floors (cost per ft. run 102s.): 4s. 11d. Fire gear: 2½d.	

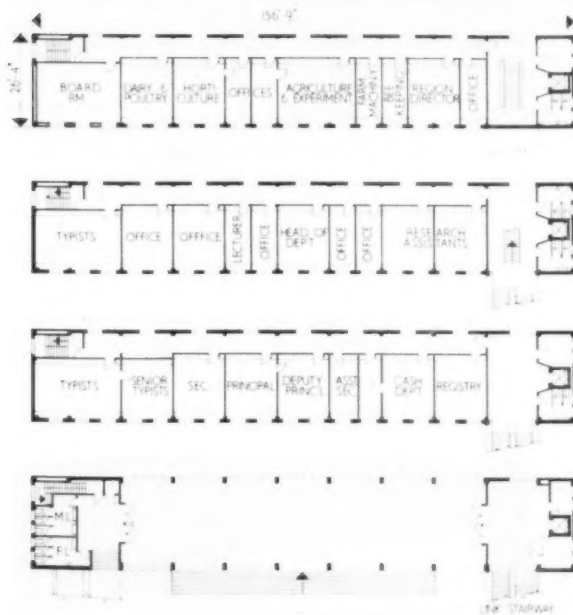
**Total of finishes and fittings: 17s 8½d**

**SERVICES**

<b>Sanitary fittings</b>	<b>10½</b>
Type of fitting	No. of each type
W.c.s	14
Urinals	3
Basins	12
Sink	1
Drinking fountains	6
<b>Waste, soil and overflow pipes</b>	<b>11</b>
Copper wastes from domestic fittings, cast iron stacks to drain.	
<b>Gold water services</b>	<b>1 1½</b>
Copper piping lagged. Domestic draw-off points: 36. Includes builder's work less than ½d.	

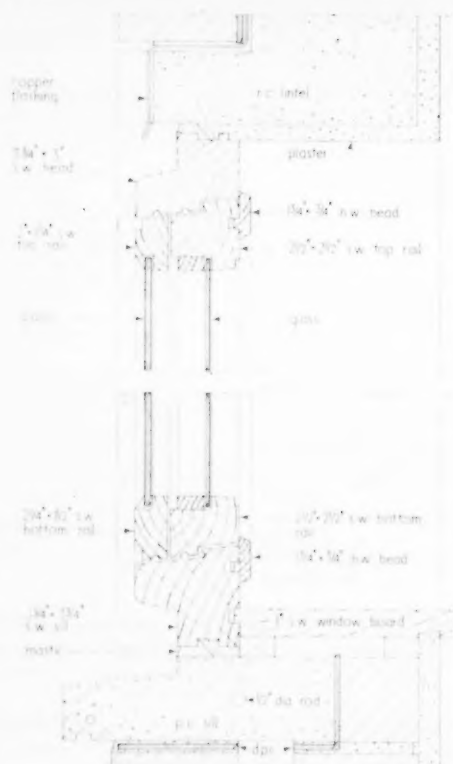
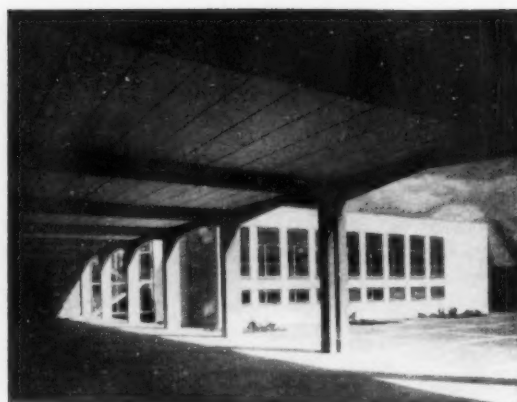


Administration block from the court



Administration block [Scale:  $\frac{1}{8}'' = 1' 0''$ ]

Section through administration block



*Circulation areas include well-considered crush space outside each lecture theatre (above left)*

*Covered way under the administrative block (top) has now been enclosed to form additional common-room space (above)*

*Library is at one end of the teaching block, overlooking the court (below)*



*Typical window detail, administration block [Scale: 1/4" = 1'-0"]*

**Hot water services**

Draw-off points: 13.  
One 30-gallon electric water heater.  
Includes builder's work less than  $\frac{1}{4}$ d.

**Heating services**

Electric floor heating: load over 3 phases, 200 kW.  
Includes builder's work on connection.

**Electrical services**

Mains	1s. 4 $\frac{1}{2}$ d.
Lighting	1s. 3 $\frac{1}{2}$ d.
Power	1s. od.
Fittings	9 $\frac{1}{2}$ d.
Builder's work	3 $\frac{1}{2}$ d.
Lighting points	179
One-way switch points	79
Two-way switch points	32
Intermediate switch points	2
13-amp. switch sockets	63
Load, lighting: 29 kW.	
Load, power: 16 kW.	

**Special services**

1 lift, load 750 lb., speed 100 ft. per minute  
serving 4 floors: 1s. 10 $\frac{1}{2}$ d.  
Builder's work: 1 $\frac{1}{4}$ d.  
Telephones: 4s. 1d.

**Drainage**

Fireclay drains generally, with cast iron under  
buildings.

**Total of services: 24s 6 $\frac{1}{2}$ d****External works**

Tarmac roads, yard and car park.  
Concrete slab and whinstone sett terrace.  
Concrete slab paths.  
Retaining walls.  
Grass sowing and general site clearing.  
Fireclay 9-in. diameter main drain.  
Lighting of roads.

**Total cost per sq. ft. of floor area:**

£60,862 (net cost, excluding external works)

15,182 sq. ft. (measured inside external walls)

**s d (3) HALL AND CANTEEN BLOCK**2 $\frac{1}{2}$ **SUMMARY**

Ground floor area: 7,695 sq. ft.  
Total floor area: 9,413 sq. ft.  
Tender price of foundation, superstructure, installation and  
finishes, including drainage to collecting manhole: £49,800.  
Final contract price: £50,241 (approximate).  
Tender price of external works and ancillary buildings,  
including drainage beyond collecting manhole: £22,863.  
Final contract price: £24,553 (approximate).  
Total (complete contract): £574,644.

**COST ANALYSIS**

	Cost per sq. ft.
<b>Preliminaries and insurances</b>	s d
Approximately 4 $\frac{1}{2}$ per cent of remainder of contract	4 0 $\frac{1}{2}$

**Work below lowest floor finish**

Excavations, concrete foundations to walls and  
columns, asphalt, concrete floor to basement store.

**STRUCTURAL ELEMENTS**

<b>Frame</b>	22 3 $\frac{1}{2}$
Steel frame concrete encased and steel roof truss. (Includes gallery frame.)	

**Upper floors**

*In situ* reinforced concrete ground floor:  
696 sq. yds., 50s. per sq. yd.  
Timber floor to gallery: 92 sq. yds., 52s. 10c.  
per sq. yd.  
Stage floor: 85 sq. yds., 36s. 9d. per sq. yd.

**Roof**

Flat reinforced concrete felted: 461 sq. yds.,  
75s. per sq. yd.  
Timber pitched copper-covered: 525 sq. yds.,  
197s. per sq. yd.

**Rooflights**

1 lantern light, 8 ft.  $\times$  4 ft.

**Staircases**

Type	Width	Rise
1 steel with hardwood treads and handrail	4 ft. 3 in.	9 ft. 7 in.
1 iron fire escape	3 ft. 0 in.	4 ft. 3 in.
1 steel ladder	1 ft. 6 in.	10 ft. 0 in.
Steps at stage, etc.		

**External walls**

11-in. and 14-in. cavity walls Tyrolean rendered on  
outer face: 580 sq. yds., 35s. 2d. per sq. yd.  
11-in. and 14-in. cavity walls with facings:  
68 sq. yds., 61s. per sq. yd.  
Hardwood glazed screens: 143 sq. yds., 155s. per  
sq. yd.

**Windows**

Softwood single glazed opening casements:  
666 sq. ft., 20s. 3d. per sq. ft.

**External doors**

2 softwood single leaf glazed, 1 softwood double  
leaf glazed, 1 flush single: 116 sq. ft., 22s. 8d.  
per sq. ft.

80 2

1 5 $\frac{1}{2}$ 3 $\frac{1}{2}$



<b>Partitions</b>	s d				s d
4½-in. brick: 211 sq. yds., 14s. 4d. per sq. yd.	4 3	<b>Heating services</b>	7 4		
Timber screens, etc.: 435 sq. yds., 86s. 9d. per sq. yd.		Electric floor heating and cabinet type heaters: load over 3 phases, 85 kW.			
		Includes builder's work less than ¼d.			
<b>Internal doors</b>	8	<b>Ventilation</b>	3		
Softwood flush single: 13 } 276 sq. ft., 21s. 9d.		Independent fans, etc.			
Softwood flush double: 1 } per sq. ft.		Includes builder's work in connection.			
<b>Ironmongery</b>	9	<b>Gas services</b>	2		
Generally chromium plated, matt.		Mains to kitchen, 7 outlets.			
		Includes builder's work less than ¼d.			
<b>Total of structural elements: 57s 10½d</b>					
<b>FINISHES AND FITTINGS</b>		<b>Electrical services</b>	9 1½		
<b>Wall finishes</b>	2 3½	Mains	1s. 7d.		
Plaster: 953 sq. yds., 5s. 6d. per sq. yd.		Lighting	1s. 5½d.		
Hardwood lining: 58 sq. yds., 47s. 3d. per sq. yd.		Power	2s. 0d.		
<b>Floor finishes</b>	4 9½	Fittings	1s. 0d.		
Beech strip: 171 sq. yds., 35s. 6d. per sq. yd.		Stage lighting	1s. 3d.		
Hardwood: 425 sq. yds., 40s. per sq. yd.		Emergency lighting	1s. 6d.		
Granolithic: 137 sq. yds., 7s. per sq. yd.		Builder's work	3½d.		
Quarry tiles: 124 sq. yds., 27s. per sq. yd.		Lighting points	128		
Linoleum: 123 sq. yds., 18s. 10d. per sq. yd.		One-way switch points	37		
<b>Ceiling finishes</b>	3 1	Two-way switch points	6		
Plaster on concrete: 198 sq. yds., 5s. 6d. per sq. yd.		13-amp. switch sockets	25		
Plaster on patent steel reinforcement: 757 sq. yds., 33s. 6d. per sq. yd.		Load, lighting: 18 kW.			
Asbestos insulation board on timber: 103 sq. yds., 23s. 6d. per sq. yd.		Load, power: 6½ kW.			
<b>Decorations</b>	1 4½	<b>Special services</b>	5 8½		
<b>Fittings</b>	1 3½	Cooking equipment: 5s. 8d.			
Counters (cost per ft. run 123s.).		Telephones: ½d.			
<b>Total of finishes and fittings: 12s 9½d</b>		<b>Drainage</b>	1 7		
<b>SERVICES</b>		Fireclay drains generally with cast iron under buildings.			
<b>Sanitary fittings</b>	7½	<b>Total of services: 26s 0d</b>			
Type of fitting	No. of each type	<b>External works</b>	4 3½		
W.c.s	3	Tarmac roads, yard and car park.			
Basins	3	Concrete slab and whinstone sett terrace.			
Sinks	1	Concrete slab paths.			
Stainless steel units	2	Retaining walls.			
<b>Waste, soil and overflow pipes</b>	5	Grass sowing and general site clearing.			
Copper wastes from domestic fittings, cast iron stacks to drain.		Fireclay 9-in. diameter main drain.			
<b>Cold water services</b>	4½	Lighting of roads.			
Copper piping served from Teaching Block tank.		<b>Total cost per sq. ft. of floor area:</b>			
Domestic draw-off points: 17		£50,241 (net cost, excluding external works)			
Includes builder's work less than ¼d.		9,413 sq. ft. (measured inside external walls)			
<b>Hot water services</b>	5½				
Domestic draw-off points: 6.					
Four independent water heaters.					
Includes builder's work less than ¼d.					

= 106 9



The court helps to give the group its own identity as a separate teaching and research unit on the campus

#### (4) EXPERIMENTAL ANIMALS BLOCK

##### SUMMARY

Ground floor area: 2,905 sq. ft.  
 Total floor area: 2,905 sq. ft.  
 Tender price of foundation, superstructure, installation and finishes, including drainage to collecting manhole: £16,562.  
 Final contract price: £15,398 (approximate).  
 Tender price of external works and ancillary buildings, including drainage beyond collecting manhole: £22,863.  
 Final contract price: £24,553 (approximate).  
 Total (complete contract): £574,644.

##### COST ANALYSIS

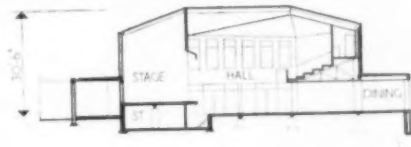
	Cost per sq. ft.
<b>Preliminaries and insurances</b>	<b>s d</b>
Approximately 4½ per cent of remainder of contract.	3 10½
<b>Work below lowest floor finish</b>	<b>6 11½</b>
Excavations, concrete foundations to walls and columns, solid concrete floor, ducts, etc.	

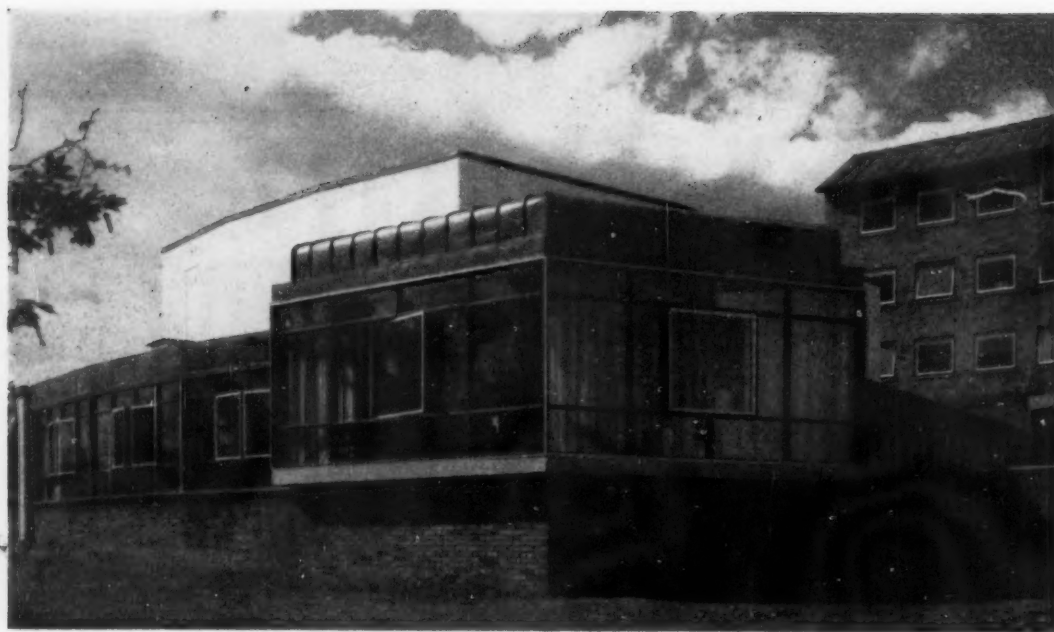
##### STRUCTURAL ELEMENTS

<b>Frame</b>	<b>1 11½</b>
In situ reinforced concrete columns, beams, etc.	
<b>Roof</b>	<b>12 5½</b>
Flat reinforced concrete felted: 193 sq. yds., 75s. per sq. yd.	
Pitched reinforced concrete felted: 147 sq. yds., 75s. per sq. yd.	

Below: Section through recreation block

Bottom: Floor plan of recreation block  
 [Scale: ¼" = 1' 0"]





Octagon in the recreation block, used as dining space by the teaching staff

#### External walls

11-in. and 14-in. cavity walls Tyrolean rendered on outer face: 244 sq. yds., 35s. 2d. per sq. yd.

#### Windows

Softwood single glazed opening casements: 675 sq. ft., 13s. 1½d. per sq. ft.

#### External doors

2 softwood double leaf glazed: 81 sq. ft., 13s. 7d. per sq. ft.  
1 softwood sliding and folding: 60 sq. ft., 34s. 4d. per sq. ft.

#### Partitions

4½-in. brick: 225 sq. yds., 14s. 4d. per sq. yd.

#### Internal doors

Softwood flush single: 14 } 242 sq. ft., 15s. 6d.  
Softwood flush double: 1 } per sq. ft.

#### Ironmongery

Generally chromium plated, matt.

**Total of structural elements: 26s 10½d**

#### s d FINISHES AND FITTINGS

5	1½	<b>Wall finishes</b>	3	8½
		Plaster: 461 sq. yds., 5s. 6d. per sq. yd.		
		Tiles: 87 sq. yds., 56s. per sq. yd.		
3	0½	<b>Floor finishes</b>	3	10½
		1-in. granolithic: 200 sq. yds., 7s. 0d. per sq. yd.		
		Quarry tiles: 60 sq. yds., 27s. 0d. per sq. yd.		
1	1	Linoleum: 13 sq. yds., 18s. 10d. per sq. yd.		
		<b>Ceiling finishes</b>	4	½
		Plaster on concrete: 255 sq. yds., 5s. 6d. per sq. yd.		
		<b>Decorations</b>	2	0½
1	2	<b>Fittings</b>	23	6½
		Lifting gear: 1s. 1d.		
1	3½	Laboratory fittings: 22s. 5½d. including plumbing and electrical work.		
		Mahogany benches with teak tops and cupboards and drawers under, average 3 ft. 0 in. high and 2 ft. 6 in. wide, 195s. per ft. run.		
8	½	Sinks	5	
		Stainless steel units	5	
		Drinking bowls	5	
		Water draw-off points	23	
		Gas draw-off points	10	

**Total of fittings and finishes: 33s 7½d**



**Drum series.** A range of 25 pendant, wall and ceiling units, from 5" to 15" in diameter, available in 6 colours.

Its salient feature is the translucent opal precision moulded louvre. Designed by Paul Boissevain.



**Merchant Adventurers Limited**

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



## SERVICES

## Sanitary fittings

1 sink.

## Waste, soil and overflow pipes

Copper and cast iron direct to drain.

## Cold water services

Copper piping lagged.

Domestic draw-off points: 5.

(Cost includes mains for laboratory fittings and supplies to this Block from Teaching Block.)

Includes builder's work less than ¼d.

## Hot water services

Domestic draw-off points: 1.

(Cost includes mains for laboratory fittings and supplies to this Block from Teaching Block.)

Includes builder's work less than ¼d.

## Heating services

Electric floor heating: load over 3 phases, 25 kW.

Includes builder's work.

## Gas services

Mains services for laboratory fittings.

Includes builder's work less than ¼d.

## Electrical services

Mains	5s. 3d.
Lighting	2s. 5½d.
Power	1s. 8½d.
Fittings	6½d.
Builder's work	5½d.
Lighting points	42
One-way switch points	20
Two-way switch points	2
13-amp. switch sockets	29
Load, lighting: 8 kW.	
Load, power: 11 kW.	

## Special services

Refrigeration equipment.

Builder's work—nil.

## Drainage

Fireclay drains generally with cast iron under buildings.

Total of services: 34s 8½d

## External works

Tarmac roads, yard and car park.  
Concrete slab and whinstone sett terrace.  
Concrete slab paths.  
Retaining walls.  
Grass sowing and general site clearing.  
Fireclay 9 in. diameter main drain.  
Lighting of roads.

Total per sq. ft. of floor area:

£15,398 (net cost excluding external works)

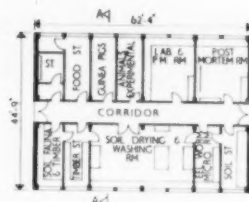
2,905 sq. ft. (measured inside external walls)

s d  
2½

Experimental animals block, section

0½

1 5½



Experimental animals block, plan [Scale: ¼" = 1' 0"]

1 4½

## COST COMMENTS

The comparison between these four blocks fits into the pattern that you would expect, for instance that the structural costs of the recreation block are very much higher than those of the other three, finishes are highest for the administrative block, and that services are somewhat higher where there are laboratories. The main doubts that occur as the result of this analysis, which is of considerable potential value to any architect engaged on the current programme of university science buildings, is whether the high structural costs of the recreation block were justified, particularly when at least some of this money has been spent on what can only be described as purely aesthetic effect. It must be remembered, however, that with the large spans and the balcony some excess over the other blocks was inevitable.

9 6½

2½

10 5½

## CONTRACTORS

Roads and site works: Chas. G. Dobson Ltd. Reinforced concrete: Costain Concrete Co. Ltd. Brickwork: John Best (Contractors) Ltd. Steelwork: Redpath Brown & Co. Ltd. Carpenter and joiner: Nathaniel Grieve. Glazing: City Glass Co. Ltd. Plumbing: Hugh Twaddle & Son Ltd. Plastering: D. & J. Borthwick. Tiles and terrazzo: Toffolo Jackson & Co. Ltd. Outside cement work: Peter Kelly & Sons Ltd. Floor coverings: Limmer & Trinidad Lake Asphalte Co. Ltd. Painters: Rolland Decorators Ltd. Laboratory fittings: Colin Macandrew & Partners Ltd. Hardwood floors: A. M. McDougall & Sons Ltd. Suspended ceilings: Scottish Speedwell Co. Ltd. Electrical: Wm. Allan Smith & Co. Ltd. Ventilation: Richard Crittall & Co. Ltd. Timber windows: Allan Bros. Ltd. Glasshouses, lantern lights, patent glazing: Mellows & Co. Ltd. Goods lifts: Pickering's Ltd. Passenger lifts: John Bennie Ltd. Ironmongery: Bell Donaldson & Co. Ltd. Steel reinforcement: Square Grip Reinforcement Co. (Scotland) Ltd. Refrigeration: L. Sterne & Co. Ltd. Felt roofing: Macartney Ltd. Electrode boilers: Bastion & Allen. Paint: Matthew, Maclay & Manson. Blinds and curtains: J. Avery & Co. Ltd. Floor heating: Panelec.

4 8½

6 8½

4 3½

## GLASS FIBRES GENERAL DATA

The Architects' Journal Library of Information Sheets 835. Editor: Cotterell Butler, A.R.I.B.A.

## FIBREGLASS INSULATING MATERIALS

Type	Description	Nominal thickness in inches (uncompressed)	Stock sizes or quantities	Nominal density, lb/cu. ft.	Thermal conductivity, Btu in/ft <sup>2</sup> h deg F	Applications
Crown 75	A resilient and flexible bonded mat of long, fine glass fibres: available in roll form	$\frac{3}{4}$ , 1, $1\frac{1}{2}$ , 2	Rolls: 2 in. thick, 10 yd. $1\frac{1}{2}$ in. thick, 15 yd. 1 in., $\frac{3}{4}$ in. thick, 20 yd. Standard width for all thicknesses 48 in. (or split to 24 in., 16 in. and 12 in. widths). Other widths available, excluding $\frac{3}{4}$ in. thick, 42 in. and 36 in. (or split to 21 in., 18 in. and 14 in. widths)	$\frac{3}{4}$	0.26	Thermal insulation of roofs and walls of domestic, industrial and agricultural buildings (excluding cavity walls in new construction)
Crown 100	A resilient and flexible bonded mat of long, fine glass fibres: available in slab and roll form	Slabs: 1, $1\frac{1}{2}$ , 2, $2\frac{1}{2}$ , 3, $3\frac{1}{2}$ , 4 Rolls: 1, $1\frac{1}{2}$ , 2	Slabs: 48 in. by 48 in., 48 in. by 36 in., 48 in. by 24 in., 36 in. by 24 in., 24 in. by 24 in. Special cut sizes and shapes within the limit of 48 in. width can be supplied Rolls: 2 in. thick, 10 yd. $1\frac{1}{2}$ in. thick, 15 yd. 1 in. thick, 20 yd. Standard width for all thicknesses 48 in. (or split to 24 in., 16 in. and 12 in. widths)	1	0.26	For thermal and sound insulation in buildings, when fitted behind perforated linings
Crown 200	Resilient and semi-rigid slabs of long, fine glass fibres	1, $1\frac{1}{2}$ , 2, $2\frac{1}{2}$ , 3	Slabs: 48 in. by 48 in., 36 in. or 24 in., 36 in. by 24 in., 24 in. by 24 in. Special cut sizes and shapes within the limit of 48 in. width can be supplied	2	0.23	For thermal and sound insulation in buildings, when fitted behind perforated linings
Crown sound-deadening quilts	Resilient and flexible bonded mats of long, fine glass fibres, available in two grades:— Type PF: faced on one side with bituminised paper Type UF: unfaced	$\frac{1}{2}$	Rolls: 20 yd. long by 48 in. wide	$2\frac{1}{2}$	—	Type PF: for sound-deadening of concrete or timber floating floors Type UF: for sound-deadening concrete floating floors only
Cavity-wall slab	A resin-bonded slab, used in conjunction with specially-designed retaining clips	1	Standard size: 48 in. by $19\frac{1}{2}$ in. for $2\frac{1}{2}$ in. brick. 48 in. by 18 in. for $2\frac{3}{8}$ in. brick.	$4\frac{1}{2}$	0.25	For thermal insulation of brick and other cavity walls in new construction
Ceiling board	A rigid, lightweight board of bonded glass fibres, faced with a decorative plastic film available in various surface patterns. The film is stable, requires no decorating and is easily cleaned.	$\frac{3}{4}$ , 1	$47\frac{1}{2}$ in. long by $23\frac{1}{2}$ in. wide to suit grid of 48 in. by 24 in.	$7\frac{1}{2}$	0.25	A combined thermal-insulating and sound-absorbent lining for use in any application with an exposed fixing system
Roof board	A rigid board of bonded glass fibres, faced with a tough puncture-resistant covering which forms an impervious surface to receive waterproofing treatment	$\frac{1}{2}$ , $\frac{3}{4}$ , 1	Standard size: 48 in. by 24 in.	12	0.23	For thermal insulation over roof decking and under mastic asphalt or built-up felt roofing

## 8.E1 · FIBREGLASS · INSULATING MATERIALS

Type	Description	Nominal thickness in inches (uncompressed)	Stock sizes or quantities	Nominal density, lb./cu. ft.	Thermal conductivity, Btu in/ft <sup>2</sup> h deg F	Applications
Resin-bonded slabs	Glass wool bonded with resin to form slabs of different densities, the rigidity and mechanical strength increasing with the density	Type 425: $\frac{1}{2}$ , $\frac{3}{4}$ , and 1 to 4 in $\frac{1}{2}$ in. increments	$\frac{1}{2}$ in. thick: 48 in. by 24 in., 36 in. by 24 in. Other thicknesses: 48 in. by 36 in., 48 in. by 24 in., 36 in. by 24 in., 24 in. by 24 in. Special sizes can be supplied within the limit of 48 in. by 48 in.	4 $\frac{1}{2}$	0.25	Thermal insulation of cladding and curtain walling systems; flat roofs under screed; thermal and sound insulation in electrically-heated floors; miscellaneous thermal and acoustic applications
		Type 600: $\frac{1}{2}$ , $\frac{3}{4}$ , and 1 to 3 in $\frac{1}{2}$ in. increments		6		
		Type 900: $\frac{1}{2}$ , $\frac{3}{4}$ , 1, 1 $\frac{1}{2}$ , 2		9		
		Type 1200: $\frac{1}{2}$ , $\frac{3}{4}$ , 1		12		
Acoustic tiles	A rigid board of bonded glass fibres faced with a decorative plastic film available in various surface patterns. The film is stable, requires no decorating and is easily cleaned	$\frac{3}{4}$	24 in. by 24 in.; 24 in. by 12 in.; 12 in. by 12 in.	11 $\frac{1}{2}$	0.25	A combined thermal-insulating and sound-absorbent lining: suitable for concealed mechanical fixing or fixing by approved adhesive

This Sheet supersedes Sheet 8.E1 published 15.5.58. It describes the general properties of Fibreglass insulating material. The foregoing table summarises the primary characteristics of the various forms in which the material is available.

**Material**

Fibreglass consists of glass drawn into flexible fibres and is entirely inorganic, non-hygroscopic, unaffected by moisture and will not rot or cause corrosion of any surface with which it may come in contact. It offers no sustenance to vermin and is non-inflammable.

**Thermal Conductivity**

National Physical Laboratory tests have been carried out on this material. The thermal conductivity figures quoted in the table are based on these tests. Copies of the actual reports may be obtained from the manufacturer.

**Fire Resistance**

Fibreglass has been rated Class I in spread of flame tests carried out in accordance with B.S.476:1953 *Fire Tests on Building Materials and Structures*.

**Trade Name**

The word 'Fibreglass' is a trade mark.

**Further Information**

The manufacturer maintains a technical advisory department which is available to answer questions dealing with the applications of Fibreglass.

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Telegrams: Fibreglass, St. Helens.

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Telephone: Hyde Park 1183.

Telegrams: Fibreglass, Piccy, London.

Glasgow Office: 6, Newton Place, Glasgow, C.2.

Telephone: Douglas 2687.

Telegrams: Fibreglass, Glasgow.

Manchester Office: Queens House, Queen Street, Manchester 2.

Telephone: Deansgate 8804.

Birmingham Office: Piccadilly Arcade, New Street, Birmingham, 2.

Telephone: Midland 0464.

Newcastle Office: 16, Dean Street, Newcastle-upon-Tyne.

Telephone: Newcastle 26662.

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## Announcements

### PROFESSIONAL

Colin Johnson, DipArch(Dunelm), ARIBA, has opened an office at 58/60, Albert Road, Middlesbrough, where he will be pleased to receive trade literature.

Leonard Manasseh & Partners have moved to 26, Charlotte Street, London, W1 (telephone Langham 5106-8).

Professor Walter Gropius has been awarded the Gold Albert Medal of the Royal Society of Arts for 1961 "for his contributions to architectural and industrial design."

Eric Colwill Strathon, FRICS, FAI, has been elected president of the Royal Institution of Chartered Surveyors. He is a senior partner of Gerald Eve & Co.

### TRADE

M. J. Hodgson, BSC, AMIMECHE, is the new area manager of Rhodes, Brydon & Youatt Ltd., manufacturers of centrifugal pumps under the trade mark MOPUMP, for the Midlands at their offices in Griffin House, Ludgate Hill, Birmingham 3 (telephone Birmingham Central 8911).

I. Margetts, group managing director of

Williams & Williams Ltd., the Chester manufacturers of metal windows and curtain walling, has been co-opted to the council of the Modular Society.

Lt-Gen. Sir W. Stratton, KCB, CVO, CBE, DSO, has been appointed chairman of Edwin Danks & Co. (Oldbury) Ltd., and of Penman & Co. Ltd., in succession to the late General Sir Kenneth Crawford. Lt-Gen. Sir William Stratton was vice-chief of the Imperial General Staff from 1957 to 1960.

L. Knight is now on the board of directors of Quicktho Engineering Ltd., and is responsible for technical sales. His assistant in the sales office, 5, Grafton Street, W1, will be K. Bulkeley, technical manager.

C. Parsons is retiring from his position as managing director of Barry, Ostlere & Shepherd Ltd., Kirkcaldy, Scotland.

J. Bulman, works manager, and E. Chapman, sales manager, of Gent & Co. Ltd., have been made directors of the company.

The new head office address of the Associated Industrial Consultants Ltd. is Knightsbridge House, 197 Knightsbridge, London, SW7 (telephone Knightsbridge 6171). Telegrams and cables should be addressed to Inbucon, London, SW7.

### CORRECTIONS

We apologise for the error in our issue of June 29, page 953, in which we referred to S. Low as the county architect for Hampshire. He has now been succeeded by H. Benson Ansell.

In the building study on *Flatted Factories at Hackney* (AJ July 5), the date given for the description of the Shoreditch factory should have been April 23, 1959.



### 20.E1 REFERENCE BACK

Readers are asked to note that the London office for Junckers Beech Flooring is Junckers (London) Ltd., 17, Hanover Square, W1 (telephone Hyde Park 8574 and 8522).

### 8.E1 CANCELLATION

Readers are asked to note that Sheet 8.E1, published 15.5.58, is cancelled and replaced by Sheet 8.E1, published in this issue.

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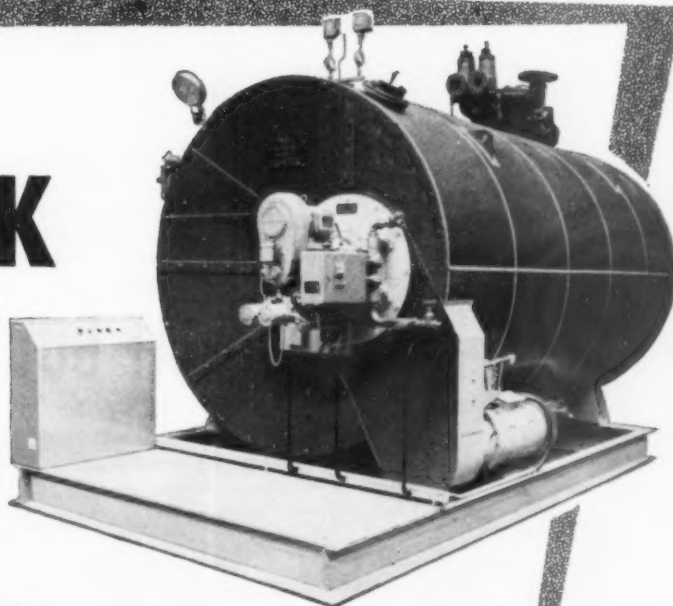
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## New Building Research Association laboratories

*This new block, for the study of building materials, is part of a long-term development programme for the improvement of the Building Research Station, including the replacement of a number of temporary war-time huts, a few of which are still in use. Designed by MOW, the upper floors for laboratories are essentially open spaces 200 ft. long by 36 ft. 8 in. wide, which can be broken up as required by lightweight partitions. The steel-framed structure is set out on a horizontal and vertical module of 3 ft. 4 in., this dimension being also used for the depth of inter-floor space, so as to provide a generous and continuous duct for services. In addition, there is a horizontal duct round three sides of the building under the windows to carry services, including drainage, needed for nearby benching. During construction, the building was used by BRS as a site study to obtain information about practical building tolerances in comparison with designed dimensions, accurate measurements being taken during construction of all relevant components. It seems a pity that more of this experimental approach, particularly on the design and layout of laboratories, could not have been*



*incorporated in the building as part of the station's experimental programme. But this remains organisationally difficult as long as all the major buildings for BRS are carried out by MOW. The architects in the*

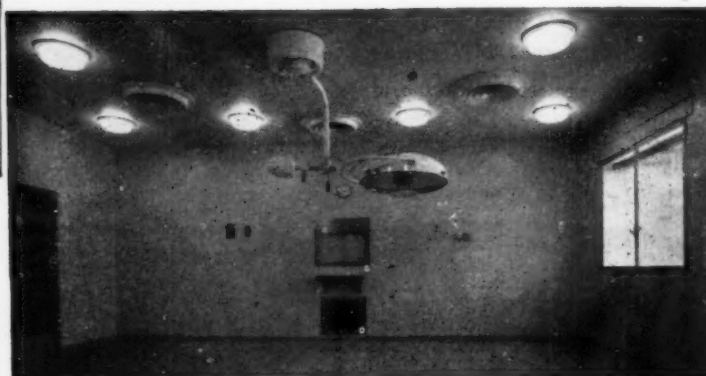
*Chief Architect's Division at MOW who were concerned with the building were H. A. Snow, superintending architect; J. Moss, senior architect; and R. D. Carpenter, assistant architect.*



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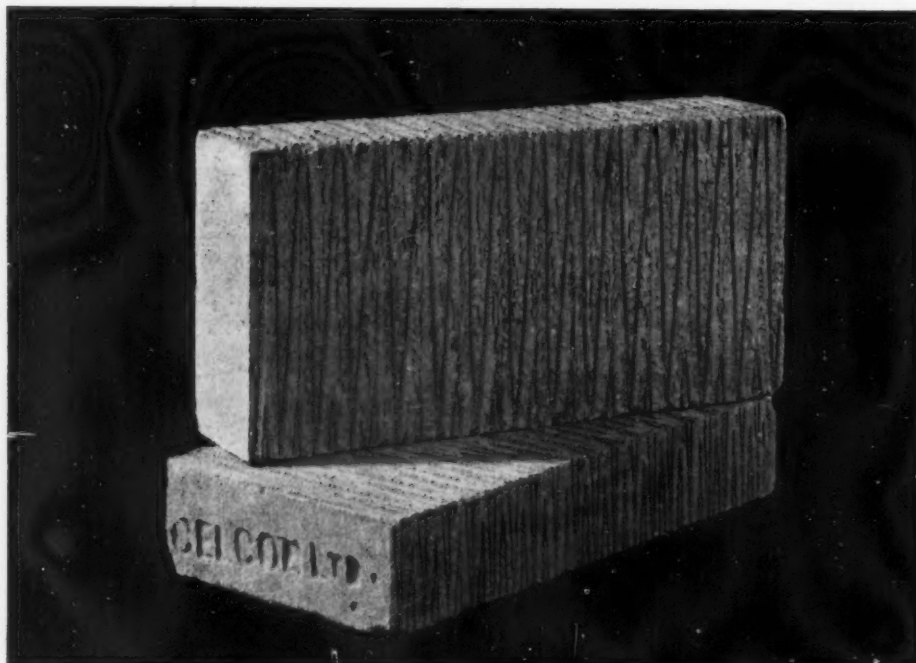
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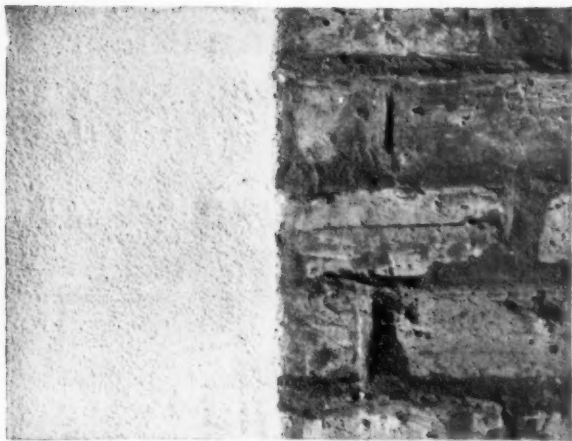
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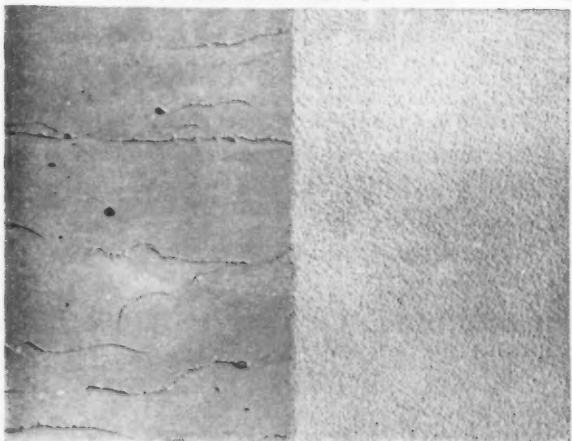
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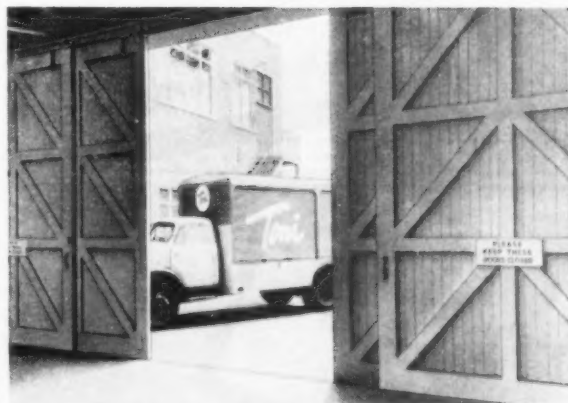
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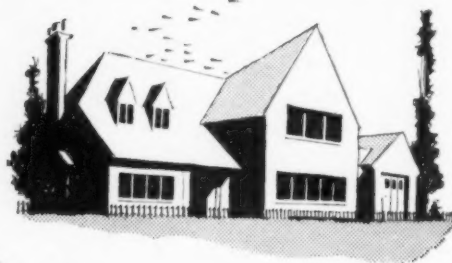
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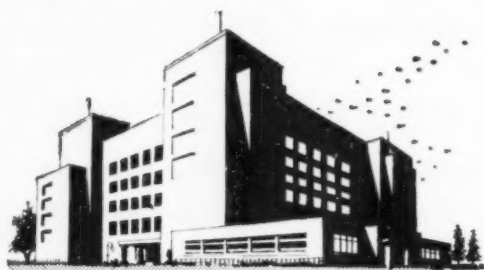
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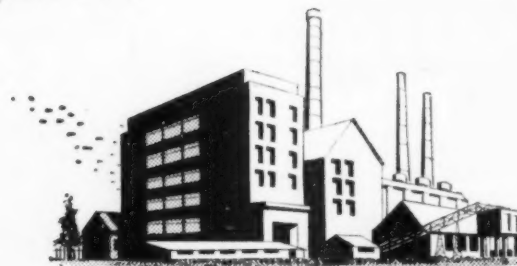
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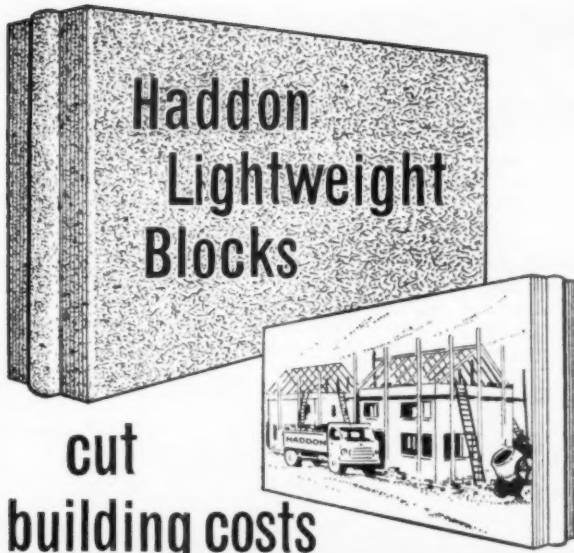
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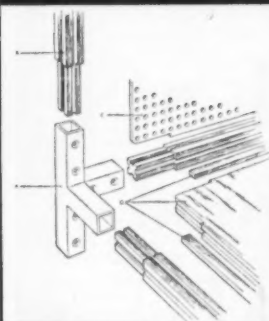
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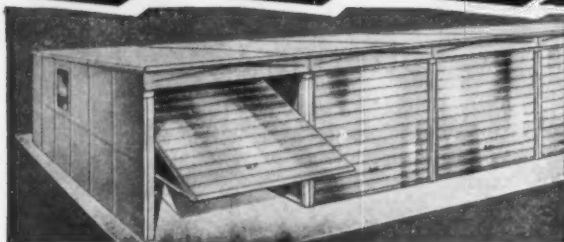
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With the present-day high cost of building materials and labour, BATLEY Multiple Concrete Garages offer tremendous economies. Employing the well-known Batley principle of tongued and grooved concrete units which are simply bolted together on a firm level foundation, these garages can be erected by unskilled labour in hours instead of days. Fitted with "Up and Over" or hinged doors as required.

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- ANY NUMBER CAN BE ERECTED IN ONE BLOCK
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## JAMES make good METAL WINDOWS

**W. JAMES & CO. LTD.**  
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NOW UP TO 48 inches.

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**POOL DESIGN, CONSTRUCTION  
AND FILTRATION**

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AP 13

## "Invisible Vacuum Cleaning?"

**Architect** Now that we've settled the central heating . . . let's discuss the central vacuum cleaning.

**Client** I don't quite see what you mean. . . .

**A** Of course you don't. Nobody can see it. It's *invisible* vacuum cleaning.

**C** Invisible vacuum cleaning?

**A** Yes. A hose is plugged into the wall of every room . . . and all dust and dirt are *silently* piped away. No heavy cleaner to drag around, no trailing cables.

**C** Sounds pretty marvellous.

**A** Except that you don't hear a sound.

**C** What about cost?

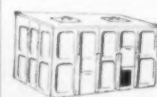
**A** Rental is 10s. 3d. a week. If you buy it's 66½ gns. completely installed. And there are easy H.P. Terms. I'll get you an illustrated leaflet from: Dept. A, THE BUILT-IN VACUUM CLEANER CO. LTD., 93 Black Lion Lane, London, W.6. RIVERSide 2848.

**C** Good. Let me have the leaflet soon.

**A** Don't worry. I'll drop them a line today!



and so simple to operate!



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in prefabricated concrete with steel bar reinforcements for extra strength and long life. Sizes range from 5 to 30 cwt.

Swing up—swing down! Unique 'Alborough'

steel-lath construction, coupled with slide-over ball-bearing fitting, makes this new 'Alborough' Door ideal for every standard-size Garage. Send for full details.

Alborough Slide-Over Doors give open-sesame access and closing in any weather!

**Alborough** 'Slide-Over' doors

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34/35 Alpha Road, Surbiton, Surrey

Telephone: —ELMbridge 6591/3



*The new Co-operative Store at Hull is one of the many fine buildings for which "Kingley" has been specified for hot and cold water services, featured by kind permission of the Chief Architect Co-operative Wholesale Society Ltd., Salford 5, Manchester and the Hull Co-operative Society Ltd.*

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**the 100% efficient joint**

"KINGLEY" manipulative joints are used in conjunction with both copper and polythene tubing. These joints are being specified to an ever-increasing extent for major building projects in many parts of the world. They have many advantages over other jointing methods, but the most important are:—(1) 100% safety in all temperatures. (2) Very quick assembly. (3) Low installation costs.

★ The 100% safety is ensured by means of a swage in the ends of the pipes on which the joints are made. This swage (which is made in seconds with a fool-proof tool) makes PULL-OFF impossible in heat or frost.

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These beams are widely used in the modern planning of factories, school classrooms, offices, canteens, etc., where spans of 20ft. to 40ft. are encountered. They are most economic for all light roofing, combine well with the many prefabricated slabs which span directly between supporting joists.



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Our Beam system gives a maximum of standardization to obtain economy and yet at the same time allows complete freedom to architectural planning.

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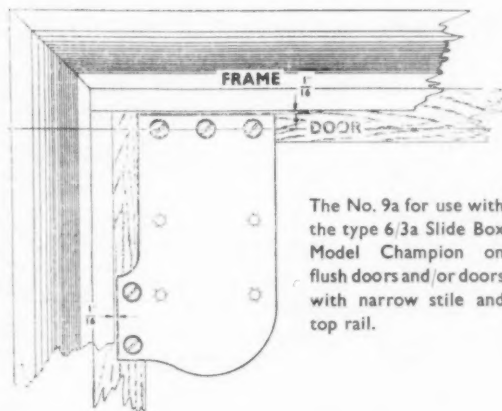
Standard 3a  
Model

The really effective and attractive  
Door Check for Light, Standard and  
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Ideal for hospitals, schools and  
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**We are the largest manufacturers of  
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doors and frames.**

A typical example of one of our corner back plates.



The No. 9a for use with  
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with narrow stile and  
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## Architects

required for the following posts:—

### Assistant Architect

Salary range :

£1,140 p.a. — £1,320 p.a.

Applicants must be fully qualified and  
capable of supervising staff (Reference  
149/A/1).

### Architectural Assistants Class 1

Salary range :

£1,060 p.a. — £1,140 p.a.

Applicants should be qualified to  
R.I.B.A. Intermediate standard with  
previous office experience (Reference  
149/B/1).

### Architectural Assistants Class 2

Salary range :

£940 p.a. — £1,020 p.a.

Applicants should be R.I.B.A. proba-  
tioners with previous office experience  
(Reference 149/C/1).

**Valuable free travel ; 5 day week ; superannua-  
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Applicants quoting reference number of post applied  
for and stating age, qualifications and full details of  
experience to Staff and Welfare Officer, LONDON  
TRANSPORT, 55 Broadway, S.W.1.

## SENIOR ARCHITECTURAL ASSISTANT

required in the **Development Section** of a firm  
of Building and Civil Engineering Contractors  
in the West End of London. The successful  
applicant will be required to assist in the  
Architectural Department engaged upon the  
preparation of designs and working drawings  
for **housing and flat projects.**

Commencing salary £1,200 p.a. according to  
ability and experience, plus half-yearly bonus.  
The position is progressive and offers many  
opportunities of advancement to anyone who  
shows ability and initiative.

*Also vacancies for Junior and Intermediate Assistants*

Apply in writing to:—

**JAMES MILLER & PARTNERS LTD.**  
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## CLASSIFIED ADVERTISEMENTS

Owing to the August Bank holiday the issue of August 9th will go to press two days earlier than usual. All advertisements for this issue must reach the publishers not later than first post Wednesday, August 2nd.

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

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

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

### Public and Official Announcements

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

#### ADMINISTRATIVE COUNTY OF LEICESTER

(a) PRINCIPAL ASSISTANT ARCHITECT, £1,410-£1,565.

(b) CHIEF ASSISTANT ARCHITECTS, £1,310-£1,410-£1,565.

(c) SENIOR ASSISTANT ARCHITECTS, £1,140-£1,310.

(d) ARCHITECTURAL ASSISTANT, £815-£1,140 (according to qualifications).

Candidates for (a) must be members of the R.I.B.A., have had sound experience and be capable of acting as Group Leaders on an extensive programme of education buildings. Candidates for (b) must be members of the R.I.B.A., have had considerable office experience and be capable of taking charge of contracts from inception to completion. For (c), should be members of the R.I.B.A., have had office experience and be capable of taking charge of small contracts. For (d), should have Intermediate or Final qualifications of the R.I.B.A. and be capable of executing working drawings. Lodging allowance and removal expenses may be paid to a married man. Apply on form obtainable from County Architect, 123, London Road, Leicester, TC7478

#### CITY OF GLASGOW

##### ASSISTANT ARCHITECTS

The Architectural and Planning Department has a number of vacancies for qualified ASSISTANT ARCHITECTS.

The Department has in hand a large, varied and interesting programme of work, including Comprehensive Redevelopment, Multi-Storey Flats, Schools and Civic Buildings. The work will provide scope for personal initiative in the preparation of designs and details of schemes upon which construction work will follow.

The salary scale for these assistantships is up to £1,560 with placing according to experience. A five-day week is in operation.

Advances up to 100 per cent. of valuation will be made available, where needed, for the purchase of suitable houses in or near Glasgow, by successful applicants.

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

A. G. JURY,

City Architect and Director of Planning.

S8092

#### CITY OF LONDON

The City Planning Office has interesting planning projects on hand and others in active preparation, e.g. large scale redevelopment is proceeding in Barbican Commercial zone where separated pedestrian walkways are planned for a large area.

A vacancy now exists in the Civic Design Section of the Department for a qualified Architectural or Planning Assistant to join a small group working on the present important phase of rebuilding in the City.

Salary: up to £1,420. Local Act Superannuation. Apply to The City Architect, Guildhall, E.C.2.

S8469

#### SURVEYOR

##### THE UNIVERSITY OF SHEFFIELD

Applications are invited for the post of SURVEYOR to the University.

Candidates must have a recognised professional qualification and may be architects, surveyors or engineers. They should possess wide experience of maintenance of buildings, plant and grounds, running of service installations, and carrying out minor works.

Commencing salary not less than £1,850 per annum, with F.S.S.U. benefits and child allowances.

Further particulars and forms of application can be obtained from the Bursar, Room D.25, The University, Sheffield, 10, to whom applications should be sent by 31st August, 1961. S8578

#### COUNTY BOROUGH OF BARNSLEY BOROUGH ENGINEER AND SURVEYOR AND PLANNING OFFICER'S DEPARTMENT APPOINTMENT OF ARCHITECTURAL STAFF

Applications are invited for the following vacancies:—

(a) CHIEF ARCHITECT — SCALE "B" — (£1,585-£1,670).

(b) ASSISTANT ARCHITECT — A.P.T. V (£1,310-£1,480).

(c) JUNIOR ARCHITECTURAL ASSISTANTS (THREE)—A.P.T. I (£645-£815).

Candidates for appointment (a) are asked to apply for further details of the post to the Borough Engineer. Applicants for appointment (b) must hold a recognised Diploma in Architecture and/or be A.R.I.B.A. For appointments (c) candidates should have had some architectural training and experience. Further study facilities can be granted.

The appointments are superannuable and subject to N.J.C. Conditions of Service, passing of medical examination and one month's notice on either side.

Housing accommodation can be provided if necessary and 50 per cent. of removal transport expenses will be paid in approved cases.

A five day week is in operation and staff dining facilities are available.

Applications, naming vacancy applied for and stating age, qualifications, present and previous appointments and experience, together with the names of two persons for reference, should be sent to the Borough Engineer, Town Hall, Barnsley, by Tuesday, 15th August, 1961.

Canvassing will disqualify.

A. E. GILFILLAN,

Town Clerk.

Town Hall,

Barnsley

July, 1961

S8587

#### GLOUCESTERSHIRE COUNTY COUNCIL

##### COUNTY ARCHITECTS' DEPARTMENT

Applications are invited for the following appointments:—

(a) ASSISTANT ARCHITECT — "CAREER CLASS," commencing in A.P.T. IV (£1,140-£1,310 p.a.) progressing to A.P.T. V (£1,130-£1,480 p.a.) subject to satisfactory report on reaching appropriate incremental point in Grade. Applicants must be Registered Architects and Associate Members of the R.I.B.A.

(b) ARCHITECTURAL ASSISTANTS—

"A QUALIFYING CLASS"—Vacancies exist in the following Grades:—

A.P.T. I: Salary £645-£815 p.a.

A.P.T. II: Salary £815-£960 p.a.

A.P.T. III: Salary £960-£1,140 p.a.

A.P.T. IV: Salary £1,140-£1,310 p.a.

Applicants for posts in Grades I and II should have passed the Intermediate Examination of the R.I.B.A., and for Grades III and IV the full R.I.B.A. Final Examination.

N.J.C. Conditions of Service; superannuation; medical examination.

Applications, stating age, present position and salary, details of previous appointments, together with the names and addresses of two persons for reference, must reach the County Architect, Shire Hall, Gloucester, by 11th August, 1961.

GUY H. DAVIS,

Clerk of the County Council.

S8603

#### CITY OF CHESTER

##### DEPARTMENT OF CITY ENGINEER

##### ARCHITECTS' SECTION

Applications are invited for the following ASSISTANTS at the salaries stated and experience appropriate to the grades indicated.

(a) ONE SENIOR ASSISTANT ARCHITECT/PLANNER, Grade V, £1,310-£1,480 per annum, with planning experience for special Central Area Redevelopment and Quinquennial Review, offering unique opportunities in a City of special character.

(b) TWO SENIOR ASSISTANT ARCHITECTS, Grade IV, £1,140-£1,310 per annum, for schools, housing and general work.

Applicants in each case are expected to be A.R.I.B.A. Housing accommodation will be available if required for the successful applicants.

Applications with three recent testimonials or references should reach the City Engineer, 49, Northgate Street, Chester, by 14th August, 1961.

S8696

#### BOROUGH OF HARROW

Applications are invited for appointments on the Architectural staff of the Borough Engineer and Surveyor's Department which is engaged on a varied programme of municipal building schemes.

ARCHITECTURAL ASSISTANTS, A.P.T. III/IV (£960 to £1,310 per annum plus London weighting). Commencing salaries will be in accordance with qualifications and experience, but applicants who are qualified will be given additional responsibilities and may be placed in A.P.T. IV (£1,140 to £1,310 per annum). The Council may be able to help with housing accommodation in the light of the applicant's circumstances. A contribution towards removal expenses will be considered.

The appointments are subject to the Local Government Superannuation Acts and to the National Joint Council's Scheme of Conditions of Service. Forms of application may be obtained from me, and must be returned not later than Friday, 4th August, 1961.

DAVID PRITCHARD,

Town Clerk.

Town Clerk's Office,

Harrow Weald Lodge,

Harrow,

Middx.

S8686

#### COUNTY BOROUGH OF GREAT YARMOUTH EDUCATION COMMITTEE SCHOOLS ARCHITECT'S DEPARTMENT

Applications are invited from Associate Members of the R.I.B.A. for the appointment of a SENIOR ASSISTANT ARCHITECT at a salary within A.P.T. IV (£1,140 to £1,310) to work on interesting and progressive programme.

Previous experience with Local Government not essential.

Housing accommodation will be available to the successful candidate if married and assistance with removal expenses may be made in suitable cases.

Full details of present and past appointments, age, qualifications and experience, together with the names of two referees should reach the Schools Architect, 22 Euston Road, Great Yarmouth, by 11th August, 1961.

D. G. FARROW,

Chief Education Officer.

22 Euston Road,

Great Yarmouth,

Norfolk.

S8639

#### BRECONSHIRE COUNTY COUNCIL

Applications are invited for the post of PLANNING ASSISTANT A.P.T. Grade II (£815-£960 p.a.).

Principal duties will be preparation of Town Maps, review of the County Development Plan and general statistical and research work. Applicants should have passed the Intermediate Examination of the T.P.I. or have a university degree in an appropriate subject or have extensive experience of this type of work.

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

Further particulars and application forms from County Planning Officer, 6, Glamorgan Street, Brecon, and completed applications must be received by the undersigned not later than 29th August, 1961.

C. M. S. WELLS,

Clerk of the County Council.

County Hall,

Brecon.

6944

#### CITY OF NEW SARUM

SENIOR ASSISTANT ARCHITECT required in the City Engineer's Department. Salary Grade A.P.T. V, £1,310-£1,480.

Applicants must possess Final R.I.B.A. and have had experience in design and detailing of housing schemes, estate layouts and public buildings, and in the supervision and handling of contracts.

The Council has a large capital works programme in hand including a comprehensive redevelopment area and the successful applicant will be responsible directly to the City Engineer for the organisation and work of the architect's section of the Department.

Pensionable post. Medical examination required. Five-day week. Housing accommodation with removal expenses, 50 per cent. of removal expenses.

Applications stating age, present and previous appointments with salaries, with the names of two referees, to the City Engineer, The Council House, Bourne Hill, Salisbury, by 19th August, 1961.

GEO. RICHARDSON,

Town Clerk.

S8646

ARCHITECTURAL ASSISTANTS AND DRAWING OFFICE ASSISTANTS REQUIRED BY AIR MINISTRY H.O. IN LONDON. Salary (inner London scale) Grade II, £1,040 to £1,220. Grade III, £858 to £1,040 (£855 at age 25). Drawing Office Assistant, £404 (age 18) to £595 (men), £731 (women)—starting salary depends on age, qualifications, and experience.

The work includes a wide range of domestic, administrative and technical buildings in varying forms of construction offering imaginative scope. Candidates should have had adequate training and drawing office experience. O.N.C. (Building) an advantage but architectural design ability important for Grade II. Financial assistance and time off may be allowed for recognised courses of study, e.g., R.I.B.A. Five-day week with 18 days' paid leave p.a. initially. Promotion and pension prospects. Some overseas tours with special allowances, in addition to salary. Applicants, who must be natural born British subjects, should write to AIR MINISTRY, W.G.D., LACON HOUSE, THEOBALDS ROAD, LONDON, W.C.1, or to any employment exchange (quoting Jones Cross 837/838), giving age, details of training, qualifications and full particulars of former posts held. Candidates selected will normally be interviewed in London and certain expenses reimbursed. Only candidates selected for interview will be notified.

S8273

#### COUNTY BOROUGH OF WEST HAM

Vacancies exist for a number of SENIOR ASSISTANT ARCHITECTS, J.N.C. Scale "A," £1,400-£1,565 p.a., and for an ARCHITECTURAL ASSISTANT, in the salary range £645-£1,140 p.a. (and London allowance), according to qualifications and experience.

An expanded programme of work, including numerous official buildings, Fire Stations, Primary and Secondary Schools, high density housing, and Town Centre Redevelopment Scheme, is on hand.

Applications, with details of qualifications and experience (together with names of two referees), to be addressed to Thomas E. North, O.B.E., F.R.I.B.A. Dist.T.P., M.T.P.I., Borough Architect and Planning Officer, 70, West Ham Lane, Stratford, E.15.

S8661



# MICHELIN

require

## ARCHITECTURAL ASSISTANTS

age 25-40, commencing salary at least £1,000 per annum. Applicants should have a minimum qualification of Inter R.I.B.A., H.N.C. Building or equivalent and several years' experience in industrial building work.

## JUNIOR ARCHITECTURAL ASSISTANTS

age 21-23, having a minimum of 12 months' experience in a professional office. Commencing salary not less than £615 per annum at 21.

These appointments are permanent and pensionable. Housing assistance given in appropriate cases. Removal expenses paid. Five-day week. Three weeks' annual holiday.

Please write in confidence, giving full details of qualifications and experience to:

Mr. B. G. Tierney, Technical Personnel Officer, Michelin Tyre Co. Ltd., Stoke-on-Trent. Quoting Ref. B 634E.

## British Railways

WESTERN REGION

Require

## Leading Assistant ARCHITECTS

in the office of The Architect, Western Region, British Railways at Paddington Station.

Applicants must be Chartered Architects (A.R.I.B.A.) and have ability in architectural design, knowledge of modern building technique and some experience of the control of a small staff.

Salary range—£1,230-£1,350 per annum.

Interesting work in pleasant conditions with promotion on MERIT;

Superannuation Fund;

Reduced rates of travel and other concessions;

5-day week;

Applications, giving age, qualifications and experience to:

The Architect,  
British Railways—Western Region,  
167, Westbourne Terrace,  
Paddington,  
LONDON, W.2.

## NEW IDEAL HOMESTEADS LTD.

This progressive company is rapidly expanding its Architectural department and is keen to obtain the services of enthusiastic architects and assistants who would like to become part of a team engaged in the large and important fields of private-enterprise housing and multi-storey redevelopment

Required urgently are:—

1. A first-class **DESIGNER**. Salary up to £1,650.
2. A qualified **GROUP-LEADER** with experience of tall flats and offices. Salary up to £1,650.
3. **RESEARCH and DEVELOPMENT ASSISTANT** to conduct investigations into structure, costings, standardisation, to keep abreast of housing design throughout the world and to be able to distribute information by means of digests. Salary up to £1,350.
4. **ARCHITECTURAL ASSISTANTS**. Salaries up to £1,000

Superannuation Scheme.

Assistance with housing if required.

Write in confidence to

Chief Architect,

New Ideal Homesteads Ltd.,

61, South Street, Epsom, Surrey.

Telephone: Epsom 1144

## BASINGSTOKE, HAMPSHIRE

47 miles W.S.W. of London  
18 miles N. of Winchester  
40 miles N.W. of Chichester

17 miles S. of Reading  
35 miles N.E. of the New Forest  
35 miles from the coast

## TOWN EXPANSION

You are invited to apply for an appointment in the newly formed technical group who are to draft and carry out a scheme for the expansion of Basingstoke from its present population of 25,000 to 75,000 by 1975.

The Group will be organised on a team basis to deal with a wide variety of tasks, ranging from the preparation of basic development plans to the comprehensive redevelopment of the Central Area, and all tasks will be arranged within strict time schedules.

Candidates for the following posts, who should hold either architectural or planning qualifications, will be judged on their design ability, experience and general architectural outlook. Gradings and commencing salaries to be within the ranges indicated, according to qualifications and experience. Those who are successful will be appointed to the staff of the Hampshire County Council and will work under the direction of the Chief Architect/Planning Officer for Basingstoke, Alan G. McCulloch, A.R.I.B.A., A.M.T.P.I.

### General Planning

Senior Architect/Planning Officer—Scale D-F (£1,710—£2,345)  
Assistant Architect/Planning Officers—Scale A-C (£1,480—£1,825)

### Central Area

Senior Architect/Planning Officer—Scale D-F  
Assistant Architect/Planning Officers—Scale A-C

Also for:

Junior Assistants and Draughtsmen—A.P.T. Grades I-IV (£645—£1,310)

The posts are pensionable. Separation allowance and assistance with removal expenses will be paid in approved cases.

Applications, stating full details of age, education, qualifications and experience, including present grade and salary, and accompanied by a copy of one testimonial and the names of two referees, should reach the Clerk of the County Council, The Castle, Winchester by 8th August, 1961.

**DURHAM COUNTY COUNCIL**  
**COUNTY ARCHITECT'S DEPARTMENT**  
 Applications are invited for the following posts:  
 (a) **ARCHITECTURAL ASSISTANTS**  
 Grade A.P.T. I, £645-£815 p.a.  
 Grade A.P.T. II, £815-£960 p.a.  
 Qualifications: Intermediate R.I.B.A.  
 Grade A.P.T. V, £1,310-£1,480 p.a.  
 Grade J.N.C. "A", £1,350-£1,565 p.a.  
 Qualifications: Final R.I.B.A. with adequate experience.  
 (b) **QUANTITY SURVEYING ASSISTANTS**  
 Grade A.P.T. I, £645-£815 p.a.  
 Grade A.P.T. II, £815-£960 p.a.  
 Qualifications: Intermediate R.I.C.S.  
 Grade A.P.T. V, £1,310-£1,480 p.a.  
 Qualifications: Final R.I.C.S. with adequate experience.  
 (c) **STRUCTURAL ENGINEERING ASSISTANTS**  
 Grade A.P.T. V, £1,310-£1,480 p.a.  
 Qualifications: A.M.I.Struct.E.  
 Particulars from County Architect, South Street, Durham, to whom completed application forms are returnable by 21st August, 1961.  
 Personally canvassing members of the Council is prohibited and the Council may declare any candidate infringing this rule to be disqualified for appointment.

J. T. BROCKBANK,  
 Clerk of the County Council.  
 8699

**COUNTY COUNCIL OF THE**  
**WEST RIDING OF YORKSHIRE**  
**OFFICE OF THE COUNTY ARCHITECT**  
 Applications are invited for the following appointments. The commencing salary will be fixed at a point within the scale commensurate with qualifications and experience. Five-day week operated.  
**ASSISTANT ARCHITECTS**  
 A.P.T. V. Salary range £1,310-£1,480.  
 A.P.T. IV. Salary range £1,140-£1,310.  
 Applicants should be Associate Members of the Royal Institute of British Architects, with a good standard of design ability and a sound knowledge of modern methods of construction and be capable of handling building projects from sketch plans to completion.  
**SENIOR ASSISTANT QUANTITY SURVEYOR**  
 J.N.C. scale "B." Salary range £1,495-£1,670.  
 Applicants should be Associate Members of the Royal Institution of Chartered Surveyors and have had experience in the preparation of Bills of Quantities, measuring for and adjustment of final accounts and should have had experience in and be capable of taking charge of a section.  
 Applications to be submitted by the first post on Tuesday, 22nd August, 1961, on forms to be obtained from and returned to the undersigned.  
 A. W. GLOVER, F.R.I.B.A.,  
 County Architect.

Bishopgarth,  
 Westfield Road,  
 Wakefield.  
 8702

**BOROUGH OF STRATFORD UPON AVON**  
**ARCHITECTURAL ASSISTANT, A.P.T. II/III**  
 Applications are invited for the above appointment on the staff of the Borough Engineer & Surveyor at a salary in accordance with Grade A.P.T. II/III, £815-£1,140, commencing at a point to be determined according to qualifications and experience.  
 Preference will be given to candidates with previous local government experience who have passed the Intermediate examination of the R.I.B.A. and previous planning experience would be an advantage.  
 The Council will, if necessary, be prepared to consider the provision of housing accommodation. Conditions of appointment and forms of application may be obtained from the undersigned to whom completed forms should be returned by not later than Monday, 14th August, 1961.

P. C. SMART, M.I.C.E., M.I.Mun.E.,  
 Borough Engineer & Surveyor,  
 Municipal Offices,  
 Stratford-upon-Avon.  
 18th July, 1961.  
 8700

**WORTLEY RURAL DISTRICT COUNCIL**  
**APPOINTMENT OF**  
**TEMPORARY CLERK OF WORKS**  
 Applications are invited for this appointment at a salary of £850 per annum. Forms of application may be obtained from the undersigned, to whom applications should be delivered not later than 4th August, 1961. A Council house will be provided if required and it is anticipated the minimum period for the appointment will be two years.  
 ADRIAN M. KELLY,  
 Clerk.

Council Offices,  
 Grenoside,  
 near Sheffield.  
 8655

**COUNTY BOROUGH OF OLDHAM**  
**BOROUGH ARCHITECT'S DEPARTMENT**  
 Applications are invited for the following posts:  
 Education Section:  
 TWO ASSISTANT ARCHITECTS, A.P.T. IV (£1,140-£1,310).  
 ONE ARCHITECTURAL DRAUGHTSMAN, Misc. IV (£625-£685).  
 ONE BUILDING INSPECTOR, Misc. VI (£760-£825).  
 Housing or General Work:  
 TWO SENIOR ASSISTANT ARCHITECTS, A.P.T. V (£1,310-£1,480).  
 ONE ASSISTANT ARCHITECT, A.P.T. IV (£1,140-£1,310).  
 ONE ARCHITECTURAL DRAUGHTSMAN, Misc. V (£685-£760).  
 ONE QUANTITY SURVEYOR'S ASSISTANT, General Div. (£220-£630 according to age and qualifications) or A.P.T. I (£645-£815).  
 ONE CLERK OF WORKS, Misc. VI (£760-£825).  
 The newly formed Borough Architect's Department is in course of reorganisation and has a large programme of redevelopment and reconstruction. Some of these posts may, therefore, be considered for early promotion.  
 Applications giving details of age, qualifications and experience, together with names of two referees, should be forwarded to the Borough Architect, Town Hall, Oldham, and received not later than Monday, 7th August, 1961.  
 8647

**COUNTY OF LINCOLN**  
**PARTS OF KESTOVEN**  
**COUNTY ARCHITECT'S DEPARTMENT**  
**ENGINEER'S ASSISTANT (HEATING)**  
 A.P.T. Grade II (£815-£960)  
 Full particulars of the above appointment may be obtained from the County Architect, County Offices, Sleaford, Lincs.  
 Applications from suitably qualified persons, together with the names and addresses of two referees, should reach the undersigned not later than the 3rd September, 1961.

J. E. BLOW,  
 Clerk of the County Council.  
 County Offices,  
 Sleaford,  
 Lincs.  
 S8656

**COVENTRY**  
 Applications are invited for the appointment of:  
**SENIOR PLANNING OFFICER**  
**(REDEVELOPMENT)**  
 For redevelopment schemes including high density Urban Renewal, requiring enthusiastic architect.  
 Planning qualification/housing experience additional advantages.  
 Salary Grade: A.P.T. V, £1,310-£1,480 or Scale "A" £1,350-£1,565, according to qualification/experience.  
 Post permanent and pensionable subject to satisfactory medical certificate. Housing accommodation in approved circumstances or up to 95 per cent. advance for house purchase.  
 Removal expenses loan. Five-day working week.  
 Application forms from Department of Architecture and Planning, Council House, returnable within 10 days of publication.  
 S8657

**STAINES URBAN DISTRICT COUNCIL**  
**ENGINEER AND SURVEYOR'S DEPARTMENT**  
**ARCHITECTURAL ASSISTANT, A.P.T. IV,**  
 £1,140-£1,310 plus London weighting.  
 Applicants must have had a good experience in architectural design and building work under construction and should have passed the examination for association of the R.I.B.A.  
 Application form may be obtained from the Engineer and Surveyor, Shortwood House, 240, London Road, Staines, and must be returned to him in suitably endorsed envelope, not later than 5 p.m. on Thursday, 10th August, 1961.  
 S8657

**F. ENTWISTLE,**  
 Clerk of the Council.  
 S8658

**COUNTY BOROUGH OF GLOUCESTER**  
**CITY ARCHITECT'S DEPARTMENT**  
 Applications are invited for the following appointments:  
 (a) ASSISTANT ARCHITECT, A.P.T. Grade III, £960-£1,140, Parts I and II, R.I.B.A. Final, and appropriate experience.  
 (b) ARCHITECTURAL ASSISTANT within Grades A.P.T. I, £645-£815, and A.P.T. II, £815-£960.  
 Applicants to have the appropriate qualifications as quoted, and salaries above the minimum of the Grade may be considered.  
 Interesting contemporary work. Superannuable posts; Medical examination; Municipal experience not essential.  
 Full particulars to City Architect, Suffolk House, Greyfriars, Gloucester, not later than Tuesday, 8th August, 1961.  
 8708

**AUSTRALIA**  
**TOWN PLANNING STAFF**  
**N.S.W. DEPARTMENT OF LOCAL GOVERNMENT**  
 Applications are invited for:-  
**TOWN PLANNERS**, salary £A2,041-£A2,106.  
**ASSISTANT TOWN PLANNERS** (Certificated) £A1,786-£A1,821; (Uncertificated) £A1,626-£A1,706.  
**QUALIFICATIONS:** University Degree in appropriate Faculties of recognised Universities, including studies in either Architecture, Engineering, Surveying, Mathematics, Economics, Geography or Geology. Corporate Membership of the Institution of Engineers, the Royal Institute of Architects or the Institution of Surveyors and/or Associate Membership of the Town Planning Institute, London. University graduates in Economics, Geography or Geology who apply must have had experience in town planning also.  
 Status and salary on appointment determined according to qualifications and previous experience. Certification as a Town Planner in New South Wales is contingent upon completion of qualifications under the Local Government Act.  
 Permanent appointment available with superannuation, sick and extended leave benefits.  
 Passage to New South Wales for successful applicants and family under 18 years of age.  
 For further particulars and application forms please write to the Agent General for New South Wales, 56, Strand, London, W.C.2, with whom four copies of applications (including a recent photograph of the applicant) should be lodged by 20th August, 1961.  
 8662

**BOROUGH OF BROMLEY**  
**SENIOR ASSISTANT ARCHITECT**  
 A.P.T. IV V (£1,185-£1,525)  
 Applications are invited from suitably qualified persons for the above appointment. A varied programme of work includes schools, housing, public buildings and the maintenance of all Corporation property.  
 Housing accommodation will be made available if required.  
 Applications stating age, qualifications, experience, present appointment and salary and the names of two referees should reach the Borough Engineer, Municipal Buildings, Bromley, by 14th August, 1961.

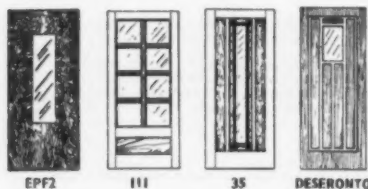
LIONEL KAYE,  
 Town Clerk.  
 Municipal Buildings,  
 Bromley, Kent.  
 8681

**BOROUGH OF WATFORD**  
 Applications are invited for the following appointments:-  
 (a) ASSISTANT ARCHITECT. Salary within Grade A.P.T. IV (£1,140-£1,310 per annum).  
 (b) ARCHITECTURAL ASSISTANT. Salary within Grades A.P.T. II/III (£815-£1,140 per annum).  
 The assistant appointed to post (a) will be a Section Leader and will carry a considerable amount of responsibility.  
 Commencing salaries will be commensurate with experience and ability and it may be possible to provide housing accommodation.  
 Applications to the undersigned as soon as possible.  
 F. C. SAGE,  
 Borough Engineer, Surveyor & Architect,  
 Town Hall,  
 Watford,  
 Herts.  
 8693

**BOROUGH OF THORNABY-ON-TEES**  
**ASSISTANT ARCHITECT**  
 Applications are invited from candidates who have passed the Intermediate R.I.B.A. for this appointment in the Borough Engineer's Department in accordance with the National Scheme of Conditions of Service on Grade A.P.T. II (£815-£960).  
 Housing accommodation will be provided if required and half removal expenses paid.  
 Applications stating qualifications and experience and giving names and addresses of two referees should be delivered to the Borough Engineer, Town Hall, Thornaby-on-Tees, not later than 14th August, 1961.

A. STOCKWELL,  
 Town Clerk.  
 8694

**LANCASHIRE COUNTY COUNCIL**  
 A vacancy exists in a newly formed group in the County Architect's Department for a qualified and enthusiastic ASSISTANT ARCHITECT with a dominant interest in organisation and management processes.  
 The appointment will be within the salary scale A.P.T. V, £1,310-£1,480, and application forms may be obtained from the County Architect, P.O. Box 26, County Hall, Preston, to be returned not later than the 4th August, 1961.  
 8695



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**PROVINCIAL PLANNING OFFICE  
DEPARTMENT OF MUNICIPAL AFFAIRS AND  
SUPPLY  
PROVINCE OF NEWFOUNDLAND, CANADA  
APPOINTMENT OF  
ASSISTANT PLANNING DIRECTOR**

Applications are invited from suitably qualified and experienced persons for the above appointment in the Provincial Planning Division of the Department of Municipal Affairs and Supply in St. John's.

Duties will include the preparation of Municipal and Regional Plans including detailed designs for communities and districts throughout the Province, and the control of development in accordance with various Provincial regulations. This is a challenging position requiring energy and initiative, and a wide range of talents.

The office is situated in St. John's, but some travelling within the Province will be required. Candidates must have appropriate professional qualifications in Town Planning together with practical experience. Experience in public relations and ability to address meetings of different types is an asset.

This is a permanent position but a successful applicant who receives assisted passage to St. John's will be required to sign a two-year contract in the first instance.

Salary will be commensurate with the qualifications and experience and will be decided after applications have been received.

Applications giving full details of candidate's age, education, professional qualifications, appointments held; professional experience, and salary expected, together with the names of two referees should be sent to: J. T. Allston, Director of Urban and Rural Planning, Department of Municipal Affairs and Supply, Confederation Building, St. John's, Newfoundland. Applications should be received not later than one month from the date of publication of this notice.

C. W. POWELL,

Deputy Minister of Municipal Affairs,  
S8685

**BOROUGH OF STOKE NEWINGTON  
APPOINTMENT OF ASSISTANT ARCHITECT  
(A.P.T. IV, £1,140 to £1,310 plus £45 L.W.)**

Applications are invited for the above appointment in the Architectural Section of the Department. Applicants must be Associate Members of the R.I.B.A. with at least three years' experience since qualifying. A contemporary outlook with first class ability in design and construction is essential.

The present work of the department includes multi-storey flats and public buildings, together with design of a new swimming bath.

Housing accommodation cannot be provided. Forms of application obtainable from me and returnable not later than 15th August.

A. J. HAZARD,  
Town Clerk,

Town Hall,  
Stoke Newington Church Street,  
London, N.16. 8637

**BOROUGH OF SWINDON  
ARCHITECTURAL ASSISTANT**

Applications are invited for the above appointment in the Borough Architect's Department at a salary within A.P.T. Grades III/IV (£960-£1,310), according to experience.

Applicants must have passed the Final Examination of the Royal Institute of British Architects. The Department is engaged in a large and varied programme of development, including housing schemes, neighbourhood shopping centres, civic works and industrial buildings.

Housing accommodation and assistance with removal expenses may be offered.

Applications, on forms to be obtained from the Town Clerk, Civic Offices, Swindon, must be returned by 10th August, 1961. 8689

**WEST SUSSEX COUNTY COUNCIL  
COUNTY ARCHITECT'S DEPARTMENT**

Applications are invited for the following appointment:-

**ARCHITECTURAL ASSISTANT** at a salary in accordance with A.P.T. II of the National Scales of Salaries (£815-£960 per annum). Commencing salary according to experience. Further particulars should be obtained from the County Architect, County Hall, Chichester, to whom all applications must be submitted by 8th August, 1961.

T. C. HAYWARD,

Clerk of the County Council,  
County Hall,  
Chichester. 8689

**ESSEX COUNTY COUNCIL  
ILFORD COMMITTEE FOR EDUCATION**

Applications are invited for the appointment in the Education Architects' Section of the Borough Engineer's Office of one MAINTENANCE ASSISTANT, A.P.T. Grade I (£645-£815 per annum) plus appropriate London weighting.

Applicants should have good knowledge of building construction and experience in dealing with minor alterations and general maintenance of school buildings.

There will also be paid such travelling and subsistence allowances as may be determined from time to time by the Essex County Council.

The post is superannuable and subject to medical examination.

Applications should be made on a form to be obtained from and returned to the Borough Engineer and Surveyor, Town Hall, Ilford, together with copies of not more than three recent testimonials, within 14 days of the appearance of this advertisement. 8674

**BOROUGH OF SWINTON AND PENDLEBURY  
ARCHITECTURAL ASSISTANT**

Applications are invited for this position within A.P.T. Division Grade III, the commencing salary being determined by qualifications and experience. Form of application obtainable from Borough Engineer, Town Hall, Swinton, Lancs., must be returned by 21st August. 8641

**METROPOLITAN BOROUGH OF  
WANDSWORTH**

**ARCHITECTURAL ASSISTANT** required, unqualified or partly qualified. Grade and salary according to ability and experience within Grades I-III (£685-£1,185). Forms from the Borough Engineer, Municipal Buildings, Wandsworth, S.W.18. Closing date 7th August, 1961.

J. NOEL MARTIN,  
Town Clerk,  
8665

**SHROPSHIRE**

There are vacancies for **SENIOR ASSISTANT ARCHITECTS** in the County Architect's Department. Salary grade up to £1,310 p.a. N.I.C. Conditions. Five-day week. A disturbance allowance or weekly separation allowance will be payable to a married man taking up the appointment. Conditions of service and application forms obtainable from Ralph Crowe, A.A.Dipl., A.R.I.B.A., A.M.T.P.I., County Architect, Column House, London Road, Shrewsbury. S8678

**BOROUGH OF BLYTH  
ARCHITECTURAL ASSISTANT**

Applications are invited for the above post in the Department of the Borough Engineer and Surveyor at a salary in accordance with A.P.T. Grade III, namely £960 rising by annual increments to £1,140.

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

Applications, with names of two referees, should be delivered to the undersigned not later than 21st August, 1961.

Canvassing will disqualify and applicants should disclose relationship with any member or official of the Council.

Housing accommodation will be provided if required.

EDWIN W. CARTER,  
Town Clerk,

Dinsdale House,  
Marine Terrace,  
Blyth. 8673

**THE URBAN DISTRICT COUNCIL OF ESTON**

(a) **APPOINTMENT OF CHIEF ARCHITECTURAL ASSISTANT, A.P.T. IV (£1,140-£1,310).**

(b) **APPOINTMENT OF QUANTITY SURVEYING ASSISTANT, A.P.T. III (£960-£1,140).**

Applications are invited for the above appointments. Applicants for (a) should have experience in housing work and should hold an appropriate architectural qualification. Applicants for (b) should have experience on housing schemes, be able to prepare bills of quantities, undertake the measurement of work on site and the preparation of interim certificates and final accounts, and preference will be given to candidates with an appropriate qualification. Both appointments will be subject to one month's notice on either side, the National Scheme of Conditions of Service, the Superannuation Scheme, and a medical examination. Housing accommodation will be made available if required. Applications stating age, training, qualifications and experience, together with the names of two referees, are to be sent to me by 4th September, 1961.

N. C. HARRISON, A.M.I.C.E., M.I.Mun.E.,  
Engineer and Surveyor.

Town Hall,  
Fabian Road,  
South Bank,  
Middlesbrough. 8676

**BOROUGH OF MARGATE  
BOROUGH ENGINEER'S DEPARTMENT  
ARCHITECTURAL STAFF**

Applications are invited for the following appointments in the office of the Borough Engineer and Surveyor:-

(a) **ASSISTANT ARCHITECT** on salary A.P.T. IV (£1,140 rising by annual increments to a maximum of £1,310 per annum).

(b) **ARCHITECTURAL ASSISTANT** on salary A.P.T. II (£815 rising by annual increments to a maximum of £960 per annum).

Candidates for appointment (a) should be fully qualified members of the Royal Institute of British Architects and have had considerable experience in the design and construction of houses from the preliminary stages right through to the supervision of actual erection. Candidates for appointment (b) should have had experience in general architectural work.

Applications, giving details of experience and the names of two referees and endorsed "Architectural Staff" are to be received by the Borough Engineer and Surveyor, 38, Grosvenor Place, Margate, by Saturday, 12th August, 1961.

The Council will assist in the provision of housing accommodation if required, and candidates should disclose whether they are related to any member or Chief Officer of the Council.

T. F. SIDNELL,  
Town Clerk.

Town Clerk's Office,  
40, Grosvenor Place,  
Margate.  
17th July, 1961. 8677

**GLENROTHES DEVELOPMENT  
CORPORATION**

**SENIOR ARCHITECT** required for a variety of work including the design of Industrial, Shopping and Commercial Buildings. This post offers excellent opportunities for an architect with wide experience, imagination and enthusiasm. Salary up to £1,570 per annum according to experience.

House to rent available. Applications to Secretary and Legal Adviser, Glenrothes Development Corporation, Glenrothes, Fife, by 11th August, 1961. 8642

**CITY OF STOKE-ON-TRENT**

**ARCHITECTS' DEPARTMENT**  
**ARCHITECTURAL ASSISTANTS** are invited to apply for appointments on Grade A.P.T. II (£815-£960) and Grade A.P.T. I (£645-£815).

Commencing salary in accordance with qualifications and experience.

Applicants of R.I.B.A. Intermediate standard should forward details of training and experience etc., to J. R. Piggett Esq., T.D., F.R.I.B.A., City Architect, Kingsway, Stoke-on-Trent, by Friday, 11th August, 1961.

HARRY TAYLOR,  
Town Clerk,  
8690

**ETON RURAL DISTRICT COUNCIL  
APPOINTMENT OF SURVEYING ASSISTANT  
ENGINEER AND SURVEYOR'S DEPARTMENT**

Applications are invited for the above appointment at a salary within Grade A.P.T. II (£815-£960 per annum). Housing accommodation will be available to the person appointed, if necessary, and the Council normally assist with removal expenses.

Applicants who should be of Intermediate R.I.C.S. or R.I.B.A. standard, should be generally experienced in housing estate development and have specialised knowledge of house design and detailing.

The appointment which will be subject to the Council's Conditions of Service and the provisions of the Local Government Superannuation Acts may be terminated by one month's notice either side.

Applications stating age, education, experience and giving the names and addresses of two technical referees, should be sent to the undersigned to arrive not later than the 11th August, 1961.

D. P. HARRISON,  
Clerk to the Council.

Council Offices,  
Windsor Road,  
Slough, Bucks. 88716

**ASSISTANT ARCHITECT** required by HAYES & PARLINGTON U.D. Salary within Grade A.P.T. IV i.e. £1,140-£1,310 p.a. plus appropriate London weighting. Preference given to finalists of the R.I.B.A. Successful candidate must be capable of preparing sketch designs, full working drawings, specifications, supervision of building contracts, etc. Housing accommodation provided if necessary. Five-day week. Further particulars and conditions of service and form of application obtainable from the undersigned, which when completed must be returned by 14th August, 1961.

GEORGE HOOPER,  
Clerk and Solicitor.

Town Hall,  
Hayes, Middx. 88711

**BOROUGH OF DOVER**

**APPOINTMENT OF ASSISTANT ARCHITECT**  
Applications are invited for the appointment of Assistant Architect (Grades A.P.T. I/II, £645-£960) on the staff of the Borough Engineer, Surveyor and Water Engineer.

Preference will be given to applicants who have passed the Intermediate R.I.B.A. examination, or its equivalent, at one of the recognised schools of Architecture, but experienced architectural draughtsmen will be considered.

The commencing salary will be fixed within the grades mentioned, according to experience and ability.

The Corporation will be prepared to assist, if need be, in the matter of housing accommodation. Applications, stating age, qualifications and experience, with the names of two persons to whom reference may be made, should reach the Borough Engineer, Brook House, Dover, not later than Monday, 14th August.

JAMES A. JOHNSON,  
Town Clerk.

New Bridge House,  
Dover,  
20th July 1961. 8721

**HAVERFORDWEST RURAL DISTRICT  
COUNCIL**

The Council invite applications for the under-mentioned appointment in the Building Surveyor's Department:-

**ARCHITECTURAL ASSISTANT**  
A.P.T. II, £815-£960 per annum. Experience required in connection with housing works either with a local authority or in private employ.

The appointment, which is superannuable, will be made in accordance with the National Joint Conditions of Service, and is terminable by one month's notice on either side.

Written applications to be received by the undersigned not later than 15th August, 1961, accompanied by three recent testimonials. State experience, qualifications, etc.

HENRY J. DICKMAN,  
Clerk of the Council.

8/10 Picton Place,  
Haverfordwest,  
Pembrokeshire. 88718



**BOROUGH OF WREXHAM  
ENGINEER AND SURVEYOR'S DEPARTMENT  
ARCHITECTURAL ASSISTANTS**

Applications are invited for  
1. ASSISTANT ARCHITECT. Salary within the range of A.P.T. III (£960-£1,140 p.a.).  
2. ASSISTANT ARCHITECT. Salary within the range of A.P.T. I (£645-£815 p.a.).  
Housing accommodation for one and two and car allowance for one offered.  
Further particulars from the Borough Surveyor. Closing date for applications Monday, 21st August, 1961.

PHILIP J. WALTERS,  
Town Clerk.

Guildhall,  
Wrexham.  
18th July, 1961. S8713

BBC requires an ASSISTANT to the Acoustics Architect in Building Department, based in London. Candidates (British Subjects only) will be required to have professional qualifications in Architecture, Physics or Engineering and have design experience. Applicants not qualified in Physics must have a knowledge of this subject. Commencing salary £1,380 p.a. to £1,540 p.a. according to qualifications and experience in a scale rising to a maximum of £1,780 p.a. Write for application form to Engineering Recruitment Officer, Broadcasting House, London, W.1, quoting reference 61.E.165.A.J. S8722

**METROPOLITAN BOROUGH OF GREENWICH  
APPOINTMENT OF**

**PRINCIPAL ARCHITECTURAL ASSISTANT**  
Applications are invited for the appointment of a Principal Architectural Assistant in the Borough Engineer and Surveyor's Department. Salary grade A.P.T. V (£1,355-£1,525 per annum, including London weighting). Commencing salary in accordance with qualifications and experience.

Candidates should be Registered Architects, preferably Associates of the R.I.B.A., with experience in housing and other municipal projects. Application forms, obtainable from the Borough Engineer and Surveyor, Town Hall, Greenwich High Road, S.E.10, are to be returned to him by noon on Friday, August 18th. S8715

**Tenders Invited**

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

**COUNTY BOROUGH OF BRIGHTON  
Fixed Price Tenders are invited for  
ERECTION OF 22 OLD PEOPLE'S BUNGALOWS ON SITES AT MOULSECOMB AND LOWER BEVEDEAN.**

Bills of Quantities and form of tender may be obtained from the Borough Surveyor, Engineer & Planning Officer, 26-30 Kings Road, Brighton, on or after Monday 31st July, 1961, on receipt of a returnable deposit of £2 2s. Drawings may be inspected upon application at the Borough Surveyor's office. Tenders are to be delivered to the Town Clerk in the envelope provided, not bearing any name or mark indicating the sender, by noon on Tuesday, 5th September, 1961.

W. O. DODD,  
Town Clerk.  
S8714

**Architectural Appointments Vacant**

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

**£850-£1,600. ARCHITECTURAL ASSISTANTS** required. Long term prospects. Non-contributory pension and life assurance schemes. Five-day week. Telephone or write: Ronald Ward & Partners, 29, Chesham Place, Belgrave Square, S.W.1. Belgravia 3361. TC6105

**ARCHITECTURAL ASSISTANTS** of all grades required in a busy provincial practice. Good salaries to right applicants. Pension Scheme. Accommodation. Apply with full details to:

Ruddle & Wilkinson, F/L/A.R.I.B.A.,  
Long Causeway Chambers,  
Peterborough. TC6984

**SENIOR ARCHITECTURAL ASSISTANT** with design and administrative ability is required to take charge of major project in private architect's Oxford office. Five-day week, progressive work, cheerful atmosphere. Holiday arrangements respected. Suitable salary and excellent prospects for a keen and conscientious man or woman. Apply with details, Box S8546.

**SENIOR ASSISTANTS** required for work on large Hospital programme, excellent opportunities for the right men, salary £1,000-£1,400. Luncheon Vouchers and five-day week. Write giving full particulars to W. H. Watkins, Gray and Partners, 57, Catherine Place, S.W.1. TC5633

**PACKAGE DEAL**  
**SENIOR ASSISTANT**, qualified, required to help run compact Architect's Department of recently formed associate company of major civil engineering concern, carrying out a design-and-construct service. Adaptable man with 3-5 years' post-A.R.I.B.A. experience. Salary about £1,350, with pension scheme and generous car allowance. Wonderful opportunity to get in on the ground floor. You may even get rides in the firm's aeroplane! Details of work done, please, to: W. J. Allen, A.R.I.B.A., Fitzpatrick & Nicholson, Ltd., 455 Old Ford Road, E.3. S8525

**ARCHITECTURAL ASSISTANT**

(Qualified)

**REQUIRED** for permanent position in Architect's department of a large Group of Insurance Companies in Liverpool. Age 27/35; non-contributory pension scheme; progressive salary. Please apply in writing to:

Box No. E 948,  
Lee & Nightingale,  
Liverpool, 2. S8523

**WOLVERHAMPTON**. Norman & Dawbarn require an ASSISTANT in their Midlands Office. This position could afford useful experience of small and medium size jobs in a young but expanding office, with possibility of later transfer to London Office or overseas if desired. Minimum two years' office experience required if qualified, four years' if Intermediate. Excellent working conditions, five-day week, three weeks' leave, L.V.s, etc. Write or phone 7 Portland Place, London, W.1 (Langham 8011), or Heanton House, Salop Street, Wolverhampton (Tel. 27387). TC8548

**EXETER**. Are you interested in a job in congenial surroundings and with an opportunity to use your own initiative in an expanding practice? ASSISTANTS of all grades required. John Radford, A.R.I.B.A., 14, Southernhay West, Exeter. S8532

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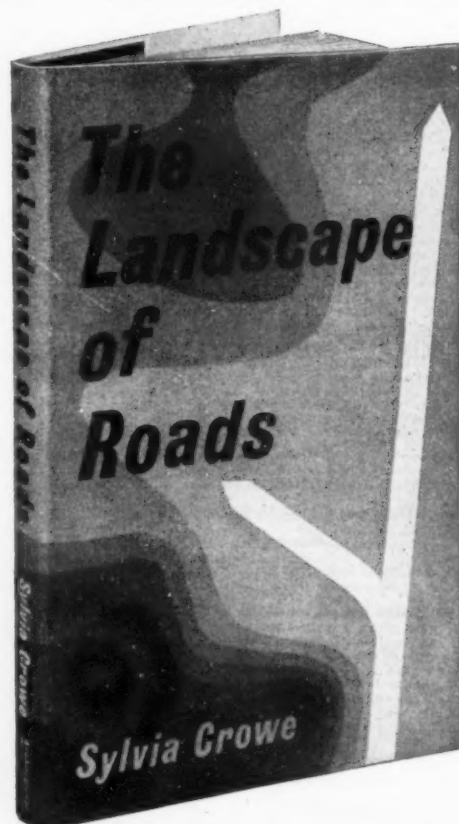
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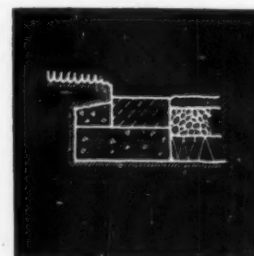
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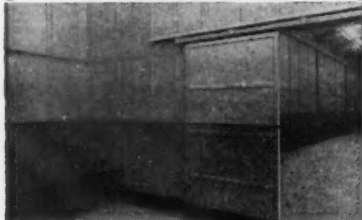
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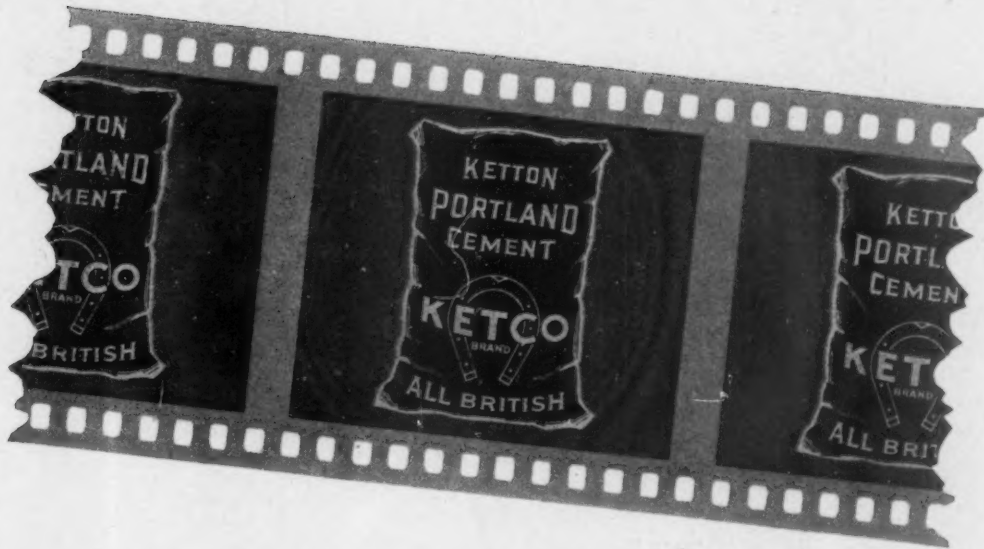
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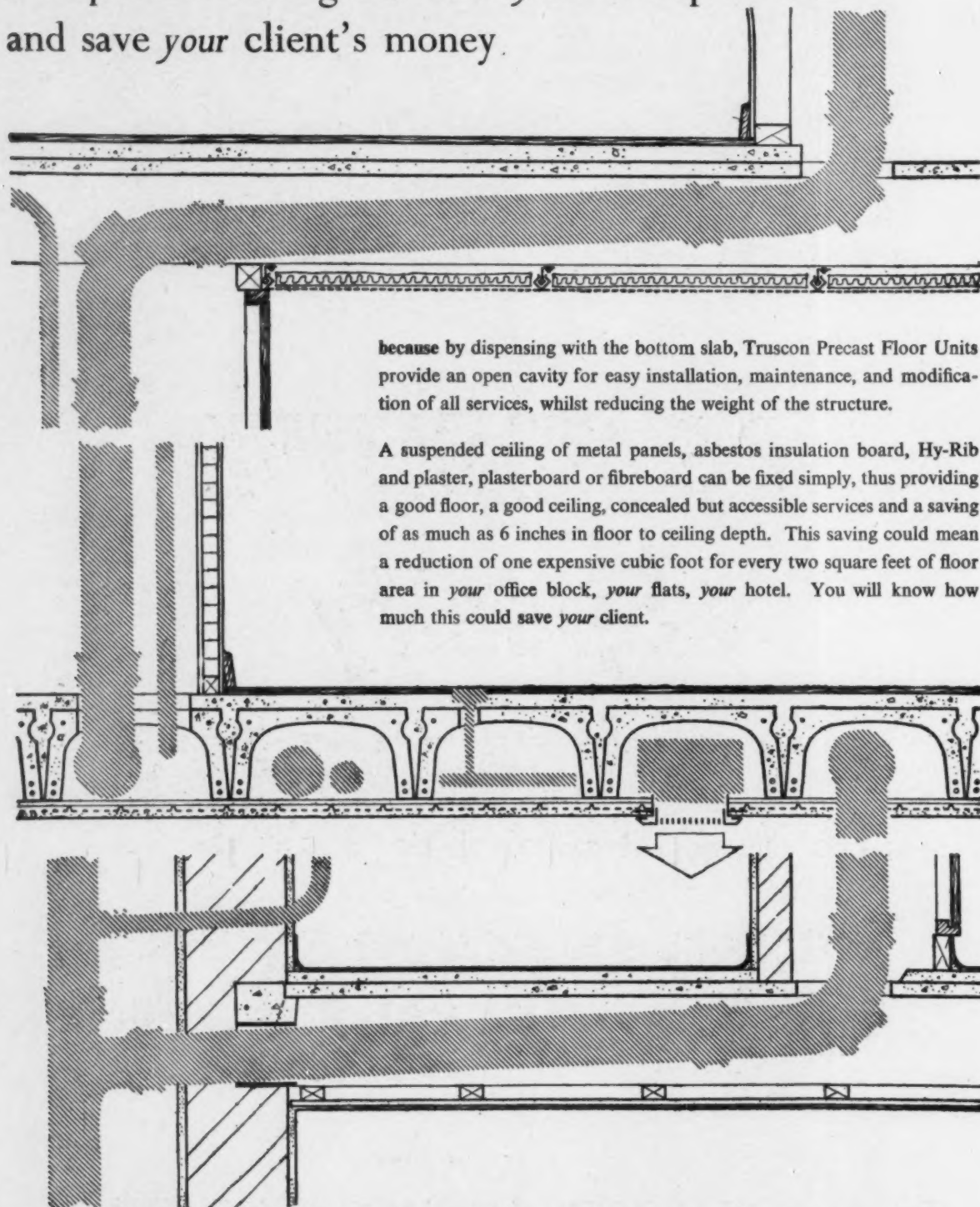
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