The Architects' JOURNAL for July 24, 1958

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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CURRENT BUILDING
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Details of Planning, Construction, Finishes and Costs
Buildings in the News
Building Costs Analysed

Architectural Appointments Wanted and Vacant

No. 3308] [Vol. 128

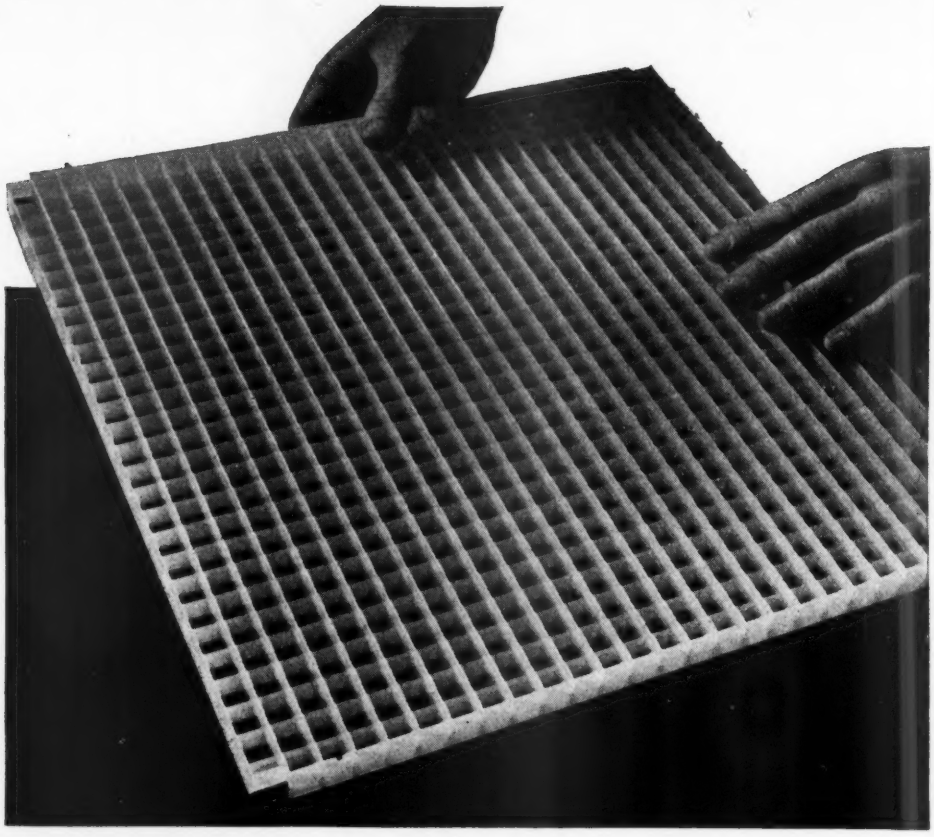
THE ARCHITECTURAL PRESS
11 and 13, Queen Anne's Gate, Westminster, S.W.1. *'Phone: Whitehall 0611*

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

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

IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square.	Sloane 1601/3158
IIBDID	Incorporated Institute of British Decorators and Interior Designers. 100, Park Street, Grosvenor Square, W.1.	Mayfair 7086
ILA	Institute of Landscape Architects. 2, Guildford Place, W.C.1.	Holborn 0281
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand, W.C.2.	Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1.	Museum 7179
IQS	Institute of Quantity Surveyors. 98, Gloucester Place, W.1.	Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3.	Avenue 6851
IRA	Institute of Registered Architects. 47, Victoria Street, S.W.1.	Abbey 6172
ISE	Institution of Structural Engineers. 11, Upper Belgrave Street, S.W.1.	Sloane 7128
JFRO	Joint Fire Research Organisation (DSIR & Fire Offices' Committee). Fire Research Station, Boreham Wood, Herts.	Elstree 1341/1797
LDA	Lead Development Association. 18, Adam Street, W.C.2.	Whitehall 4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1.	Museum 3891
LSPC	Lead Sheet and Pipe Council. Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1.	Trafalgar 7711
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1.	Mayfair 9400
MOH	Ministry of Health. 23, Savile Row, W.1.	Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1.	Whitehall 4300
MOLNS	Ministry of Labour and National Service, 8, St. James's Square, S.W.1.	Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, W.C.2.	Gerrard 6933
MOT	Ministry of Transport, Berkeley Square House, Berkeley Square, W.1.	Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1.	Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1.	Abbey 1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1.	Abbey 4813
NBR	National Buildings Record, 31, Chester Terrace, Regent's Park, N.W.1.	Welbeck 0619
NCBMP	National Council of Building Material Producers, 10, Storey's Gate, S.W.1	Abbey 5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, W.C.2.	Trafalgar 3927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1.	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4.	Macaulay 4451
NFHS	National Federation of Housing Societies. 12, Suffolk St., S.W.1.	Whitehall 1693
NHBRC	National House Builders Registration Council. 58, Portland Place, W.1.	Langham 0064/5
NPL	National Physical Laboratory. Head Office, Teddington.	Molesey 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3.	Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street, S.W.1.	Trafalgar 6838
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1.	Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1.	Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1.	Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh.	Fountainbridge 7631
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1.	Langham 5533
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1.	Whitehall 5322/9245
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1.	Whitehall 3932
RS	Royal Society. Burlington House, Piccadilly, W.1.	Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2.	Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1.	Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19.	Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1.	Victoria 2186
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1.	Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, E.C.3.	Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, W.C.1.	Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1.	Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen	
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1.	Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2.	Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, E.C.4.	City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1.	Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4.	City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1.	Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1.	Grosvenor 6636

or



Paragrid-tile

A NEW TYPE OF LUMINOUS CEILING UNIT

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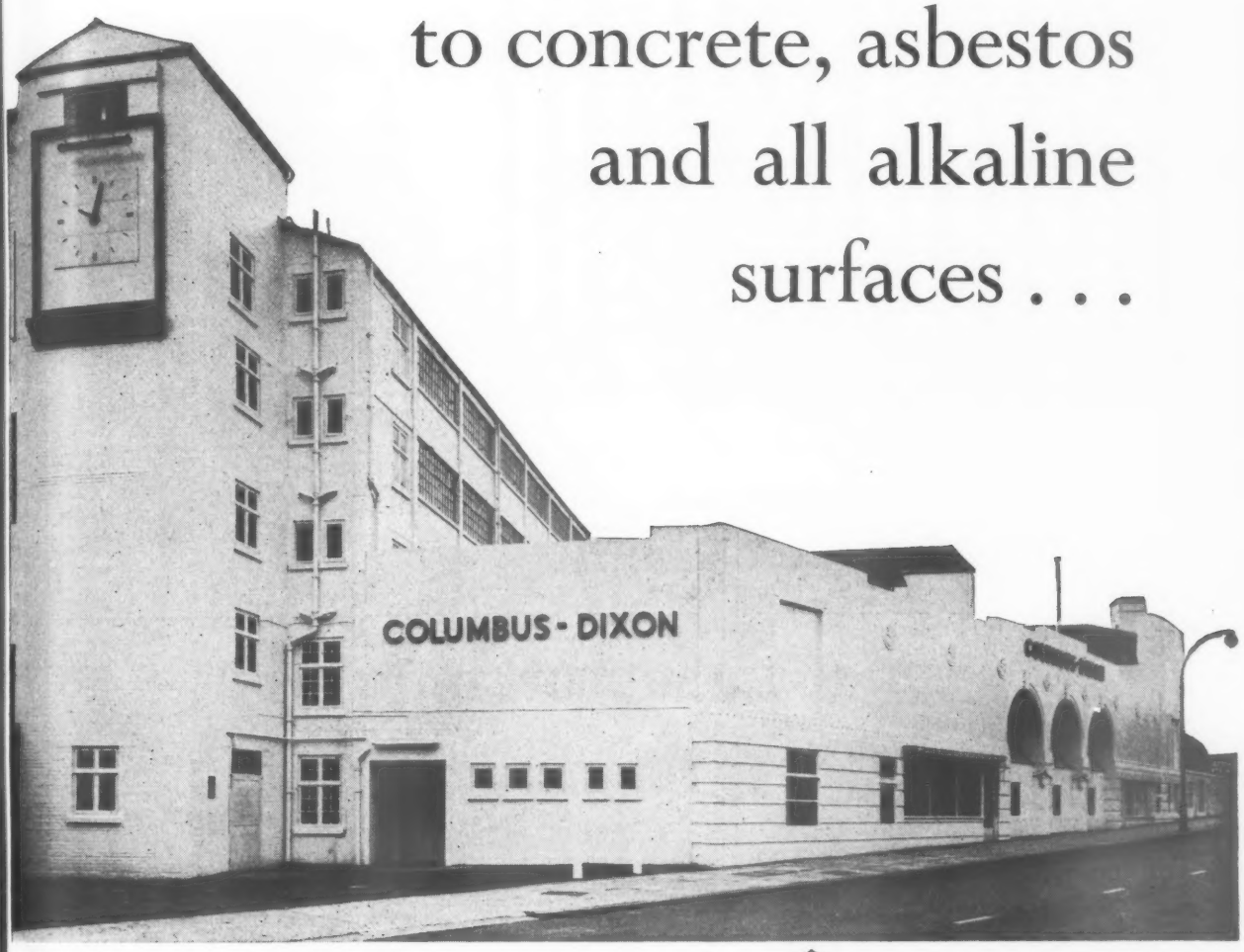

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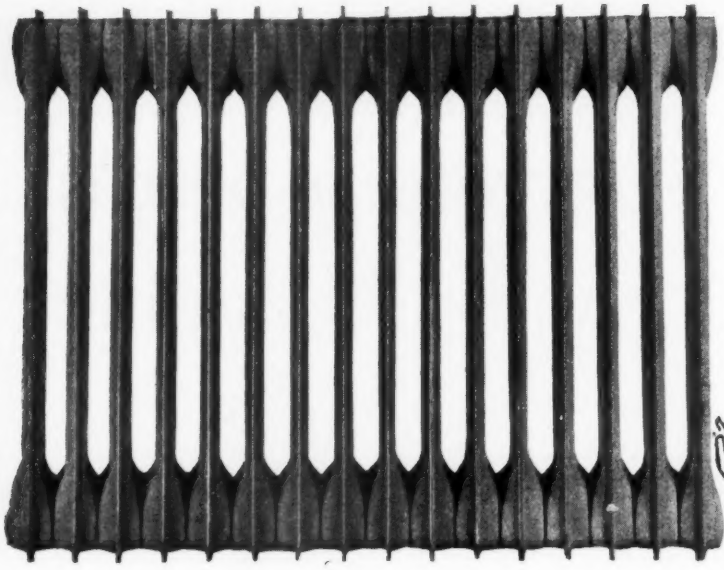

Light

support only required

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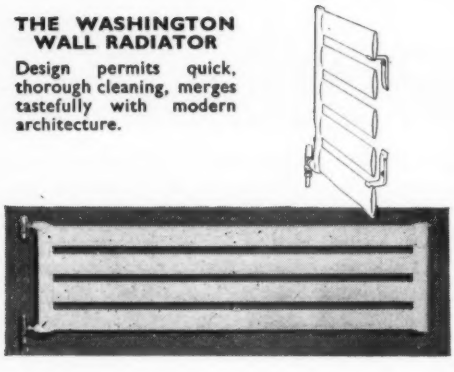
Design permits quick, thorough cleaning, merges tastefully with modern architecture.



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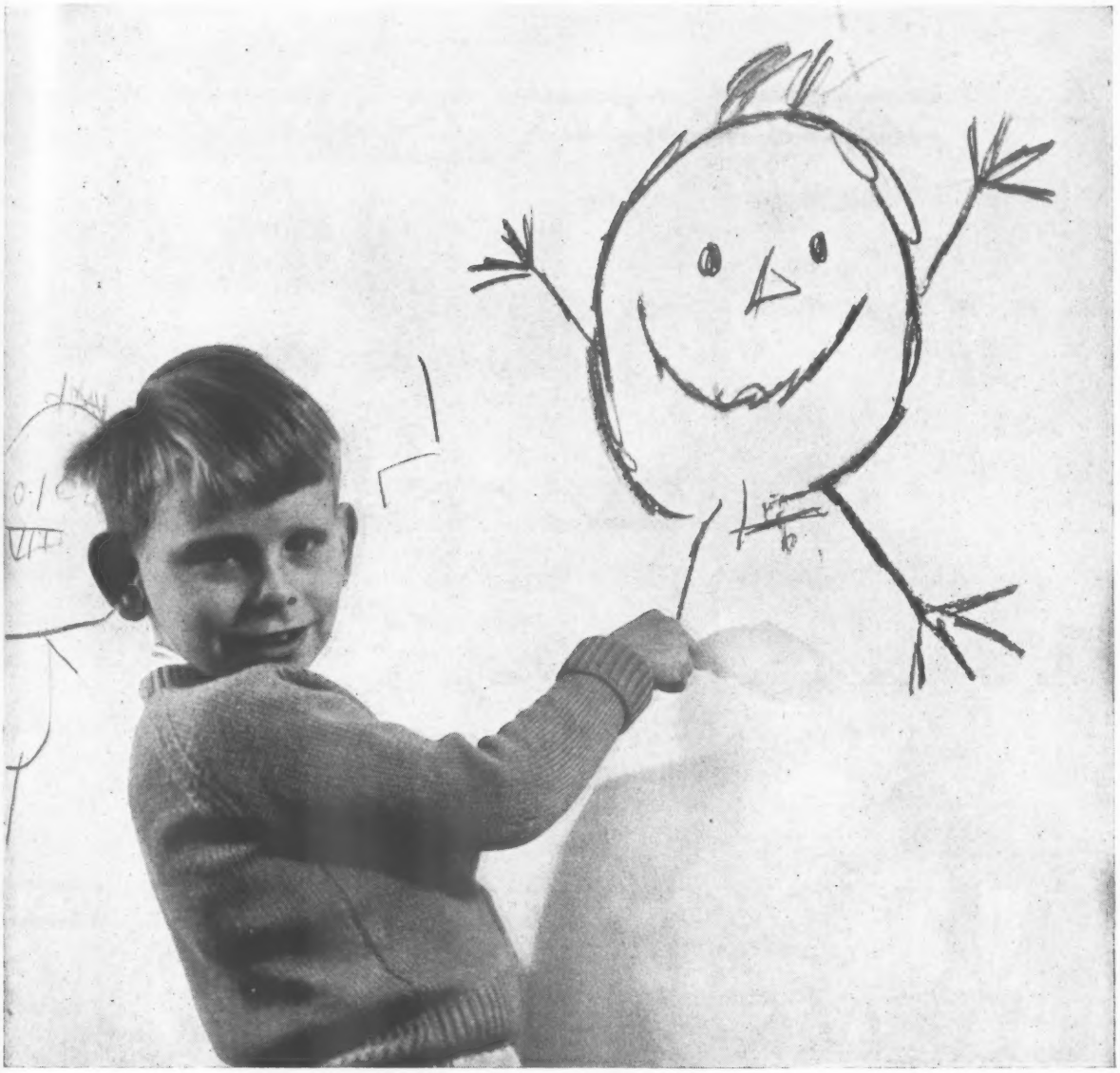

This mural won't last!

Not least among the virtues of TYLEX is the ease with which it can be cleaned down. This brush applied tile-like finish is ideal for school corridors, staircase walls of flats and the many other situations where youthful high spirits tends to leave its mark.

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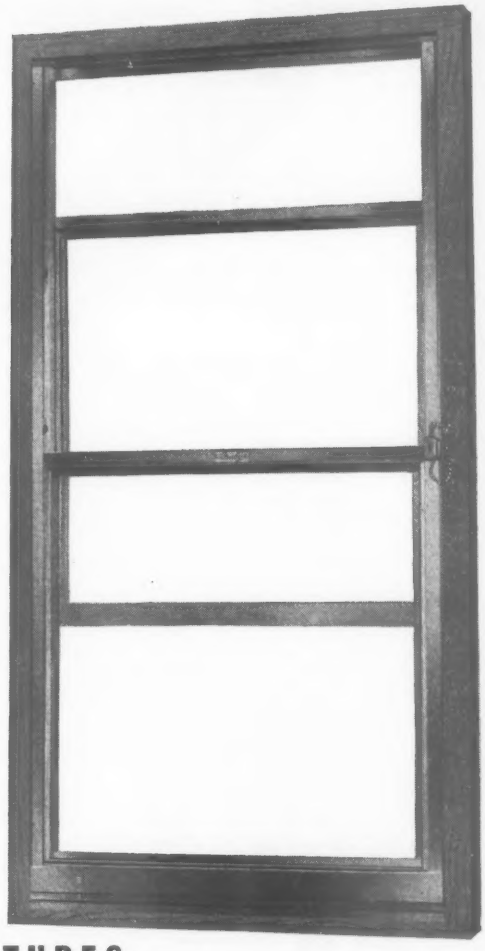
Aluminium Alloy

VERTICAL SLIDING SASH



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

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

IMPORTANT FEATURES

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

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

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

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A device locks sliding sashes when in closed position.

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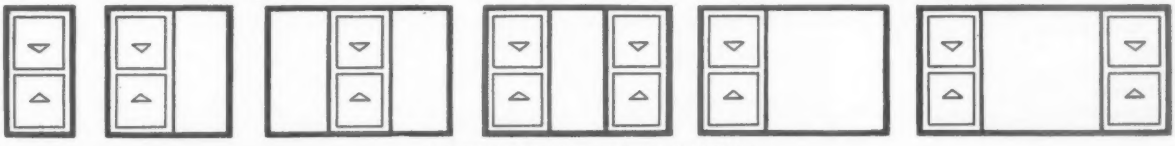

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Palace Street, Plymouth. TELEPHONE: 62261

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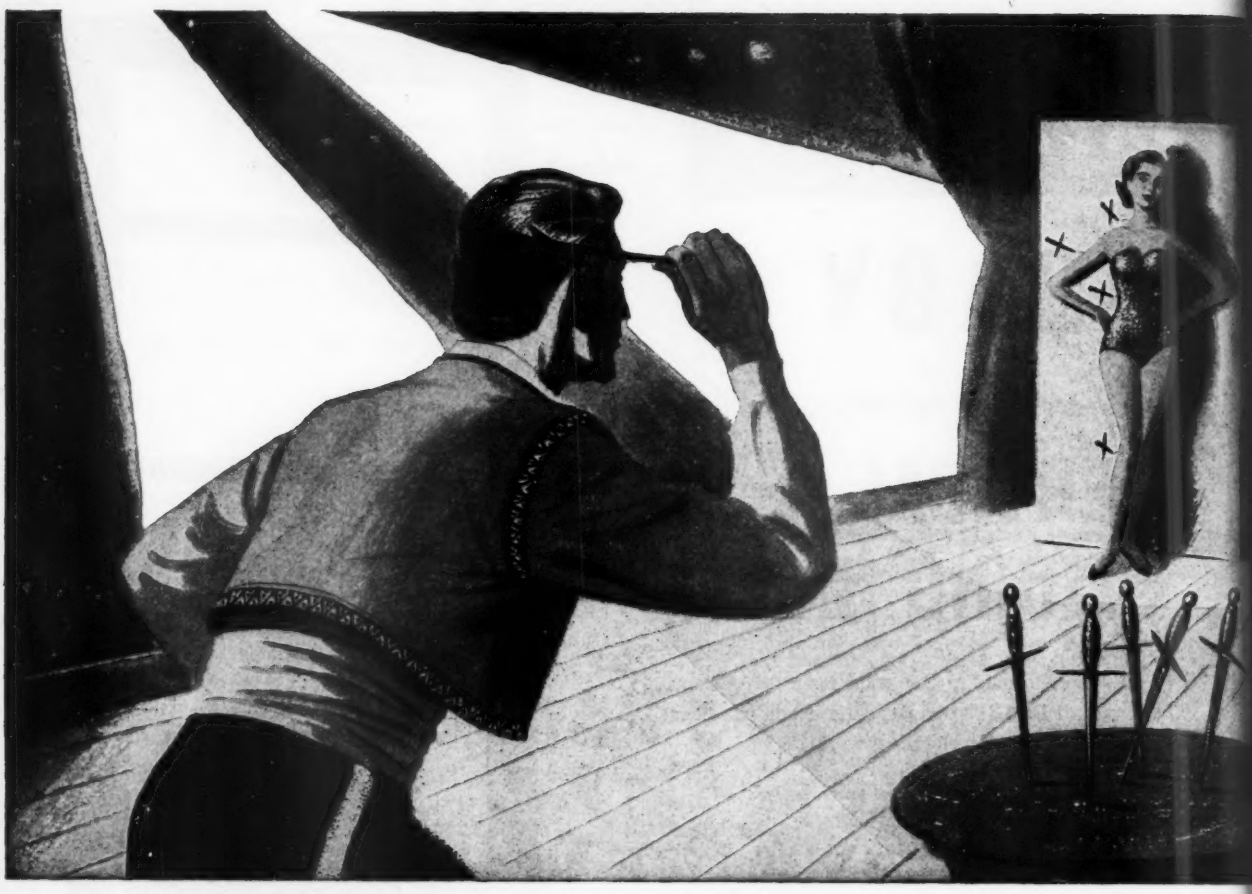

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the basis of the artists superb performance . . . the essential when you are specifying materials or PAINT for that new important assignment.

If it's PAINT, and if it's produced by montgomerie stobo—then you can have all the confidence in the world in recommending it for quality, durability, colour fastness and 'rightness for the job'—nothing is left to chance in its manufacture, which probably accounts for the number of new projects on which it is being used to-day!

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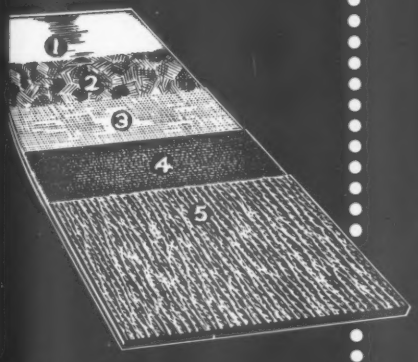

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Zinc Coating

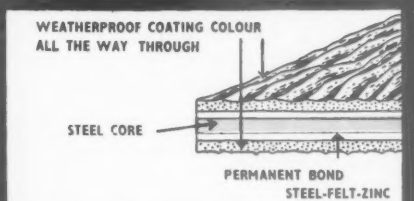
Asbestos Felt which is pressed on to zinc coating whilst still molten

Bitumen impregnant

Final weatherproof coating (applied on both sides of the sheet or on one side only) in one of the four colours

Resistance to corrosion, minimum maintenance and long-life are qualities which have been proved in Galbestos Protected Metal by decades of service in industries of every kind.

Now after years of research and the most stringent tests Robertson Thain announce Colour Galbestos, a product which allies the beauty of colour to the well known advantages of Galbestos Protected Metal.



In Colour Galbestos the colour is not applied to the surface like a paint.
The weatherproof coating which is applied hot contains colour throughout its thickness.

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The extensive laboratory and field equipment can be used to help solve any foundation problem, such as assessment of bearing capacity, the stability of slopes and cuttings, the presence of ground water, accelerated consolidation of soft clays, etc.

If *you* have any problems of this nature or need advice on data already to hand—dial for Douglas; they have put many construction plans on to the right footing!

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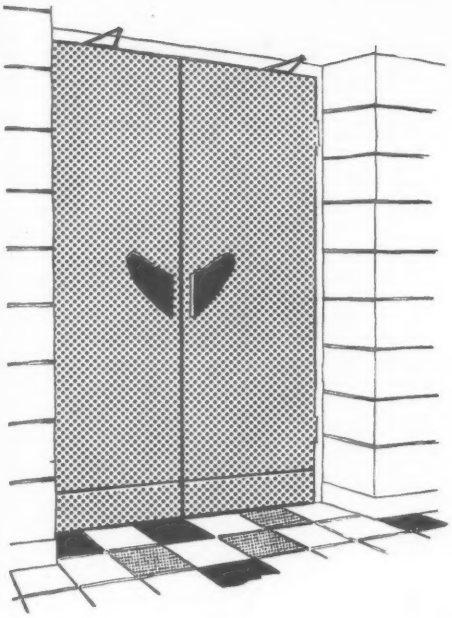

Only the SLIM arms can be seen

The " No. 500 " is a new door closer designed for use when the appearance of the door and surroundings are of first consideration. With nothing visible except the slim arms, which are styled to be as streamlined and unobtrusive as possible, it achieves complete concealment without loss of power or door control. The " No. 500 " is suitable for internal single-action doors not exceeding 7ft. by 3ft. in size, and 70 lb. in weight.

- ★ Smooth and silky check-action.
- ★ Bounce completely eliminated.
- ★ Closing and latch speed fully adjustable.
- ★ Stand open device put in and out of action as desired.
- ★ Body only 1¾in. wide, overall length 13in.
- ★ Opens to 90° or 180° according to fixing position.
- ★ No oil leakage.

N°500

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Concealed Overhead Door Closer

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MK153
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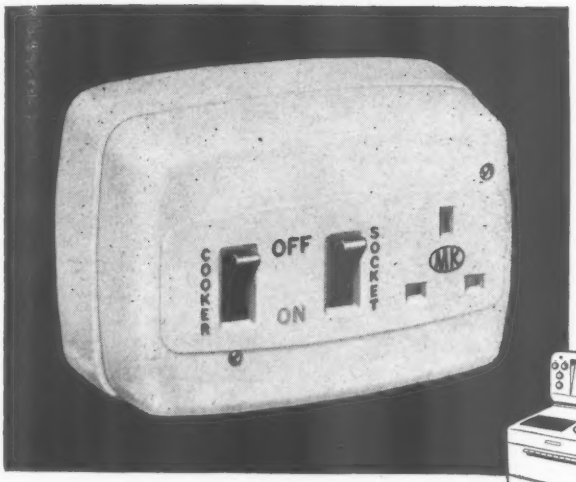
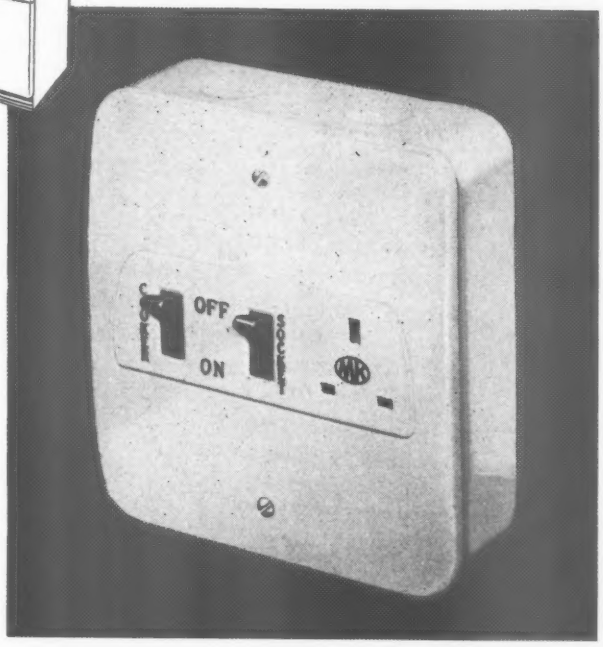


The MK Range of COOKER CONTROL UNITS has EVERYTHING!



9 types to choose from — surface or flush, metalclad or insulated, with or without pilot lamps, 13 ampere or 15 ampere auxiliary circuits.

MK have been specialists in cooker control unit design for many years, and the current range offers you a wide choice of units that are as easy to wire as they are smart to look at. There is an MK design for every installation.

LOOK AT THESE FEATURES!

* Indicating units have two long-life neon lamps visible from almost any angle
* Complete interior built as one integral unit
* Removable chassis for easy wiring
* Flush units have adjusting screws for raising or lowering interior
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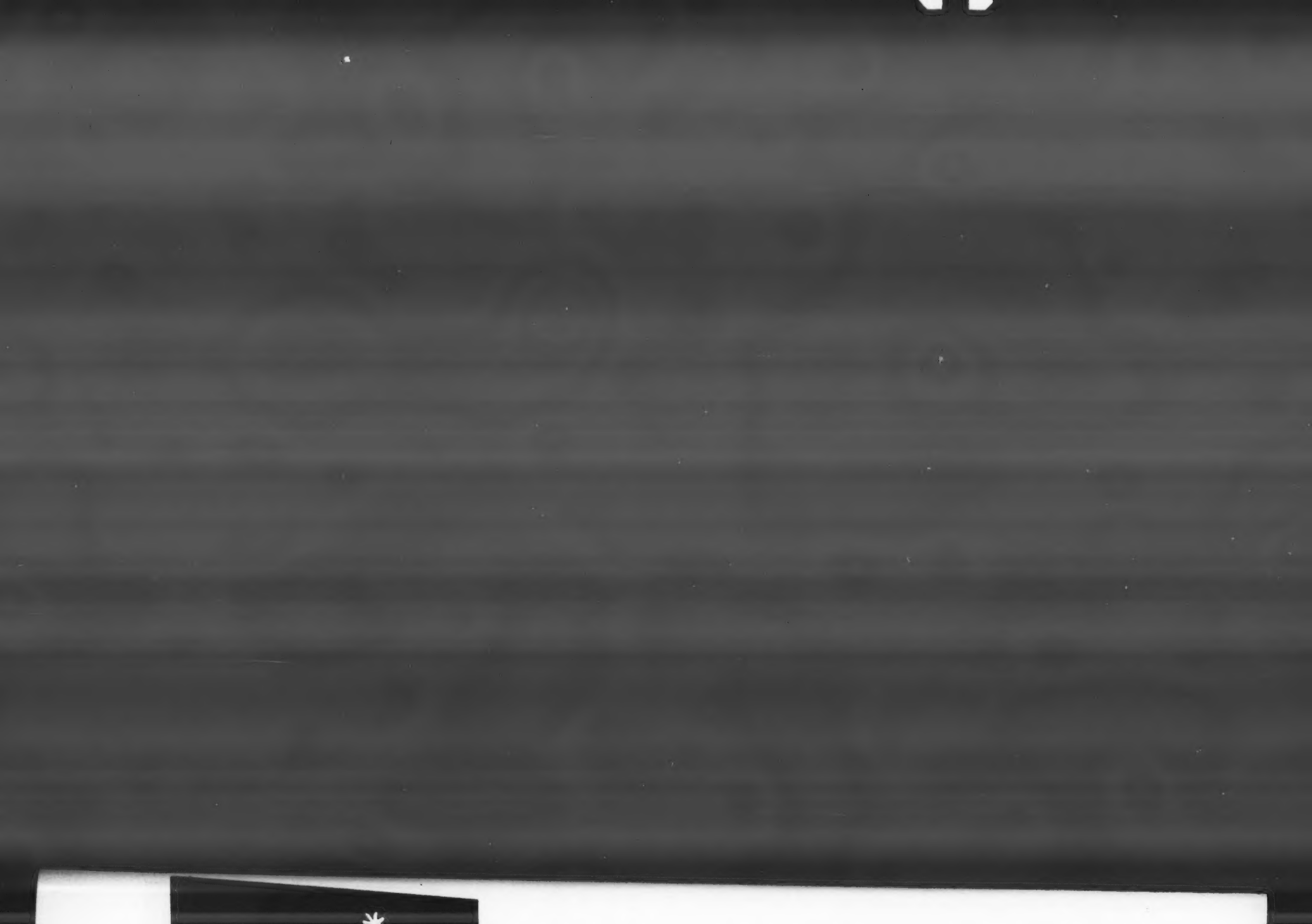
* All current-carrying parts completely shrouded by an insulating cover when plate is removed
* Two heavy pillar-type earth terminals, each with two clamping screws
* Completely new double pole switches with pure silver contacts
* Lasting pressure ensured by subsidiary compression springs
* Positive separation of contacts—yet the switches can be operated in complete silence
* Switches have successfully withstood mechanical tests in excess of 100,000 operations
* All mouldings are of urea formaldehyde
* Case and cover-plate are of zinc-coated steel. The ivory stove enamel finish matches the moulded inserts
* Switch handles are moulded in red for contrast. Both circuits are clearly identified

MK .... the mark of leadership

M. K. Electric Limited, Wakefield Street, London N.18 Edmonton 5151



Fire precautions begin with Lindoco FIRE-CHECK DOORS

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

OFFICIAL!

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

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

There's an open-and-shut case for

Lindoco FIRE-CHECK DOORS

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

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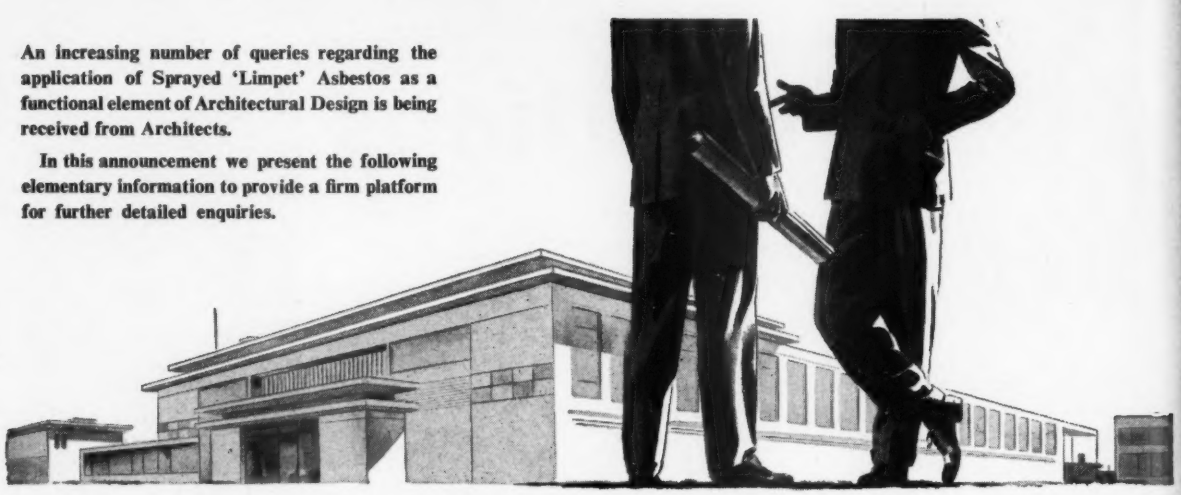
An increasing number of queries regarding the application of Sprayed 'Limpet' Asbestos as a functional element of Architectural Design is being received from Architects.

In this announcement we present the following elementary information to provide a firm platform for further detailed enquiries.



an architect asks questions about Sprayed 'Limpet' Asbestos by NEWALLS

REGD.

"What do you consider is the major advantage of Sprayed 'Limpet' Asbestos?"

Probably the most important element is that the 'Limpet' process gives intimate surface contact, sealing all joints, covering rivets, irregularities and protrusions in a continuous coat that entirely eliminates air spaces—a significant factor in itself.

"I understand that Sprayed 'Limpet' Asbestos has two insulating properties?"

Correct. In addition to providing a high degree of thermal insulation, it is an excellent material for absorbing sound. Indeed, many firms have specified the process for correcting acoustic distortions alone.

"Being largely Asbestos, I suppose the process gives a measure of fire protection?"

Most certainly! Again, it is often used solely because of its fireproofing properties. In fact, this method was the first to be approved for Class A fireproofing of ships under the 1948 Convention.

"Being porous, isn't the treatment liable to premature rotting where condensation exists?"

On the contrary. Asbestos is chemically inert. It is rotproof, verminproof and undamaged by water. Condensation is diffused preventing dripping and allowing for speedy re-evaporation to the atmosphere from the warm surface of the coating.

"It seems too versatile for words. It's a Thermal and Acoustic Insulant, rotproof and verminproof, fire-resistant, prevents condensation, resists vibration . . . anything else?"

Well. It has been used extensively purely as an anti-corrosion measure on metals subject to severe corrosive conditions, but we'd have to know the particular application you had in mind to give our full recommendations.

"Naturally. And if we did want Thermal and Acoustic Insulation—and Fire protection in one coating—I suppose it would cost the earth?"

Frankly—no. You see, the erection of timber grounds is not necessary. In application there is no cutting to waste, and the density and thickness is controllable to a very fine degree by highly efficient operators. It compares favourably with conventional insulation methods and materials.

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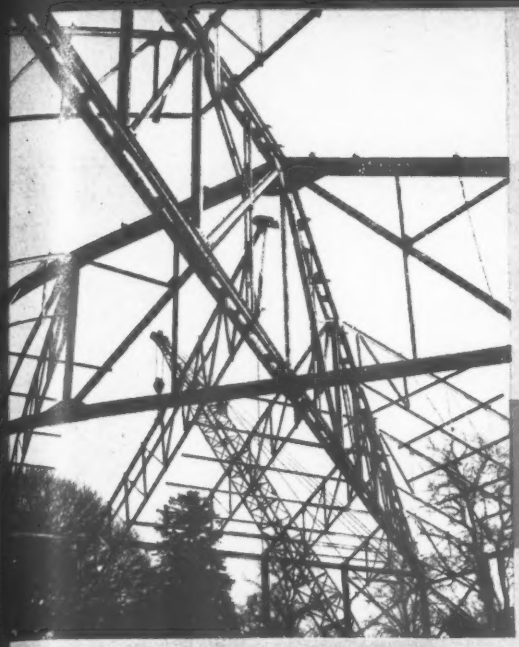

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Architects: RAYMOND E. HAWKINS & ROBERTS
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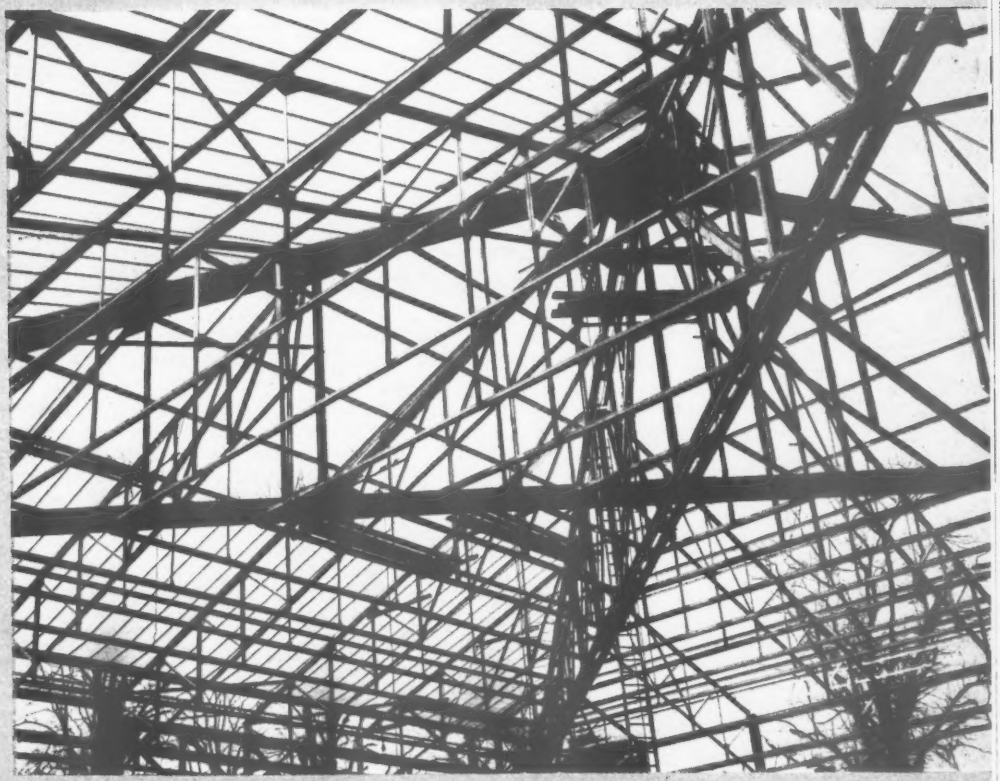
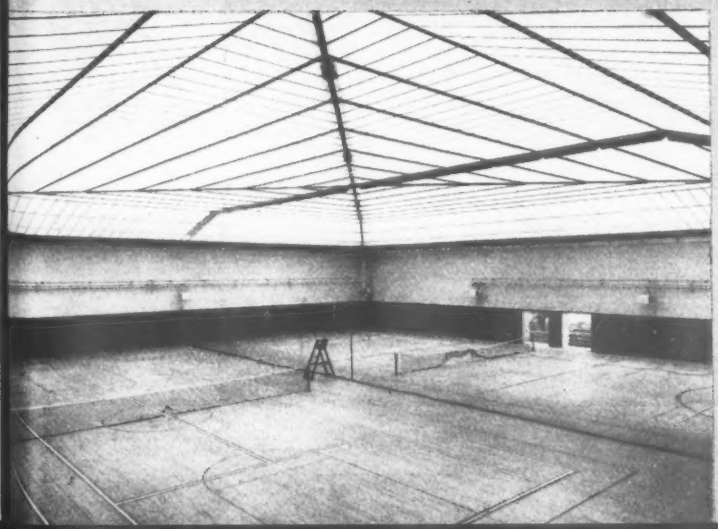


IXING OF ROOF GLAZING



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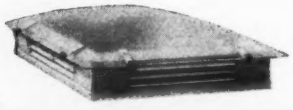
At the new Wimbledon covered courts a central ventilator was needed 14 ft. in diameter. Greenwood-Airvac engineers designed and built a special fitting, shown above, photographed from inside, and, below, from the outside.

Spectacular tasks of this kind broaden the experience which helps Greenwood-Airvac build a *Standard Range* of roof ventilators to meet, efficiently and economically, the vast majority of demands for ventilation and daylight. The cut-out illustrations below are two examples, both of which carry standard glass or 'Perspex' domes. Circular ventilators from 18 in. to 6 ft. diameter, rectangular from 2½ ft. square to 4 ft. x 6 ft.



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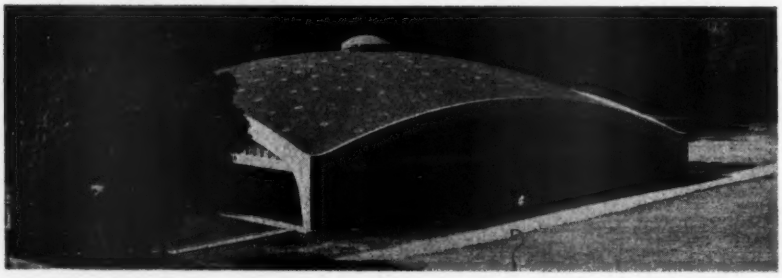
New covered courts at Wimbledon for the All England Lawn Tennis and Croquet Club.



Consulting engineers: C. J. Pell and Partners Contractors: W. H. Gaze and Sons Limited, in conjunction with Formcrete Limited.

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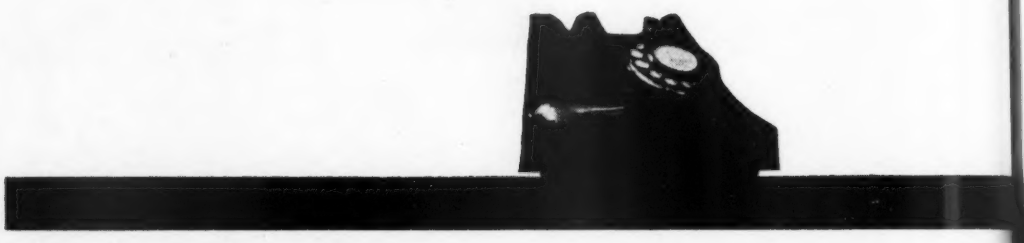

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monthly review by WILLIAMS & WILLIAMS

CANADA'S NEWEST HOTEL HAS THE 'WALLSPAN' LOOK

1 The entire cladding contract for the new Lord Simcoe Hotel (the second largest in Canada) was placed with Williams & Williams. And 'Wallspan' is used for the vast areas of curtain walling.

The 20 stories of this 900 room, 10 million dollar hotel make an imposing addition to Toronto's skyline. Viewed from a distance, the giant structure appears to be bathed in a greenish aura. This strangely impressive effect is obtained by the combination of green porcelain enamelling and grey muroglass infilling panels.

All of the vertical columns and horizontal trims of the curtain wall are covered by the green porcelain enamelled panels. This looks to be a grey-green colour when reflected by the muroglass —33,000 square feet of it in the spandrels of the 'Wallspan' grid.

Williams & Williams purpose-made aluminium windows were used in the 'Wallspan.' And the actual arrangement of the windows over 'divided' infill panels is somewhat unusual.

Apart from the aesthetic considerations, a valuable point in favour of using 'Wallspan' was its speed of erection. In this particular instance, the choice of 'Wallspan' curtain walling effected a considerable saving in time—from the moment the first sod was dug to the official opening ceremony, took only seventeen months.

'ALOMEGA' WINDOWS EXCEED ARCHITECT'S EXPECTATIONS

2 The Wellington Hotel, Hastings, situated right beside the sea, now boasts a proud new façade. And its 'Alomega' windows, invulnerable to the corrosive action of salt-laden sea air, have been widely praised. The architect himself, had several enthusiastic things to say about them.

"I am very pleased indeed with the 'Alomega' windows," he writes. "They have certainly exceeded all my expectations and are draught and weather-proof. The tenants are equally amazed at their efficiency and simplicity.

"I have had many pleasing comments from my friends on the appearance of the windows, and I shall use them wherever I can after the testing they have had in this very exposed position."

SPACIOUS SHOWROOM HOUSES PERMANENT EXHIBITION

3 The modern London showroom at 36 High Holborn, W.C.1. contains a comprehensive selection of Williams & Williams products. Here, in comfort and at your convenience, you can view and examine examples of all the products mentioned on this page. This is a *permanent* exhibition of the latest developments by Williams & Williams. It is open daily from 9 a.m. to 5.30 p.m.

THE CASE OF THE FLYING WINDOW

4 It would perhaps be a slight exaggeration to say that the team of Williams & Williams window fixers got the full red carpet treatment when they landed at Lima Airport. Nevertheless, the window that they brought with them *was* inspected by the President of Peru. And a huge and valuable contract *did* go to Williams & Williams.

The events leading up to this happy occasion were triggered off by an invitation to Williams & Williams. They were asked (at rather short notice) to quote (in competition with the Americans) for the windows, which were to be made of aluminium, for the new Lima Hospital.

Seven men worked round the clock for seven days (over the Easter holiday, as it turned out). The result was that the tender and drawings were flown out in the nick of time before the closing date.

Williams & Williams price turned out to be easily the lowest. But in the meantime the Peruvian authorities, in some inexplicable way, had got hold of an idea that our windows might possibly be inferior to those made on the other side of the Atlantic. We were asked to prove different!

We pulled out all the stops and made a sample window (to specification) in one week. Thereupon the aforementioned team of fixers plus window were loaded into a fast aeroplane and flown to Miami. There they but paused to take breath (and change aeroplanes) before continuing to Lima. The rest of the story you know.

'WALLSPAN' PRESCRIBED FOR MILLBROOK CLINIC

5 This clinic has to provide maternity, child welfare, school medical and dental services for the entire development carried out by the Southampton Borough Council at Millbrook. The building contains an unusually large number of small rooms, which required varying degrees of natural daylight, ventilation and privacy. Conventional fenestration would have led to an unhappily fussy facade, and therefore it was decided that the main elevations should be treated as all embracing window walls, within which variations in sizes and types of windows could readily and tidily be made. These window walls are in fact areas of Williams & Williams 'Wallspan'. The floors and roofs are carried by the load bearing cross-walls.

In the construction, special steps were taken to give added protection against the spread of fire and to eliminate airborne sound between rooms and stories. The gaps between the mullions and crosswalls at the reveals are closed with a felt-lined, recessed timber closing member; and the horizontal gap between the first floor beams and the curtain wall is closed by carrying the insulation board false ceiling right up to the 'Wallspan' transoms.

Buildings that already existed nearby were a school, the community centre, garages and shops. And the general appearance of these was taken into account when designing the clinic's external finish. On the ground floor, 'Wallspan' infilling panels are of hydraulically pressed asbestos cement slabs. First floor infillings are of grooved western red cedar.

WILLIAMS & WILLIAMS
RELIANCE WORKS · CHESTER

Member of the Metal Window Association

1 THE LORD SIMCOE HOTEL, TORONTO
Architect: H. T. Langston.

2 THE WELLINGTON HOTEL, HASTINGS
Architect: Norman A. E. Wyatt, L.R.I.B.A., F.I.A.S.

3 WILLIAMS & WILLIAMS NEW SHOWROOM
Architects: Bronek Katz & R. Vaughan.

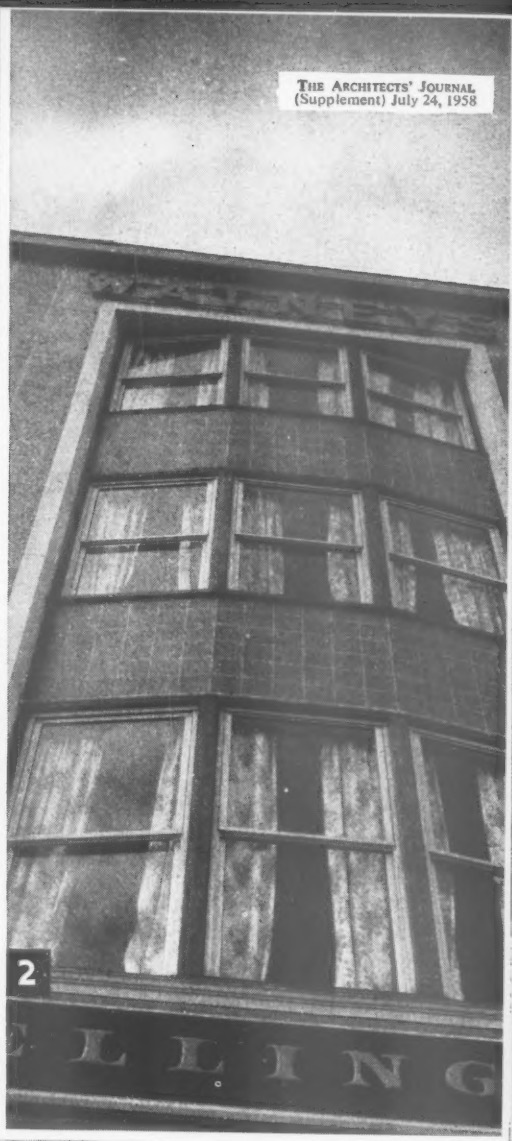
4 THE LIMA HOSPITAL, PERU
Architect: Ricardo Malachowski.

5 THE MILLBROOK CLINIC
Architect: L. Berger, DIP. ARCH., A.R.I.B.A.
Borough Architect, Southampton.

A *View from North-West with entrance to school medical wing.*

B *General view. Covered way from gates leading to maternity waiting room.*

1



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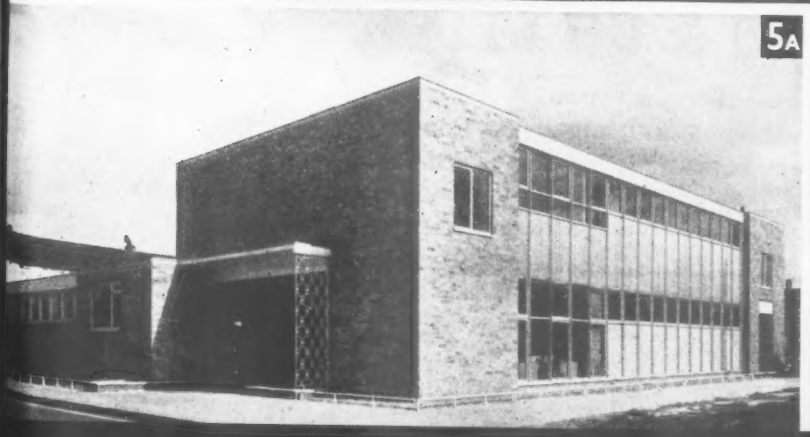

5A

5B

BLUE HAWK PRODUCTS

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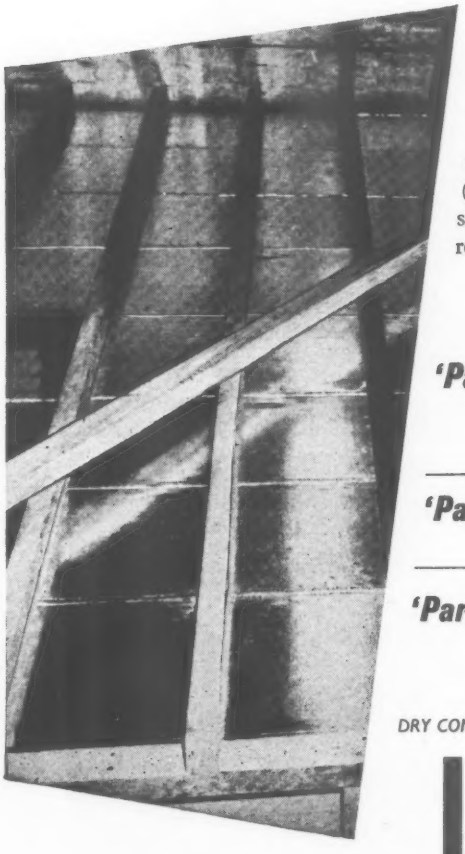

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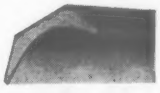

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AP96

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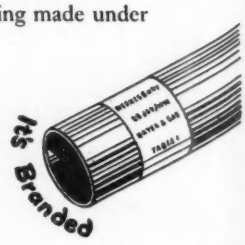

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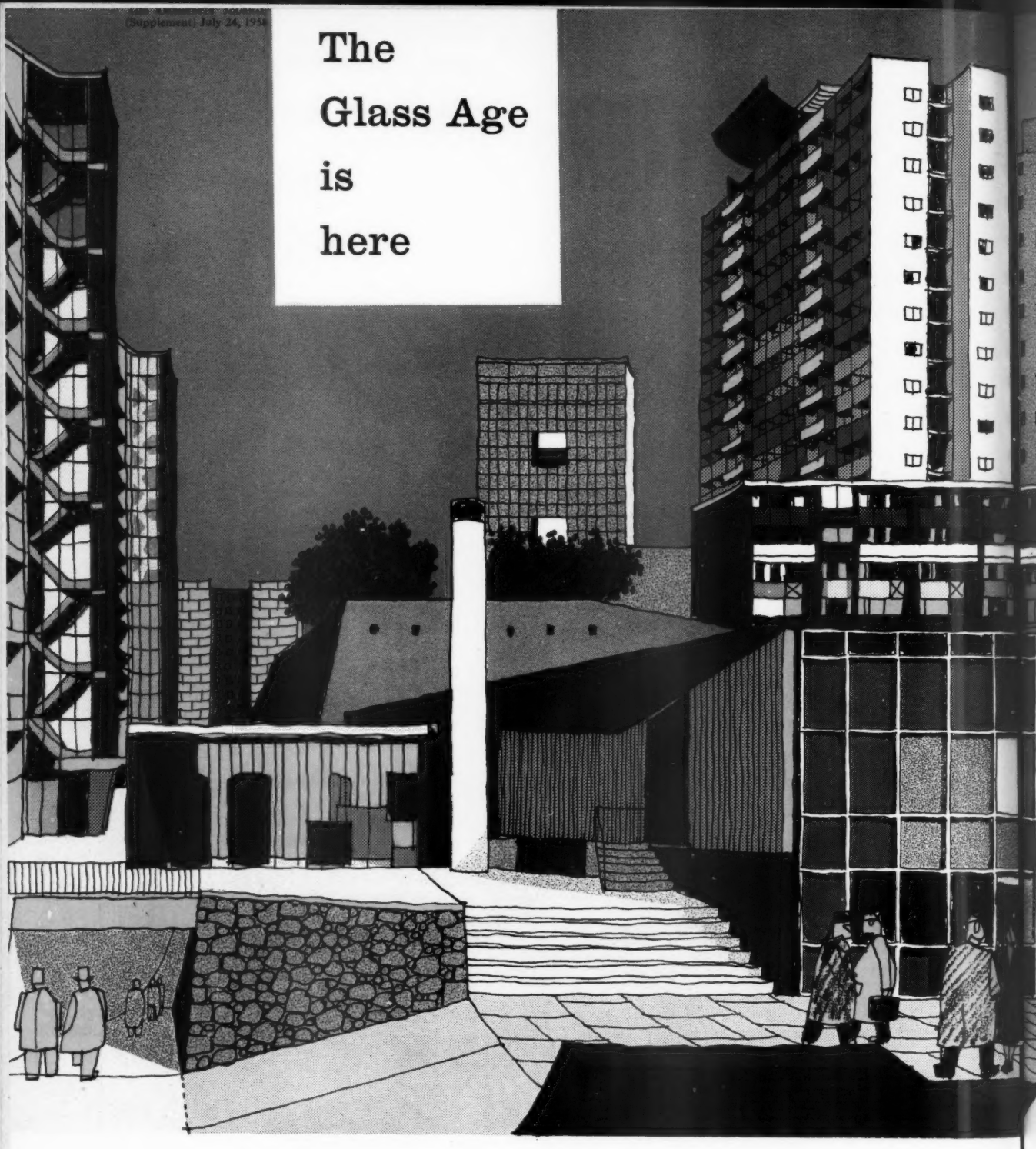
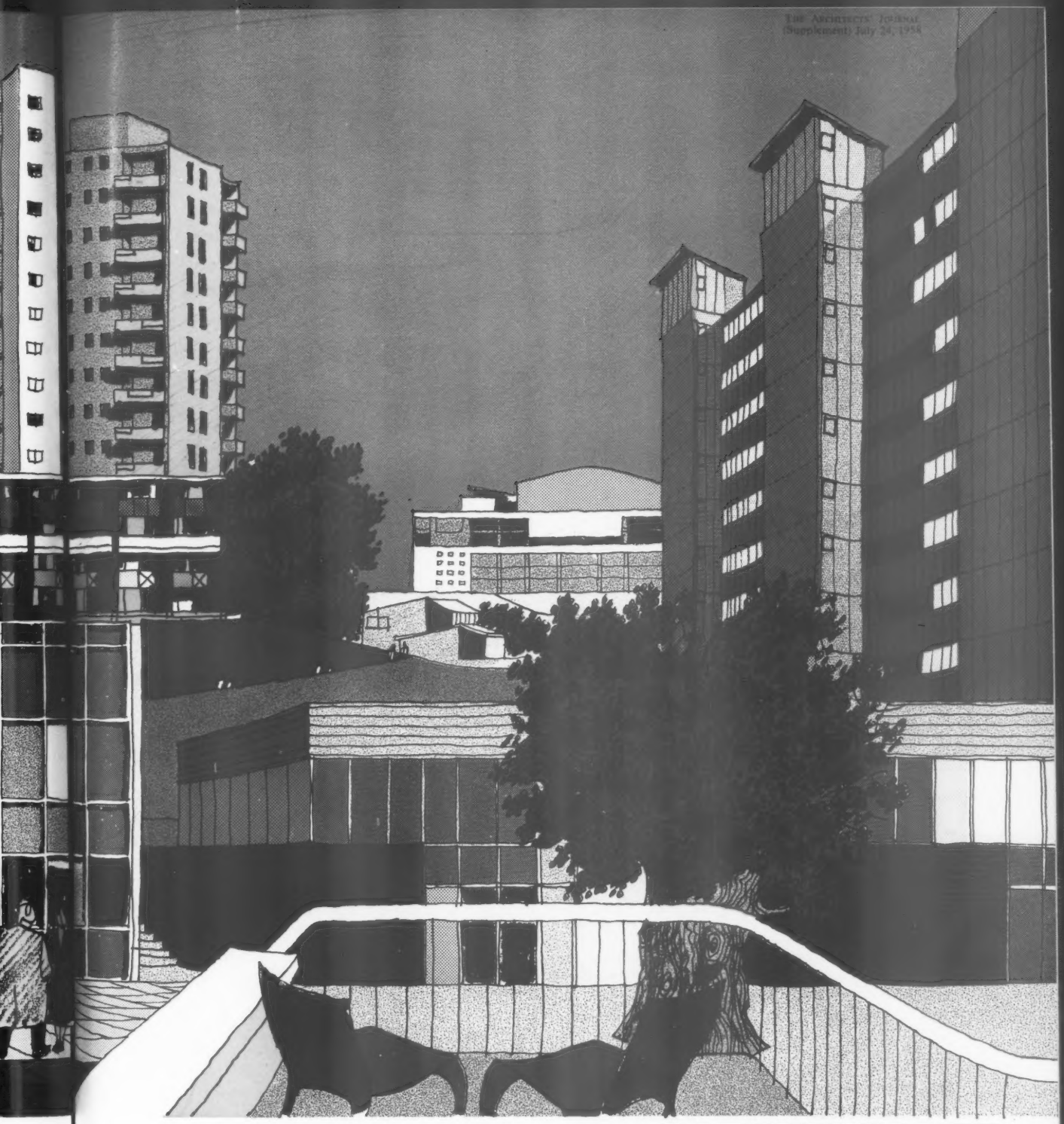
The Glass Age is here



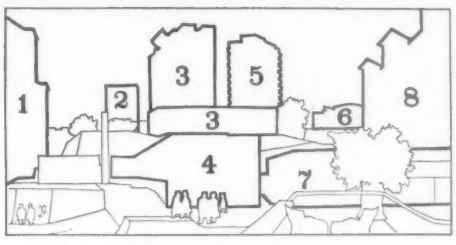
No dream city...

This city exists: not yet as a coherent, related whole, but as individual structures which rise in and around London and show the part glass plays in architectural technique. Here, eight contemporary buildings have been brought together—by Gordon Cullen—rather as Wren's buildings were once assembled in Cockerell's famous drawing. This is not a glimpse of a city of the future: it is a city for which all the components have been designed and built today. The Glass Age is here.



Pimlico Flats — Architects: Powell and Moya, F/F.R.I.B.A.
Headquarters Offices for National Dock Labour Board — Architect: Frederick Gibberd, C.B.E., F.R.I.B.A., M.T.P.I.
Golden Lane Housing — Architects: Chamberlin, Powell & Bon, A/A.R.I.B.A.
Factory at Hemel Hempstead, Herts. by Ove Arup and Partners

5 *Housing Project, Roehampton, by the Architect to the London County Council*
6 *Royal Festival Hall, by the Architect to the London County Council*
7 *School at Putney — Architects: Powell and Moya*
8 *School at Tulse Hill, by the Architect to the London County Council*



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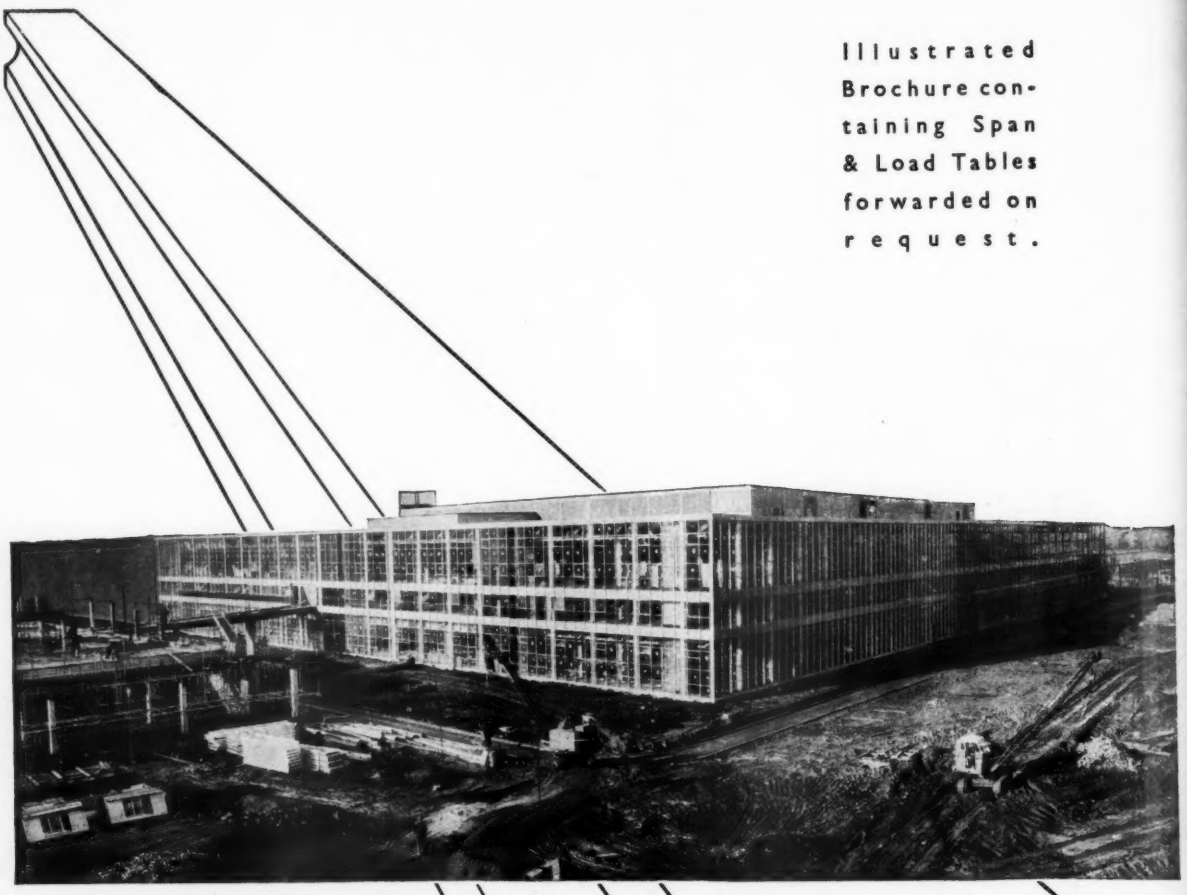

Illustrated Brochure containing Span & Load Tables forwarded on request.

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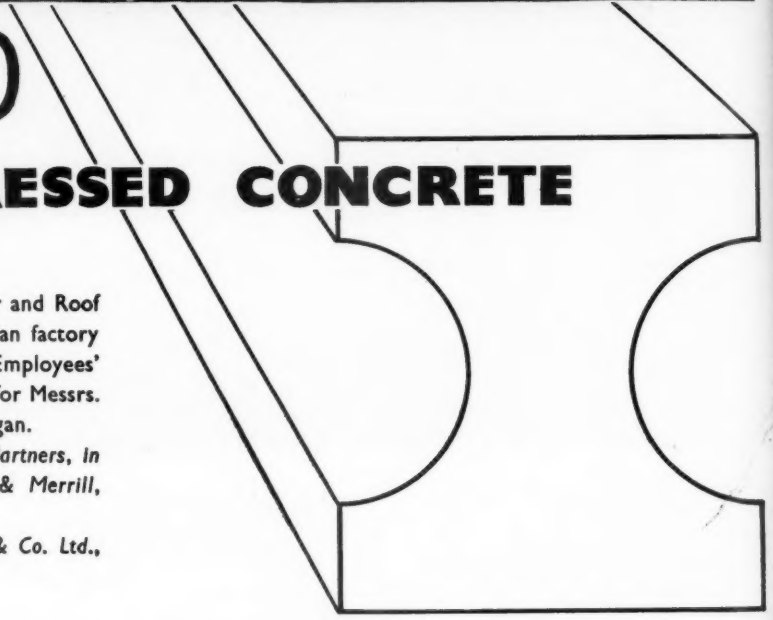

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Architects: J. Douglass Mathews & Partners, In conjunction with Skidmore, Owings & Merrill, New York, U.S.A.

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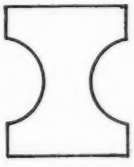

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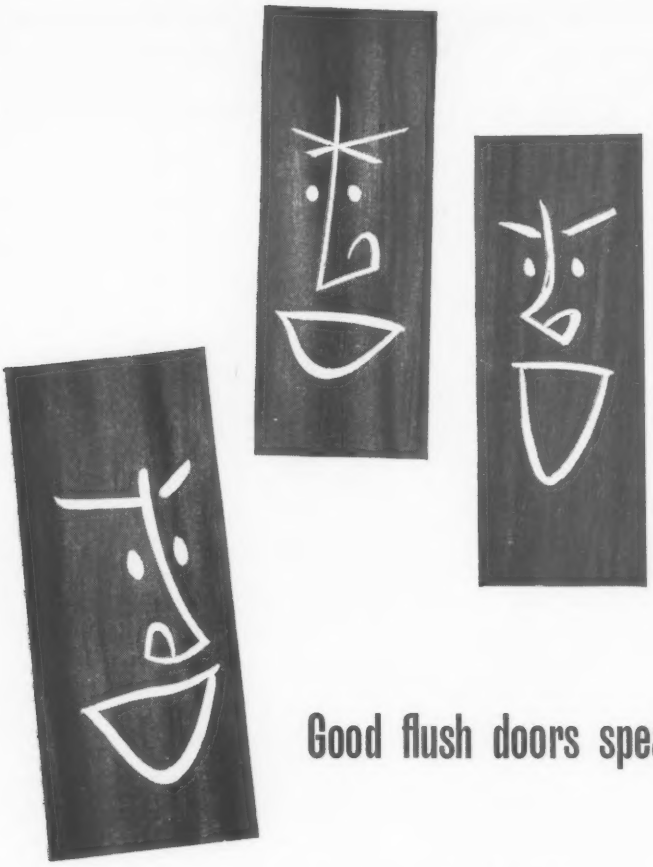

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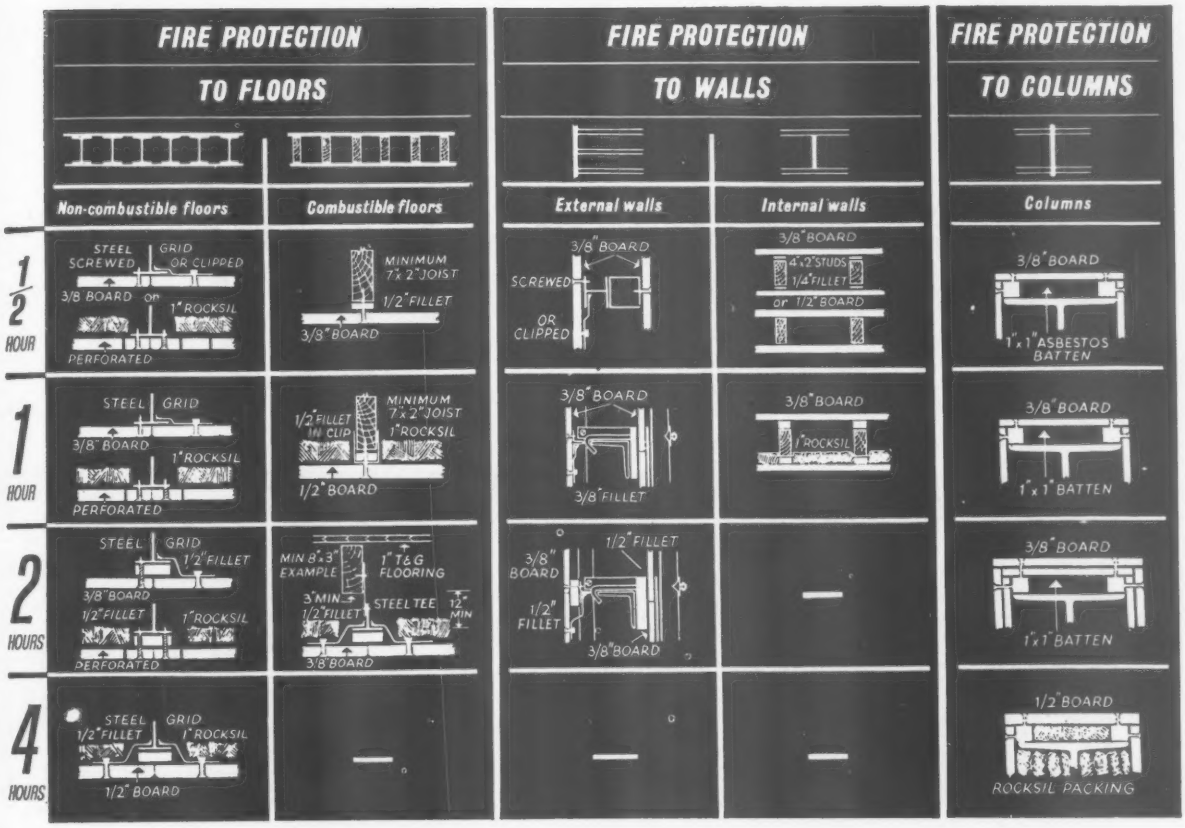

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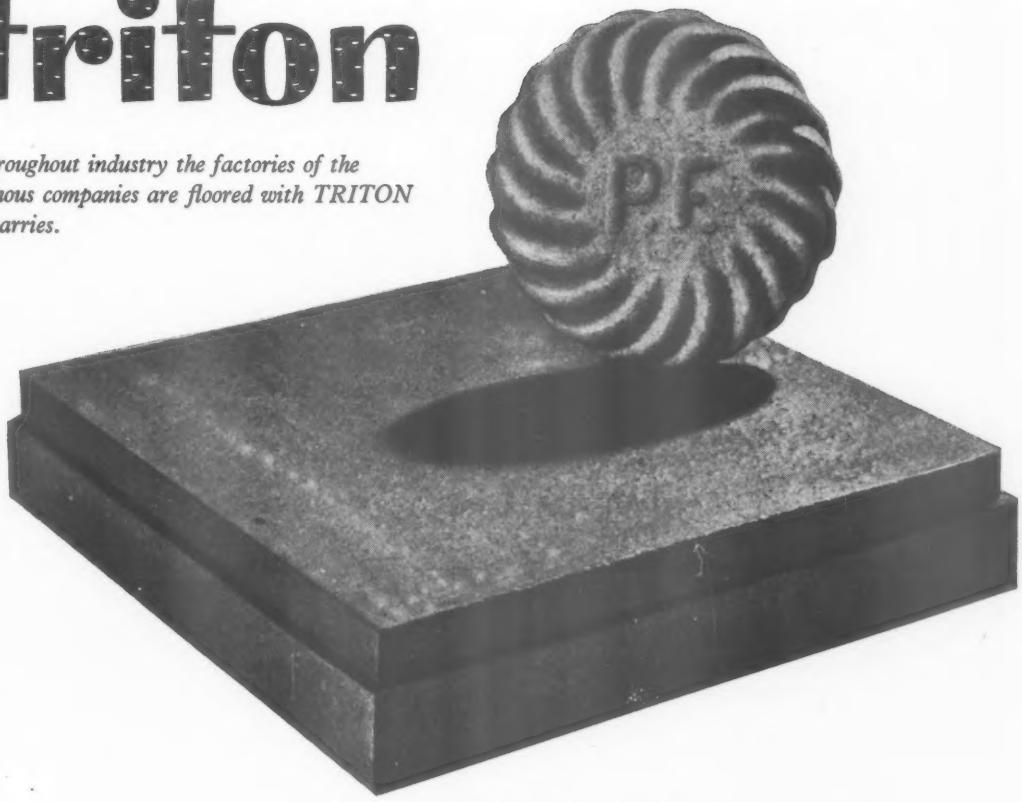

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VH.86

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"Standard"

★ *In many countries it is officially required that Sanitary Appliances be made of Vitreous China. Many British architects, doctors, and Public Health Authorities would like to see similar legislation in Britain and so, not unnaturally, would the makers of "Standard" Sanitary Appliances.*

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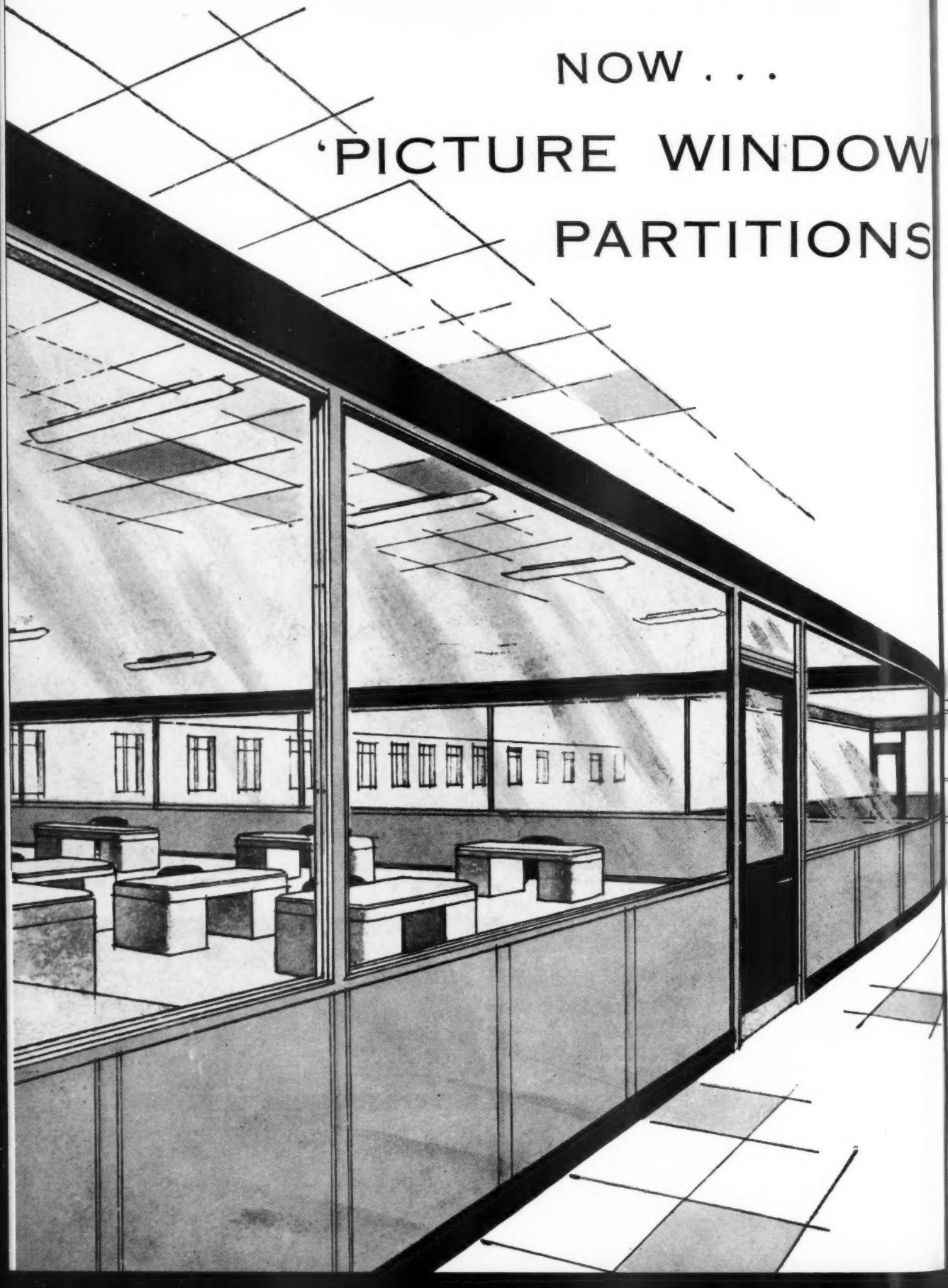
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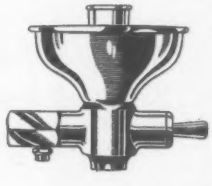

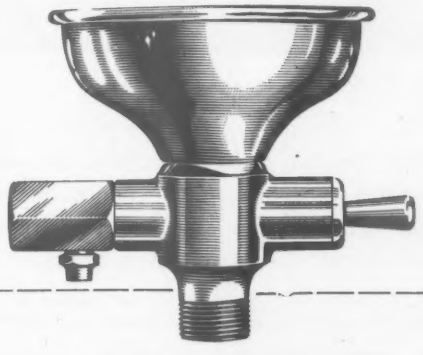

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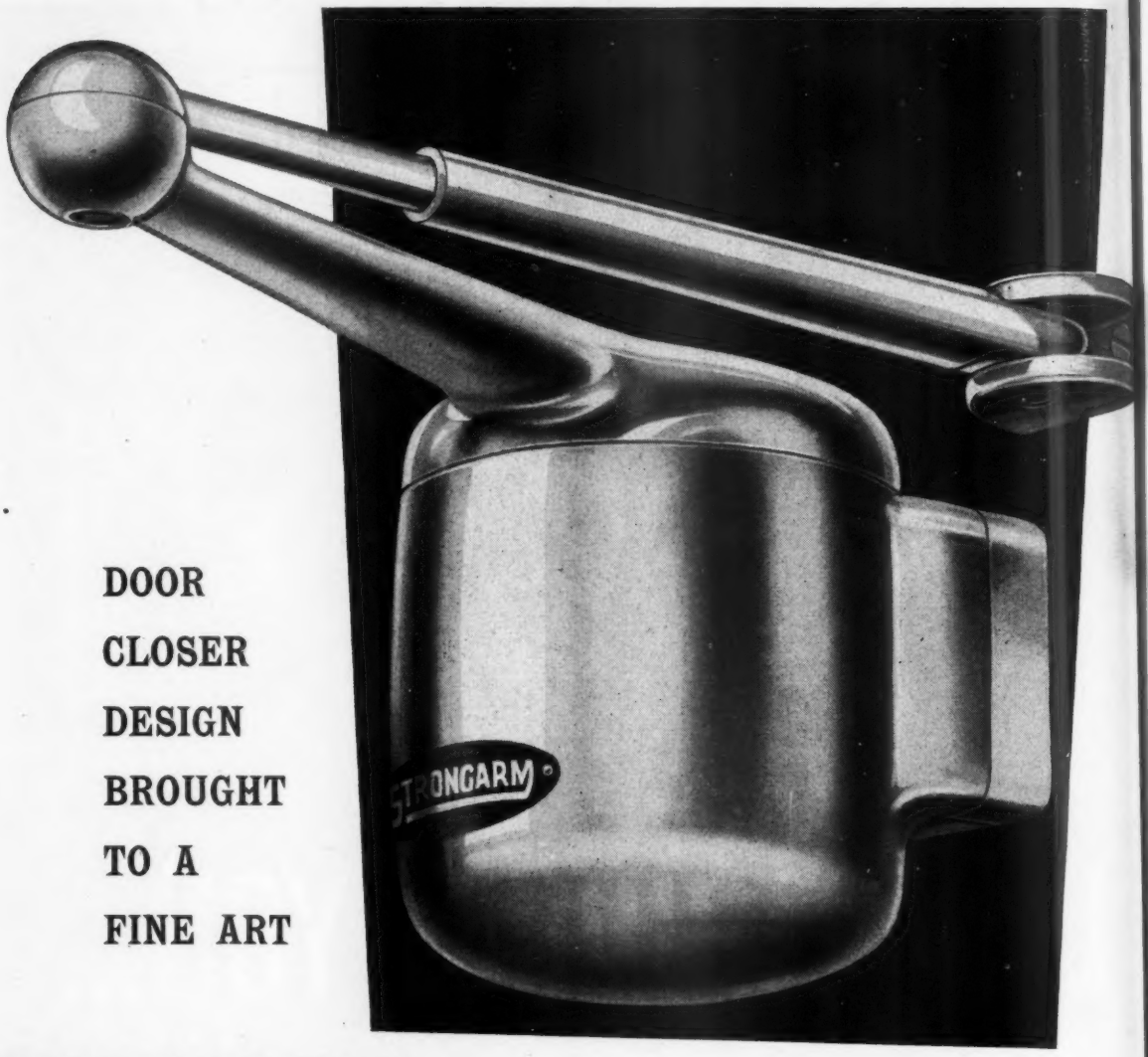

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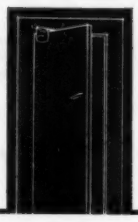

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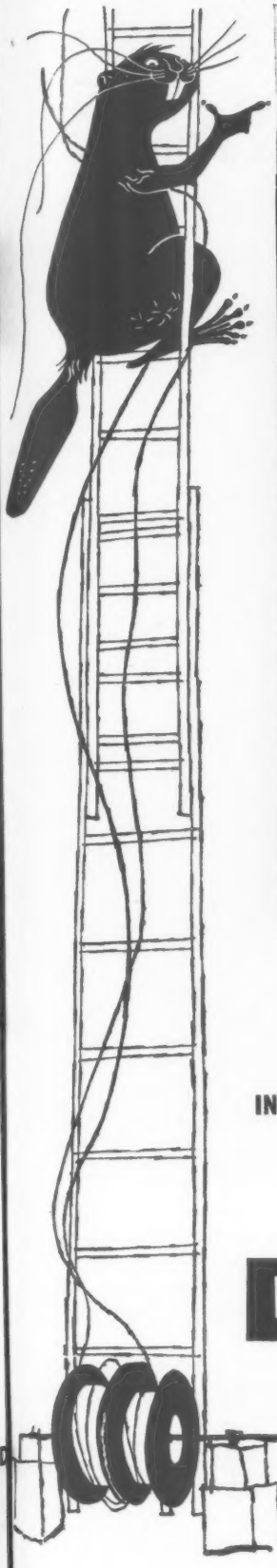

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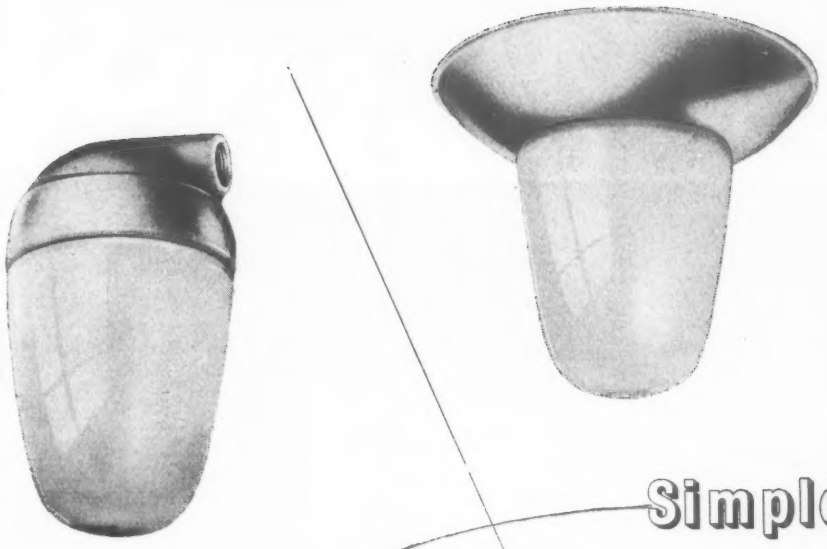

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THE ARCHITECTS' JOURNAL

No. 3308 Vol. 128 July 24, 1958

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NOT QUITE ARCHITECTURE

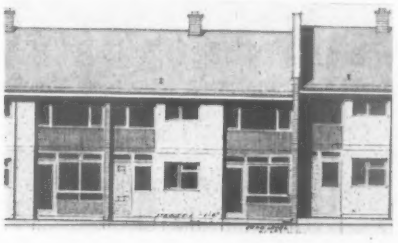
'THIS EVIL'

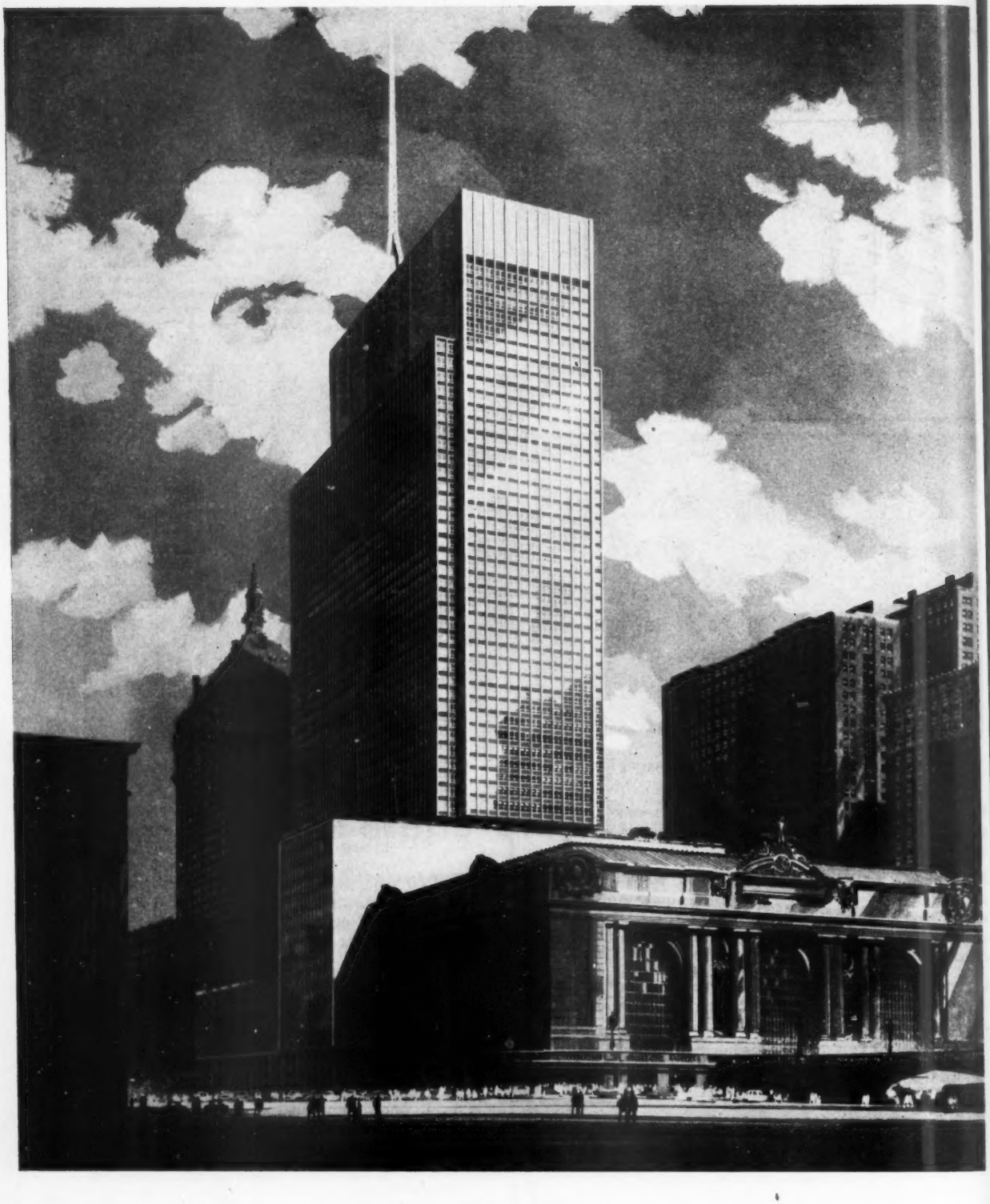
"The County Council of Essex refuse permission for the following development: erection of terraces of houses on land south of Eastwood Road, Rayleigh . . . the erection of terraces of houses in this country town would be detrimental to the amenities, particularly as the rear of the terraces would be seen from Eastwood Road."

Eastwood Road, which you see above, whose inhabitants must be protected from the detrimental sight of the rear elevations of the terraces below, is an assortment of characterless dwellings scattered in typical, endless, ribbon development along a class A road. It is adorned by concrete lamposts, electricity and telephone posts, and an elaborate wirescape overhead. Its two redeeming features are its gardens, many of which are expertly and lovingly cared for, and a good many fine trees. The building site referred to in the refusal notice lies to the right of the photograph, behind a row of houses similar to those on the left, with access through a gap in the built-up area. The terraces were designed by J. M. Bion for A. & J. Wedge Limited, speculative builders, as part of a small estate of 18 terrace houses and 14 bungalows.

*

The prejudice against terraces in Rayleigh





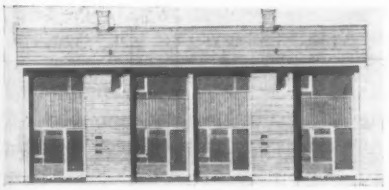
Compromise Without Reconciliation

Grand Central Concourse (not only New York's but one of the world's most "imposing reception rooms") has been saved from a threat that would have replaced it in the name of efficiency and economy. The drawing above shows the compromise it is now intended to put into effect to make the maximum use of the site. A fifty-storey skyscraper office block (by Emery Roth and Sons) will squeeze itself into the space between the old office tower (behind) and the concourse building (foreground). Quite apart from blocking the light from buildings in upper and lower Vanderbilt Avenues (much nearer to it than the perspective would lead one to suppose), a most unhappy relationship is established between the new slab block and the old office tower, which it will dwarf. Though the saving of Grand Central is heartening, a compromise like this that fails to reconcile the new with the old falls far short of victory.

seems to be extraordinarily strong. The Urban District Council succeeded in persuading the Essex County Council to overrule the favourable recommendation of the Area Planning Officer. A host of local residents, 80 of whom had signed a petition asserting that terraces would "lower the character of the district," came to the public enquiry this month to voice their objections (though, for some mysterious reason, the Area Planning Officer was not there to explain the merits of terraces). The County Council committed itself to the following proposition, extraordinary both for its grammar and its bad logic: "the provision of terraces in the past has brought about slums in the future . . . once these properties become in separate ownership they could considerably deteriorate and not be in keeping with the amenities of the area." The Deputy Clerk to the UDC referred at the enquiry to terraces as "this evil" and "this retrograde architecture," while conceding that their appearance was "pleasing."

*

Mr. Bion's clients have been waiting for nearly a year for permission to build. To safeguard their interests Mr. Bion, in the meantime, has applied for, and got, planning



permision for houses (rear elevations above), which differ principally in the fact that they are semi-detached. And, of course, the Council saw nothing "detrimental" in the semi-detached boxes, seen below, now being built outside Rayleigh station.

*

It is easy to understand the feeling of the residents, who like what they call the "semi-rural" (actually suburban) character of the area and hate to see it buried beneath bricks and mortar. But the villain responsible for this is not the architect or the builder of terrace housing, as they suppose. It is the Rayleigh Council which, with their support, insists on a maximum density of 10 houses or less to the acre, in the mistaken belief that this preserves the "semi-rural" character. In fact it ensures the maximum spread of spec. built bungalows and semi-ds, and the exclusion of all character.

M. M.

The Editors

CRISE DE CONSCIENCE

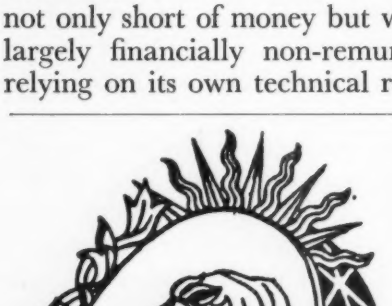
WE publish on page 123 of this issue the full report of the Local Inquiry into the Causes of Damage to Houses at Hatfield New Town. We do this because we consider it a vivid object lesson. The conclusions are very severe on all the chief parties in the case and they are difficult to contest. Were the contractors, the clerk of works and the architects exceptional in their mistakes? Such independent knowledge as we have—at least of the contractor and of the architect—is that this would probably be an unfair conclusion. Those who know building will know also that the kind of things that happened at Hatfield—the failures in knowledge and the failures of communication—are rather more common than we would care to admit. Which is as much as to say that a share of the responsibility must be borne corporately by the building industry and by the architectural profession. The type of structure involved at Hatfield is very typical of our time in that it was partly traditional, partly innovating. Part of the myriad of decisions which had to be made in its design and in its building would be made on a basis of rule of thumb and of implied custom, part on a basis of exact computation and to be the subject of specific order. This begets a curious mental no-man's-land, both as regards *how* points are to be settled and by whom. The existence of such a no-man's-land is of no comfort to the public and offers no real extenuation for what happened; but it prompts the questions: How easy is it for the conscientious architect and for the conscientious builder to do their job properly? Have they been trained as they should? Can they get the information they need quickly? Has the pattern of their relationships, one with another, been fully worked out? Is the process of designing and building so organized that those who hold responsibilities have time to discharge them properly? Do we make enough use of check lists and other safeguards against human mistakes and omissions? In a word (to confine ourselves to the architect's side) how easy has the RIBA made it for the architect to do the job traditionally assigned to him?

STILL MUDDLING ON

In the JOURNAL last week we published a report on the annual Housing Centre Conference on Redevelopment and Slum Clearance. It is clear from this report that there is still no national co-ordination in the attack on our slums. The administrative machinery, offering two alternative procedures in the Town and Country Planning Act and Housing Act, does not facilitate speedy action and the subsidy arrangements still militate against comprehensive rebuilding. Two years ago the JOURNAL published a series of articles on this theme written by D. Rigby Childs and Jack Whittle. In these articles the authors concluded that to meet the task ahead three things were necessary, first, legislation for special

problem areas; second, a national programme of research; and third, reassessment of objectives for urban renewal. So far, it seems we are still muddling on. Local Authorities are producing many fine schemes, many still on paper, and if the cleared sites are to be redeveloped in a fit manner, a more positive approach from Central Government is required.

The signs for this developing are not propitious. Apparently the Government still intends to restrict the output of Local Authority houses while easing the credit squeeze, with its resultant encouragement to speculative builders who already are producing more houses than Councils. There has been no real attempt to improve legislation and streamline administration, and building research remains haphazard and uncoordinated. It seems that the public authority will be left not only short of money but with the difficult, expensive and largely financially non-remunerative job of redevelopment, relying on its own technical resources for solving its problem.



STUDENT EXHIBITIONS

Last week ASTRAGAL undertook a lightning tour of two current exhibitions of student work: the AA's and the Regent Street Polytechnic's. To be really able to comprehend the quality of the student's work, and the efficiency of these schools, it would be necessary to spend several days studying the programmes for designs and the resulting drawings hung. As this is not possible, and as both schools, like all schools, make few concessions to the visitor in the way of presenting the material so that it can be quickly understood, comment must be superficial. The AA have taken an unusual step (as usual) and are showing *all* the work of two students, from their first year to their fifth. This occupies two studios. A third studio is used to show examples of work from the first to fourth years, in the normal, end-of-term manner, and space is further given to just one fifth-year "thesis." (Why must more elaborately executed design subjects continue to be given this misleading title?) It would seem that one above-average, and one average student were selected for this close study of their architectural progress and prowess. The result was interesting, educationally, but such a method of presenting a school's work made it hard to compare the AA standard of work with that of Poly students.

*

ASTRAGAL had the advantage of being shown some of the Poly work by a member of the staff, but even allowing for that, and for the very different methods of showing a school's work, the Poly students seemed more enterprising, equally imaginative, better draughtsmen and harder working. If this seems unfair, then blame the method of exhibiting material, and blame the scholastic mind that imagines a visitor will search for a programme, read it carefully, try and decipher the year for which it is set, and then study a panel of drawings captioned with a brevity which could only be improved upon by an illiterate. The *tour de force* of the Poly was a design for a block of offices that resembled a circulation diagram petrified, or perhaps more correctly, made concrete. Such a design made the rest, however random, punched out, or punched in their fenestration, appear hopelessly old-fashioned.

*

It is not possible to do these exhibitions of industry and mental torment justice here, but two features are conspicuously worthy of comment. First, the tremendous emphasis on appearance—æsthetics, if you like—which takes years to develop and control, and the apparent neglect of techniques, whether of construction, lighting or services, costs, practice and management, which are the fundamental disciplines on which good design should be based, if it is ever to be more than a style. Second, the way in which so many of the students of both schools have become disciples of the Anglicized-Corb School (for want of a better term). Which is, perhaps, not to be wondered at, since the talented, forceful, exponents of it—Smithson, Killick, Howell and Stirling — are their teachers, never ask me which.

SHOULD ALLIES VOTE?

Since the RIBA Council has decided not to act on the AGM resolution until the "Constitutional" Committee has made its report, ASTRAGAL hopes that the Committee will be able to move quickly. It has some tricky problems to solve—not least the relationship between the Institute and the Allied Societies. Under present bye-laws these societies are represented in the RIBA Council by their presidents. But a lot of people feel—as did the AGM—that the representatives ought to be elected by postal ballot. Who, then, should vote? A large number of the members of Allied Societies are not members of the RIBA, and many are not even architects. Presumably local bye-laws prevent a majority of non-RIBA members electing a non-RIBA (or a non-architect) member as president to represent them in the Council; but the possibility is an interesting one.

*

Is there any reason why, as Miss Lakeman suggests on another page, there should not be a local ballot for the RIBA representative, in which only RIBA members could take part? This need not prevent others from joining the Allied Societies.

NO CURE FOR MANCUNIANS

The Minister of Housing has refused Manchester's application to build a new

Architect as Top Per on of Tomorrow: see "How To Get Jam Tomorrow."

town at Lymm. The alternative favoured by the Minister is described by the *Manchester Guardian* as the building of " more large housing estates, with no hope that they will ever be anything but dormitories, on sites which are needed for the overspill from its equally congested neighbours, but which those neighbours despair of being able to use under existing legislation—and which should in any case be kept as part of the green belt."

*

Both the report by the independent inspector, J. Ramsay Willis, Q.C., and the Minister's letter to Manchester, treat the new town as a problem in arithmetic to see where 14,000 additional housing sites can be provided by 1971. When will Henry Brooke and his adviser, Dame Evelyn Sharp, realize that without regional planning it is impossible to arrive at the right decision at the right time?

HOW TO GET JAM TOMORROW

Just in case you were getting self-conscious about buying the newspaper advertised as top people's reading, the printers have started to reassure you by telling you that the top people of the future also take it. In case you haven't seen it I reproduce above Eric Fraser's top person of tomorrow. Is he an estate agent or a budding speculator? The evidence, unfortunately, suggests that this bow-tied individual in the unsanforized shirt and nearly double-breasted jacket is an architect. Look at the lamp, the pencils in the breast pocket, the drawing on the wall behind, the A for architecture on the magazine. " This well-dressed mind " . . . states the copy writer (in the ill-dressed body, one can't help adding) " is far more noticed than you think." . . . " Reading *The Times* every day makes you mentally bigger than your job."

Which, taking a look at this architect's job, is just as well.

TOWN-GOWN RESEARCH

The subject of daylighting in factories (discussed in last week's JOURNAL) is of growing importance. ASTRAGAL is pleased to report that the Liverpool School is offering an open fellowship, leading to an M.Arch. degree, for an architect with a few years' experience, who will be required to work for a year in association with Pilkington's on the economics of this problem. It is good to see another of the all too few examples of industry-university collaboration in architectural research.

LOSS TO ABS

For many years Miss Solly has been doing her job as secretary to the Architects' Benevolent Society with efficiency and kindness. Last week the ABS Council gave a dinner in her honour, and presented her with a Georgian silver jug to commemorate her retirement. The occasion was not as sad as it sounds, partly because of the wit and friendliness of the speeches made by Mr. Goodhart Rendel in presenting the gift, and by Miss Solly in receiving it, and partly because the ABS is making her a vice-president.

*

As Mr. Goodhart Rendel pointed out, Miss Solly's achievement is such that the ABS's work will continue unchecked by her departure—from now on in the hands of Mrs. O'Sullivan. ASTRAGAL has had immense admiration for Miss Solly's tact in the no easy job of dispensing charity—a job made no easier by the profession's forgetfulness about sending contributions. By the way, have *you* sent a guinea in the last year?

THE PONTIUS TOUCH

When a Ministry issues a report containing an unintelligible passage, almost certainly the result of a slip, one might suppose that it would hasten to make it intelligible. Not so the Ministry of Housing and Local Government, when told by ASTRAGAL that Michael Rowe's otherwise lucid report on the Hatfield Roofs Inquiry contained an unintelligible passage. The Ministry's Press department, having confirmed that the report as printed was an accurate copy of Mr. Rowe's manuscript, took the bureaucratic view that a report, once submitted, could not be changed, and declined to draw the slip to Mr. Rowe's attention.

The passage in question, reprinted on page 126 of this issue, says that the architect estimated the anticipated suction or negative wind pressure on the roof at 10 lbs. per square foot, and continues: " He estimated the weight of the roof at 3,000 lb. or 6 lb. per square foot or 2,000 lb. for the whole roof area. Professor Pippard and Mr. James agreed that the estimate was in truth considerably too high." Obviously the weight of the roof could not be both 3,000 and 2,000 lb., as the report says it is. Mr. Rowe seems to have meant to say: " The anticipated wind suction was 5,000 lb. (at 10 lb. per sq. ft. of a 500 sq. ft. roof). As the estimated weight of the roof was 3,000 lb., the holding strength of the nails would have to be 2,000 lb. Since the actual weight was 3,600 lb. this was an overestimate." Perhaps the Ministry will now tell us if ASTRAGAL'S guesswork is right.

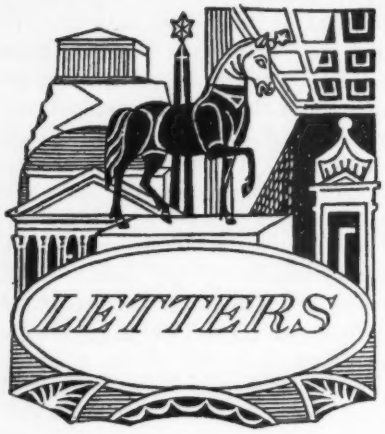
MR. NELSON AT SEA

George Nelson, the American master of unit furniture, architecture and a few other things, stopped in London a few days ago on his way to Brussels, and left behind a spate of stories that seem to be typical of American humour. Here is one of them.

*

Like Charles Eames, Mr. Nelson and his associates have recently been embroiled with aluminium big business in search of design-prestige. The client's brief was to design an aluminium boat of the immediate future —" the next thing after streamlining!" After prolonged thought about what Americans actually expect from boats and boating, the Nelson team came up with a sort of square thing, with a rather high centre of gravity to make it roll and pitch, a big paddle-wheel astern, driven by two minute lawn-mower motors. The phone, according to Mr. Nelson, started ringing thirty seconds after the aluminium company had opened its post. Now, after eighteen months of argument and explanations about how the average American family uses its boat as a means of moving part of the backyard a few fathoms out from the shore, but still likes to feel it's at sea—after eighteen months the company's engineers are at work on ways of making the paddle-wheel splash the maximum amount of water about.

ASTRAGAL



Kenneth Buffery, A.R.I.B.A.

Alan Daventry

G. Grenfell Baines, A.R.I.B.A.

D. Plaskett Marshall, F.R.I.B.A.
President, Institute of Registered Architects

"A Fellow Student"

T. Richard Davies,
Student R.I.B.A.

I. M. Parsons, A.R.I.B.A.

J. B. Weller, A.R.I.B.A.

H. Richardson, *Press Officer, Timber Development Association*

Tender Figures

SIR,—There are a number of questions an architect must surely ask after reading the JOURNAL'S report on a recent High Court ruling on the disclosure of tender figures (AJ, July 3).

1. Assuming that a contract where quantities did *not* form part was to be the basis for an agreement (contrary to recommended practice in view of the amount involved *viz.*: £6,000 plus) why did the architect assume that the lowest figure submitted must be in error and that the remaining figures were not excessive?
2. If quantities did form part of a proposed agreement why wasn't the Bill called for, an arithmetical check undertaken, and the tenderer, if an error had occurred, given the opportunity of revising his figure which could have then been recommended for acceptance if below the next builder's estimate? this would follow normal practice.
3. Regarding the evidence provided by expert witnesses, under what circumstances is it considered common practice to disclose figures submitted in competition to one or, for that matter, all the tenderers *before* a contract has been negotiated?
4. Why weren't all the tenderers given the opportunity of revising their figures by the mass disclosure of their competitors' tenders?

If an architect knows that a builder has made an error in his tender that is likely to cause hardship and trouble if accepted then he is at liberty and morally bound to draw the attention of the builder to this point and, if still not satisfied, need not recommend his figure for acceptance. This is normally accepted practice but, surely, the divulging of other tenderers' figures is an unnecessary breach of privilege?

KENNETH BUFFERY.

Huntingdon.

SIR,—A recent High Court action reported in your columns made known the fact that it is a common practice for architects to disclose the amount of tenders to competing tenderers. The action succeeded; but this does not lessen my conviction that we have here a most dubious commercial practice. It is, to my lay mind, just so much more evidence that architecture and building are carried on in this country with no regard for normal commercial usage. Everyone's interests are safeguarded except the purchaser's.

I also have been in a business where I was called on to represent my clients' interests to tenderers. If I received a quotation which was substantially below the others, I would ask myself two questions. Firstly, "Is this tenderer grossly inefficient?" If I thought this a possibility I would dismiss him from further consideration. Secondly I would ask, "Has an honest mistake been made by a reputable firm?" I might in this event ask the tenderer the question pointblank. If, as happened in the case which came to court he denied the possibility of error, I would take his word, accept his quotation and consider that I had made a *coup* on my client's behalf. The tenderer might make a loss but that is a commercial hazard against which he must safeguard himself. I would not do it for him. *Caveat*, in this case, *mercator*.

Anyone who has had any dealings with the house-building industry—surely the most primitive and inefficient of all our major industries—must be appalled at the way in which costs are allowed to proliferate. It seems to be tacitly assumed that the purchaser has an infinitely large bank balance with which to make good the glaring deficiencies in cost control, production planning and the use of advanced techniques. If the architect shares in this view and is prepared to go to lengths which in commerce would be regarded as grossly unethical to bolster up the builder's inefficiency, is it surprising that the profession has so little to do with private building?

ALAN DAVENTRY.

London.

Liverpool Failures

SIR,—As an external assessor to a number of schools I was interested in P. F. Smith's letter (AJ, July 10) referring to "anomalies" in full-time training course generally, and the percentage failures at the Liverpool School particularly, where this year I was one of the external assessors.

I am a practising architect and received part of my training at a recognized school in a university. Working with our firm were some thirty qualified architects most of whom are school trained, my reasons for mentioning this will be obvious.

My experience as an assessor cannot be described as extensive and I wouldn't claim to be an expert, but I have now seen something of the final processes by which the work of a student in a School of Architecture is judged and of the hard thinking and human consideration which lies behind the decision to pass or fail that student.

Though some responsibility does lie with the assessors, and to this extent the pass-fail percentage could be taken as a reflection (or otherwise) on the teaching, an assessor cannot possibly go into anything like the same detail as the staff. Consequently the help he receives from Principal and teachers is material and frequently conclusive. Passes and fails therefore are very much dependent on standards set by the staff themselves and maintained by their own decisions.

Of the Liverpool School staff I would say that the last thing they are is suicidal; the first thing they are is humane—to a degree which surprised me and I was particularly gratified to notice how finely balanced was this humanity with a logical attitude to standards.

It must be tempting for a staff to present the school in favourable colours to an assessor who takes one week away from practice to go through a tremendous amount of student work and who—let it be said—could easily be led astray by bad advice designed to court popularity with the students, and prestige in the outside world, by a high percentage of passes; but weak students so passed would soon be disillusioned, and the prestige would soon prove to be spurious.

That this is well understood at Liverpool, and generally at all the other schools I have visited is made clear by the balanced, almost neutral way in which the students' work is presented to the assessors, who, to repeat, are only members of a jury responsible for deciding who in the school has attained its standards.

Finally, I imagine your correspondent hardly needs reminding that an entrance to a university course is not by itself a ticket to a degree, and that a School of Architecture, like all other schools, consists of its students as well as its staff.

G. GRENFELL BAINES.

Derby.

Pensions For Private Architects

SIR,—When assistants are deciding whether to go into public or private offices they are, quite naturally, influenced by the conditions of employment offered by each. Many believe that public employment has two main advantages—security and pension rights.

I believe that, at least as far as the latter is concerned, private architects can and should be in a position to offer conditions equal to public offices. During recent months I have done considerable research into the possibility of a self-administered pension fund (*i.e.* not an insurance scheme) being adopted by private architects for the benefit, and with the agreement, of their staffs.

Such a scheme, financed by contributions from employer and employee, requires relatively low contributions from both, is economical in administration and will permit the employee to carry his pension rights from one particular office to another.

It is not possible in a short letter to go fully into the details of such a scheme. My desire at this stage is to ascertain the extent of the demand among private architects and their staffs. One point should be made clear: the scheme should be open to all private architects' staffs irrespective of membership of professional organizations and, indeed, subject to Treasury consent, it might be possible to open the fund to allied professions. But at the moment I am primarily concerned with private practising architects and their staffs.

I should like to hear from private architects who, preferably after discussing the matter with their staffs, are interested in this proposal. If it is thought desirable, group meetings could be held in various centres more fully to examine it.

D. PLASKETT MARSHALL.

London.

Bartlett 'Revolt'

SIR,—With reference to the Egyptian composition mentioned and reproduced in your feature on the exhibition held at the Bartlett (AJ, July 10), may I point out that it was in itself revolutionary: M. W. Cassidy had to obtain special permission to submit an Egyptian study for a programme requiring a composition of classical elements, which are never otherwise anything but Greek and Roman.

"A FELLOW-STUDENT."

London.

SIR,—One thing about the Bartlett School Revolt puzzles me—

If students don't like the place, why on earth don't they leave it, and why did they go there at all? They might find the things they are looking for elsewhere—perhaps even outside the walls of a "recognized school." . . .

A school can teach techniques and suggest theories. No school and no "system of education," has a monopoly of either.

T. RICHARD DAVIES.

SIR,—I have just read about the trouble at the Bartlett School of Architecture and although I qualified there in 1950, I still get hot round the collar when I think what we were forced to endure. I would like to think that I echo other ex-Bartlett architects' sentiments, when I offer to sacrifice some of my hard earned leave and pay, by coming down to London, if asked by the Institute, to answer questions.

Yours in hope more than anger.

I. M. PARSONS.

Stafford.

Why Use An Architect?

SIR,—John Carter has raised an issue of increasing importance to the architectural profession ("Why Use an Architect?" AJ, July 10). Within the next decade, the architect will need, in certain circumstances, to have a consultant to help plan a building, even as he does now to resolve both structural and technical problems. The consultant will be some form of work study or management expert.

There is nothing mysterious or difficult in work study technique, but as it is a lengthy process it lies outside the architect's role. It is an exacting science needing constant practice. It is a scientific and accurate way of critically examining circulation and routine to establish the best layout within certain buildings, in particular, factories, farms, storage depots, hospitals, and, as Mr. Carter observed, shops. This is significant not only for the fittings within a building, but for its shape. It is a planning problem—something many architects consider sacrosanct to the profession.

Consultant firms in work study have appeared in industrial and agricultural capacities. They are in a position to, and sometimes do, criticise an architect's solution to a planning problem, which may be arbitrary in contrast to their judgment based on stopwatch, tape, and analytical charts. This should be observed by our profession, and taken into account in the choice of consultants an architect advises a client to have. Should architects despise the new science, its exponents will go their own way, and our potential clients will follow after them.

J. B. WELLER.

Wolverhampton.

Timber Roof Lining

SIR,—In your issue of June 19 you illustrated a working detail of the roof of a spinning factory in Sligo. The caption to the photograph refers to the use of painted tongued and grooved boarding and includes a comment to the effect that this material would not be allowed in England. This is most misleading.

The Thermal Insulation (Industrial Buildings) Act does not preclude the use of timber as a roof lining provided it is suitably treated with a fire retardant as a means of increasing its resistance to flame spread. A number of such treatments are available and details of Proprietary Fire Retardants conforming to test requirements are contained in FR Note No. 350/1958 issued by the Fire Research Station at Boreham Wood.

H. RICHARDSON.

London.

BRS REPORT

Management Study Proposed

A more extensive study of the problems of management in the building industry is proposed by the Building Research Board in their programme for the next five-year period 1959-64. This is announced in the Board's Annual Report, *Building Research 1957* (HMSO, 5s. 6d.), published last week, and summarized below. The Board's proposals will be considered by the Council for Scientific and Industrial Research.

Research undertaken during 1957 includes:

Partial prefabrication: A detailed study of methods of house-building using large factory-made components reveals that partial prefabrication of this sort is not necessarily economical. The odd jobs of filling in, covering joints and finishing, which still have to be done on the site, may offset any expected savings. To be successful, factory-made components should eliminate rather than reduce the need for traditional components and trade operations.

Packed bricks: Under the stimulus of the Station's work on the packaging of bricks, the use of this method is now steadily increasing.

Incentive schemes: The Station has studied the operation of incentive schemes in practice to find out what affects their success and to what extent they can be efficiently employed in building. It has been found that the most important factor is the way in which it is administered. If an incentive scheme is to be of maximum value it should be developed as part of the whole organizational structure of the firm. It can then aid planning and estimating while being itself under continuous review so that bonus payments are kept at an equitable level.

Preplanning: An important preliminary to the actual construction of a building is the preparation of a detailed plan or programme of site work. In assisting the architects and the contractor for a secondary modern school in drawing up such a programme, the Station found that building time could be halved.

Lightweight concrete: The use of lightweight concrete for the construction of loadbearing reinforced concrete beams and slabs can save much in weight. Though the current Code of Practice for reinforced concrete permits its use, it does not give adequate guidance to designers. Investigations are now going on to provide further knowledge so that better use may be made of lightweight reinforced concrete.

Soil-engineering: A study of the pressures that have to be resisted by tunnel linings indicates that considerable economies in design are possible. A related investigation—on the design and construction of underground pipelines—is producing information which may lead to increased safety and reduced costs.

New sizes for bricks: Larger perforated brick units could cost less to lay and give better heat insulation. The Station has developed suitable patterns, and two brick-making firms have now made trial batches of a horizontally-perforated brick measuring 13 × 8⅝ × 2⅝-in. (about three times the volume of the usual brick). It has a central hand-hold and is grooved to provide a "cavity" effect. Wall tests on these are encouraging.

Floors: So far, no testing machine has been developed to give results that correspond to experience of wear by foot traffic but in the hope of being able to design such a machine, a study is being made of what actually happens between the sole of a shoe and the surface of a floor.

Roof gutters: Until now there has been no formula for calculating the size or other features of design of roof gutters. The Station has studied both the important factors—rainfall characteristics, and patterns of flow off roof edges and in gutters—and is about to publish detailed recommendations for designers.

Factory design: Financial support from the Midland Regional Board for Industry has enabled the Station to embark on comprehensive studies of factory design problems.

RIBA

Constitutional Committee

The RIBA announces that at its meeting on July 8 the Council, in addition to taking other decisions published last week, appointed the following members to serve on the Constitutional Committee (whose terms of reference are not published, but are understood to include the resolution passed at the AGM): The Honorary Secretary, R. H. Sheppard, the Honorary Treasurer, E. D. Jefferiss Mathews, the Chairman of the Allied Societies Conference, Norman H. Fowler, the president of the Royal Incorporation of Architects in Scotland, T. H. Thoms, Hubert Bennett, Kenneth J. Campbell, Denis Clarke-Hall, A. W. Cleeve Barr, Bernard H. Cox, R. O. Foster, Edward Holman, Arthur G. Ling, J. H. Napper, Thomas E. Scott, Peter H. Shepheard, John C. Stillman, Thurston M. Williams, L. Hugh Wilson.

At its first meeting on July 17 the Committee elected Cleeve Barr chairman, and agreed upon a programme of work.

Release for Examinations

The Council of the RIBA wish to bring to the notice of members of the RIBA the importance of allowing their staff part-time day release until they have completed their qualifications. Part-time day release should, as a minimum, be the same as that agreed between the Royal Institute and the Ministry of Labour and National Service in connection with deferment of national service. Under that scheme it is obligatory for employers to permit students part-time day release to the extent of not less than eight hours a week for the purpose of taking a course of instruction and/or private study in connection with preparation for their examinations.

ELECTRONIC BILLS

Used in Coventry

Electronic calculating equipment, using data put into punch cards, has just been used successfully in connection with the preparation of bills of quantities for Binley Comprehensive School, Coventry, (City Archi-

tect, Arthur Ling, Schools Architect, W. Kretchmer). The system used is based on a "unit quantity" method of measurement and has been devised by J. E. Cook, a partner in the firm of Bridgewater & Coulton, chartered quantity surveyors, (Senior Asst., D. J. Atkins).

Binley School will be in an area subject to mining subsidence and is being constructed in the system developed by Donald Gibson at Nottinghamshire County Council, in collaboration with the Architectural Departments of Coventry City and Derbyshire County Council.

We published an article on April 18, 1957, by H. M. Stafford, on the problems and possibilities of this method of preparing bills of quantities. Mr. Cook will be describing this latest and tremendous advance in taking off quantities in next week's JOURNAL.

JEW'S COLLEGE

Cost Explanation

In our publication of The Jew's Theological College on June 19, the cost comment referred to the "inexplicably high cost of the windows" (29s. 10s. per sq. ft. of window). The quantity surveyors, Messrs. Veale and Sanders, now inform us that this price includes, besides the frames: glass, sub frames, glazed aprons, steel external cills, hardwood or terrazzo window boards and double windows to the synagogue and singing rooms. This information was not available to us at the time of publication.

COMPETITIONS

The Carter Group of Companies announce a competition, open to architects and architectural students and to be held under RIBA regulations, for the design of its stand at the 1959 Building Exhibition. Premiums of £100 and £75 will be offered with a further £75 at the discretion of the assessors, who are Howard V. Lobb, Denys Lasdun and C. C. Carter (chairman of Carter and Co. Ltd.). The conditions will be announced in September.

The closing date for submission of entries in the Wokingham School competition is December 5, 1958, and not December 15 as stated in our issue of July 10.

VISITING PROFESSOR

Recently a number of architects with tropical knowledge or experience were invited to meet Professor Leonard Currie at the RIBA. Professor Currie was on his way from Blacksburg, Virginia, where he heads the Department of Architecture, to the IUA Conference in Moscow, and called at the Institute to meet British architects and to give some account of his experiences in the tropics.

He showed a large number of slides of recent architectural work both in Central and South America, but more particularly of Bogota, where he directed the Inter-American Housing and Planning Centre. The latter performs a useful function as a post-graduate school for students from all the Latin-American States, and it has done valuable work in designing components and prototypes for low-cost housing.

Discussion centred mainly on the advantages and disadvantages of the freer professional organization in South America whereby in some cases architects work as Building Directors as well.

The RIBA, which comes in for a good deal of criticism from time to time, is to be congratulated on bringing together such an experienced group of architects to meet Professor Currie at short notice.

How should the Council of the RIBA be elected? At our request Enid Lakeman, B.SC., A.R.I.C., an expert on electoral systems, has examined the system now used by the RIBA, and has recommended a method of election that would provide both for election by ballot and for a fair representation of different parts of the country and of different sections or interests in the profession. Miss Lakeman is research secretary of the Proportional Representation Society, and acts as returning officer in the elections of a professional institution.

THE RIBA ELECTION SYSTEM

Why Not Try Proportional Representation?

The dissatisfaction so vigorously expressed at the Annual General Meeting of the RIBA concerns in part, matters on which an outsider is not entitled to any opinion—for example the question of what particular status should be accorded to Fellows, Associates and Licentiates. It also involves, however, technical problems that arise in all elections, no matter what the organization concerned, and it is on these that I hope outside advice may be helpful.

The chief ground of complaint is the high proportion of Council members who are not directly elected by members of the Institute, and the resolution adopted by the meeting asks for this to be altered; however, those who voted for that resolution may not have realized that merely to fill all Council seats by direct election will not suffice to "make the Council more representative of the general body of members." Let us examine the result of this year's election for those places that are now so filled The total number of valid votes cast was 38,146, but of these only 15,502 helped to elect one or other of the ten successful candidates; 22,644 votes were cast for the 33 unsuccessful candidates and had no effect on the result. How serious this position is will be clear if we consider the possible consequences if the one candidate with the fewest votes had withdrawn. That candidate polled only 197 votes, compared with 1,171 for the lowest successful candidate and 1,176 for the one next above. If the bottom candidate had not stood, most of the votes given to him would probably have been used for someone else, and if, say, 50 of them had gone to the top unsuccessful candidate (Westwood, 1,350) and 70 to the next unsuccessful candidate (Pooley 1,112), both Westwood and Pooley would have been elected in place of Wilson and Conolly.

Another thing may falsify the result. For all that the figures show to the contrary, one of the defeated candidates—say, Westwood—may really be the one whom the largest number of voters would select as the best candidate. This is because each elector has ten votes; if he gives his first vote to Westwood he may give up to nine votes for other candidates, and each of those nine votes counts *against* Westwood. A candidate who is the first choice of a substantial majority may be defeated *by the votes of his own supporters*; an actual instance of this occurred in the 1955 election of the Food and Agriculture Organization for four representatives from the European section. There were five candidates and 69 voters, and the result is consistent with the supposition that 41 of those voters wanted the United Kingdom re-elected while the other 28 did not. The U.K. got one vote from each of the 41, while the other four countries each got one vote from each of the 28; but the 41 voters each had three other votes (123 in all). Of those 123 votes, 13 were not used, but the other 110 were distributed among the remaining four candidates, with the result that the 28 votes were raised to 49, 50, 57 and 66 respectively, all four thus coming above the United Kingdom with its 41 votes. No wonder the AJ Editor finds it difficult to decide what the results of the RIBA election really mean!

This has further consequences. A candidate believing he may have lost for this reason may proceed to organize his supporters, arranging either that they do not use their other nine votes or that they use them only in an agreed way. He may arrange for the nomination of nine of his friends and urge members to vote for that whole group of ten candidates. If that move is successful, not only will the one candidate with majority support be elected, but all ten will be. In other words, a group of members who organize themselves like a political party have an immensely better chance of winning seats on the Council than has an equally large group that is not organized: the system gives a strong inducement to organize on "party" lines when probably members have no real wish to divide themselves in that way. It tends to set the older members against the younger ones, the traditionalists against the moderns, London against the provinces, and so forth.

All this would be avoided by the use of the single transferable vote. In this method, each elector has *one* vote, which he gives in the first instance to the one candidate he considers best (marking that candidate "1"). To make as nearly as possible certain that each vote cast will affect the result, the

voter may then mark the candidate he considers the next best "2," the next best "3," and so on, this being an instruction to the returning officer: "If my vote cannot help to elect my first-choice candidate (either because he already has enough votes without mine or because he has so few votes as to have no hope of election), don't waste my vote but give it instead to the candidate I have marked 2, and if it cannot help him either, then to the one I have marked 3, and so on until it reaches a candidate it can help to elect." This method applied to the filling of ten vacancies would enable ten-elevenths of the votes cast to contribute to the election of one of the successful candidates—instead of only five-twelfths in the actual election this year.

The returning officer carries out the voters' instructions by first sorting the ballot papers according to the candidate marked as first preference, then utilizing by transfer the "surplus" votes of any candidate who may have more than they need for election; the actual papers transferred are selected according to precise rules to make sure that they are a fair sample of all the papers credited to the successful candidate. When there are no more surpluses, the returning officer turns to the candidate who is then at the bottom of the poll and has no further hope of election; that candidate is declared defeated and each of his papers is utilized by being transferred to whichever of the remaining candidates has been marked by that voter as his next choice. These operations are continued until all the places are filled.

To secure election, a candidate needs not a majority of the votes cast but only a quota, the quota being the smallest number of votes that can be obtained by each of as many candidates as have to be elected, but not by more. (For ten places, the quota would be one vote more than one-eleventh of the total valid votes.)

Suppose, for example, that one quota of the voters are employed in local government. They will probably vote first for local government candidates—partly in a conscious attempt to get that branch of the profession represented, partly because those are the candidates they are likely to know best. In that case, we may be sure that one local government candidate will be elected (and if there are two quotas of such voters two will be elected, and so on), because if there is only one such candidate he will get the whole quota of votes at once, while if there are two the less popular will be eliminated and his supporters will be found to have directed that their votes be transferred to the other one. No group can ever fail to secure representation because its votes are split among too many candidates, nor can any later preference ever count against an earlier one; therefore an organized group secures no advantage over an unorganized group of the same number of voters, and there is no inducement to divide the membership into mutually antagonistic "parties."

The operation of this system can be studied in the elections of bodies similar to the RIBA. For instance, in this year's election to the Council of another professional organization, the quota was 71 votes and there were two candidates employed in the Admiralty who, between them, secured 86 first preferences. There is no Admiralty Party; there is probably not even any conscious effort to secure Admiralty representation, but to most members working in that department those two candidates are the ones they know best. Therefore, when the less popular of those two candidates found himself at the bottom of the poll with 20 votes, 18 of his supporters were found to have directed that their votes should be given to the other—who thus more than reached the quota and was elected. In the Royal Arsenal Co-operative Society, most of the members live in the Woolwich area, but that district does not monopolize the committee: members living in, say, Streatham get representation in proportion to their numbers. At the same time, so do quite different groups—the older and the younger members, the men and the women. In the two Houses of the Church Assembly, shades of opinion are important, and we find fair representation of groups such as High Church and Low Church—but without any of the organization one against another which, under a different electoral system, would have tended to disrupt the Church.

All this means that special rules for the representation of certain categories largely become unnecessary. For example, architects who are Licentiates would almost certainly secure sufficient votes to elect one from that category. Nevertheless, if it should be felt desirable to lay down that there must always be elected, for example, at least one Licentiate or at least three Fellows or not more than six Associates, a very simple modification of the rules will secure this. (Under such a modification, if, for instance, all Licentiates but one have been defeated and that one is at the bottom of the poll, he is not eliminated in the usual way but is declared elected, the rest of the count proceeding normally.) Therefore, it would be possible to fill all the places on the RIBA Council (apart from the Overseas and various ex-officio representatives) in one election. If the whole 54 who now are elected on the national ballot or represent the Allied Societies were elected together, or if they were elected in thirds, 18 of them each year, there would be reasonable certainty that, for instance, London and the four adjacent counties, which contain almost exactly one-third of the membership, would elect about one-third of the Council, while the Midlands and Northern regions, each with about half as many, would each elect about one-sixth. A much smaller region, like Wales or Ireland, might or might not get representation on the strength of the votes cast for its candidates, so a special rule, as suggested above, might be desirable for their benefit.

It would probably, however, be more practical to elect separately the members now nominated—to continue the nation-wide election for those Council members now so elected and to send each member at the same time a second ballot paper containing the names of candidates for his own region: thus, for example, letting Northern members vote separately to elect the six people now representing the Allied Societies in the North. If it were desired to retain the special representation of any particular allied societies, then again there could be a special rule on the lines already suggested.

What effects would this be likely to have on the elections? In the first place, I should expect the at present deplorably low poll to rise considerably. Filling all seats by election (under any system) would probably raise the poll in any case, but the rise will be greater if each voter can feel reasonably certain that his vote will affect the result. As already pointed out, well over half the votes cast in the recent election were of no effect, and it is possible that many voters cast all their ten votes for losing candidates and had no part in electing any Council member. Under the single transferable vote, in an election for ten places, not more than one-eleventh of the voters can be unable to elect a representative of their choice.

Secondly, I should expect the number of spoilt papers to fall. The present system requires the observance of quite complicated instructions, while the new one involves only the much simpler process of numbering, in the order of his preference, as many candidates as the voter wishes. In this year's elections, the number of papers invalid by reason of mistakes in marking votes was 62 out of 4,833, or 1.3 per cent.; this is twenty times as high as in the elections of the National Union of Railwaymen. Those elections are to fill one seat at a time, by a majority, but the method of marking the ballot paper is the same, 1, 2, 3 and so on; in a typical result, the number of papers spoilt by mistakes in the marking was 34 out of 45,927, or 0.07 per cent.

The returning officer also would find there was less risk of making a mistake and not discovering it in time. His work would, however, take longer; probably about twice as long if all the elections were counted centrally.

An incidental advantage would be that if there were a contested election for any office, this would cause no trouble in the Council elections. A member standing, for example, for President could also stand for an ordinary seat on the Council. Under the present system of voting with X's, if he were successful in the first election—thus becoming an ex-officio member of Council—all votes cast for him in the second election would be wasted, but under the single transferable vote they would not; each vote would simply be passed on to that voter's next preference, *i.e.* to the candidate for whom that member would have voted in the first place if the elected President's name had never appeared on the ballot paper.

Far more important, however, would be the effect on members' relations to each other and to the Institute as a whole. No substantial group of members could any longer feel themselves to be excluded from their proper share in the running of their Institute; none could feel that the Council was unfairly dominated by a particular interest. Each member would be led much more to feel himself to be an essential part of an organization working for the good of the whole profession.

After 18 months' investigation the RICS Cost Research Panel have reported to the Minister of Housing on the cost of flats and houses. Their recommendations for action were commented on in the leading article of July 17. The review below assesses the report as a whole, considers that it adds little to present knowledge and suggests that a true comparison of flats and houses must consider more than merely the construction costs.*

THE COST OF HIGH FLATS

RICS Cost Research Panel Report

This report sets out to unravel two things: why flats cost more than houses and whether flats could be built more cheaply. It is addressed primarily to the Minister as a reply to the challenge thrown out by his predecessor, Duncan Sandys, at the 1956 RICS dinner. This was the year when the RIBA debated Architectural Economics at Norwich, and the RICS quantity surveyors awoke from their Rip Van Winkle sleep to scientific modes of thinking. Since then they have scrambled to catch up with encouraging vigour and energy—witness the numerous articles on cost they have sponsored, the lectures and meetings they have taken part in, their frank admission that old methods of cost control are not good enough, and their espousal of cost planning. Two years have seen great changes—and this report marks the end of the first stage.

Its main section begins by showing that in 1954 a two-storey house cost on average 28s. 6d. per sq. ft., low flats 40s. 6d. and flats over eight storeys between 45s. 3d. and 85s. 2d. Then follow paragraphs explaining the differences. They are due, for example, to the need for a structural frame, heavier foundations, fire resisting floors, lifts, more cupboards, larger plumbing pipes, more elaborate electrical installations, clothes drying amenities, balcony balustrades and so forth. They are also due to a generally less adequate preparation for building than is the case with houses, to the wide employment of nominated sub-contractors, and to the lack of a tradition of flat building in this country. The MOHLG and housing authorities are criticized for not providing better guidance and unambiguous cost limits for the architects who have to design flats.

These, then, are the facts and reasons as to the cost difference. Recommendations to the Minister based on them (listed in the JOURNAL's leading article of July 17) are all worthy and unexceptionable—the kind of recommendation we might all make, if asked. One's only hope is that the authority of the RICS and of the hard work it has done will cause the Minister to take notice. The widespread belief that the Ministry's present cat-and-mouse method of cost control has well and truly defeated its own object over the years finds some implicit confirmation in this report—notably in the alarming range of high flat costs.

It would be unfortunate, however, if the MOHLG or local authorities took the report as to the last word on housing costs—and used it to guide housing finance policy. Its most significant defect is that there is little attempt to equate the comparisons made. Besides having smaller floor areas, flats have items such as access balconies, refuse chutes, floor finishes,, extra cupboards, lifts, and so forth—which are mentioned in the report as being absent from houses—but no attempt is made to isolate them, or assess their equivalents in two-storey development. In other words when they say that flats cost more than houses, they are not comparing like with like. This omission on the part of the authors of the report signifies the quantity surveyor's blind spot—his inability to understand the cost of architectural *function*, as distinct from the cost of particular ways of meeting it. An architect might perceive that with two-storey houses the refuse chute function is performed by door to door dustbin collection; the upper floor balcony function is performed by roads, fences and paths; the structural frame function by land; the vertical soil stacks function by underground drains, the balcony and staircase lights function by street lighting. Clearly, it would not be easy to draw up an itemized balance sheet of this extent—but it would be possible to compare the total development costs of an area of land at high and at low density and it would be possible to make some assessment of the effect of two such schemes on other rate-financed services and on the tenant's pocket. To local authorities, the higher construction cost of flats and a nostalgic preference for houses has brought about peripheral housing estates on virgin land—often several miles from the town centre, from shops and workplaces.

Because many of the incidental and running costs of this kind of development do not appear on the housing account, it is thought to be much cheaper than it really is. The social dreariness of such development brings home to us the error of considering costs by themselves—without setting them against the value of goods bought. To compare flats and houses is rather like comparing the tubes and buses of London. The capital cost per route mile of providing and running a tube must be enormous set beside the same cost for a bus route, unless we take into account the road costs, the difference in amenity between buses and tubes and not least, the cost of *not* providing tubes.

It was probably not within the Panel's terms of reference to set their boundaries of consideration so wide but only at this scale can one properly reconsider the hoary old flats *v.* houses question.

The conclusion of the Panel's report is that "although it is to be expected that flats will be more expensive, there is ample scope for reduction in the cost of flats." This implies that the next stage of investigation—whoever is to pursue it—should be to identify the intrinsically economic designs and types of construction for flats. BRS have already broken into this field by suggesting economical ratios of circulation to dwelling area, number of people per lift and so forth. In the course of their 18 months' work the Panel must have accumulated a great deal of "raw" information from which more criteria of this kind might be abstracted. It would be of far more value than the kind of wholly theoretical study which seems to have captured the Panel's affections. The study of an impeccably "average" dummy building may show that lifts, for example, take 9 per cent. of the total cost but if analyses of actual flats show a range from 6 to 18 per cent.—it immediately suggests that what the architect needs to know is *why* the range is so wide. Until you know what made the 18 so costly or the 6 so cheap, you cannot decide a fair target for the job on the drawing board. The lure of the theoretical study is obvious. When you contemplate the bewildering variety of designs, types of construction, local factors, market conditions and other imponderables which make the comparison of one building with another so hazardous, the need for a firm datum is very pressing. But the firm datum of the theoretically "average" plan, type of construction and cost, only tells the architect what his prices might be if he copied these averages. If he chooses something else, he is once more in the dark. The essential quality for any cost data is to give him some guide as to the cost consequences of a number of choices.

This review has said little about the effect on costs of the way projects are prepared and administered. The Panel's report makes it clear that part of the high cost of flats is due to causes of this kind—which their recommendations to the Minister rightly emphasize. Experienced and intelligent builders have been known to say that a full set of good drawings, a good bill and a co-operative architect could make much more difference to the cost of flats than all the cost planning in the world and one knows of not very good designs that were built cheaply for this reason. It is a pity that builders have not been sufficiently emboldened by their full order books to commit themselves to a figure—"...our prices will be 6 (or 16?) per cent. lower if the job is well prepared and administered...." We can only hope that the MOHLG will take the RICS recommendations on procedure to heart—so that the architect and quantity surveyor and builder who want to do better have a chance.

The final verdict on this report and on the papers and studies which preceded it might be this: The facts accumulated, the reasoning brought to bear on them and the conclusions drawn may be irreproachable, but nowhere is there any hint of the multi-storey flat as a type of home brought into being by the social and economic ideas of our time. If the report has a fault, it is that it probes the costs of concrete, brickwork and tiles, not of places for people to live.

* Published in the *Chartered Surveyor* for July 1958.

DIARY

Stop and Look. Talk by Sir Hugh Casson in the BBC's Children's Television series.
JULY 25

The Polytechnic Annual Exhibition. At Little Titchfield Street, W.1. 10 a.m.-5 p.m.
UNTIL JULY 25

AA School Annual Exhibition. At the AA, 34, Bedford Square, W.C. Monday to Friday, 10 a.m.-7.30 p.m. Saturday 10 a.m.-2 p.m.
UNTIL JULY 31

Lightweight Domes and their Structures. Interview with Buckminster Fuller by Reyner Banham. On the BBC Third Programme. 8.20 p.m.
AUGUST 1

Japanese Art Treasures. Exhibition at the Victoria and Albert Museum. Monday, Wednesday, Friday and Saturday, 10 a.m. to 6 p.m.; Tuesday and Thursday, 10 a.m. to 8 p.m. Sunday, 2.30 a.m. to 6 p.m.
UNTIL AUGUST 17

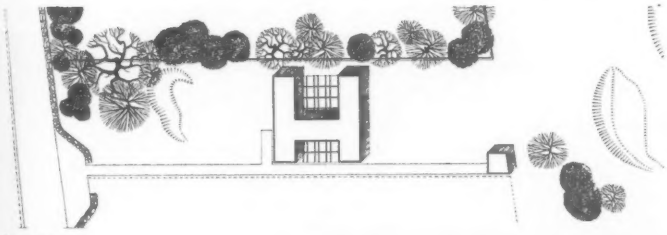
CRITICISM

by J. M. Richards

HOUSE near COWES, ISLE OF WIGHT
designed by JAMES STIRLING and JAMES GOWAN

This is the first time I have discussed a house in this series of articles, and it is a little surprising that it should be on this occasion that I find myself confronted by a design strictly based on the principles of modular planning. The design reflects what some people may feel is a doctrinaire insistence that every element in the plan must conform to a mathematically consistent grid. I say it is surprising, because a house is the one type of building in which every space—that is, every room—serves a different purpose and demands a different size and shape. Therefore one would expect it to lend itself far less well to modular planning than a type of building requiring frequent repetition of the same unit. On the other hand I suppose it could be argued that buildings with rooms of assorted sizes are the very ones that need the overall discipline which reference to a single module imposes, in order to give the plan coherence.

You can take your choice; and I should now say that I am not objecting to this highly schematic approach to planning. One must judge by results and I find this a very charming little house. What I would like to be sure of is whether its charms are due to the architects' interest in modular design endowing it with some inevitability of form and proportion, or whether they have been achieved in spite of this. But before going into the question any further I must try briefly to define what the schematic basis of the design consists of.

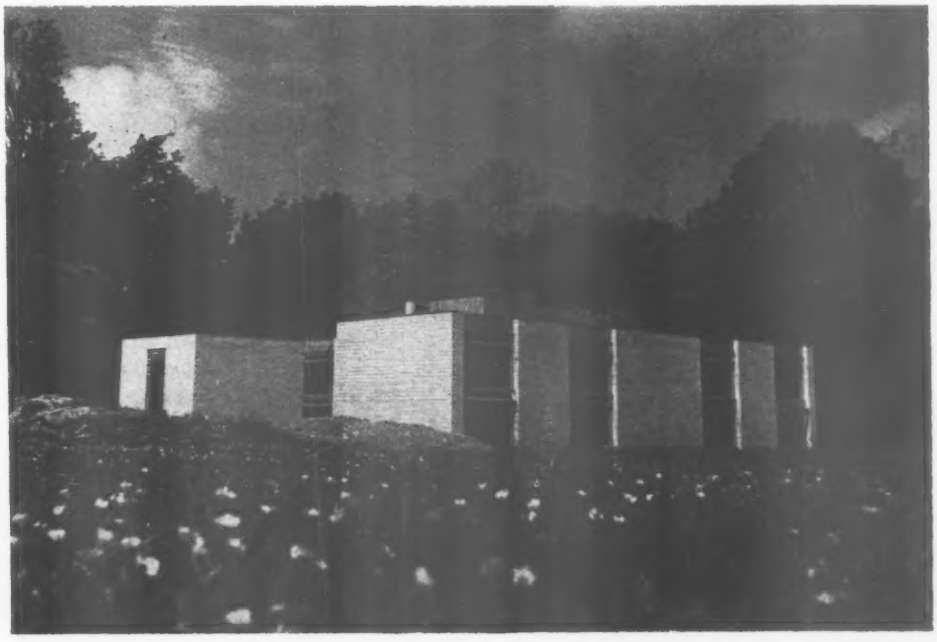


Site plan

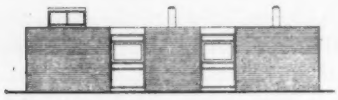
The house is of one storey only, laid out on a 10-ft. grid. Its plan is the shape of a capital H, with the living-room, the entrance-hall and a store-room occupying one long wing, the bedrooms and a small studio occupying another wing parallel to it, and with these two wings connected by a shorter one containing kitchen, bathroom and a corridor. This short wing divides the space between the two long wings into two paved courtyards, one twice the width of the other.

Each wing (see plan) is 10 ft. wide; the courtyards between them are 20 ft.; the other dimensions of the courtyards, either side of the 10-ft. cross-wing, are 20 ft. and 10 ft. Internally this 10-ft. grid is subdivided into 5-ft. units, every window or door opening throughout the house being 5 ft. wide, and the wall areas between windows being either 5 ft. or 10 ft. All other subdivisions of the plan—such as the partitions separating the entrance-hall from the living-room, the bathroom from the kitchen and the bedrooms from each other—conform to this grid, and the corridors are 2 ft. 6 in. wide—half the 5-ft. unit. All finished dimensions are not, of course, exact multiples or subdivisions of 5 ft. because the thickness of the wall (11-in. cavity throughout) has to be allowed for, but the principle of modular planning is never departed from. Leaving aside for the moment whatever aesthetic or intellectual satisfactions are obtained from the application of this principle, it can be seen that it has definite practical advantages. The house had to be built very cheaply*, and this must have been greatly

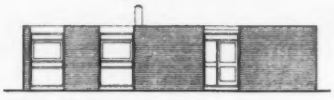
* As in fact it was. The final cost was £2,800, which is remarkably low for a house of 1,000 sq. ft. enclosed living area, or 1,600 sq. ft. including the courtyards.



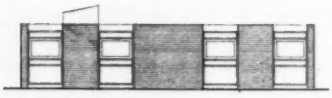
The house from the south-east: bedroom wing in foreground; living-room wing beyond.



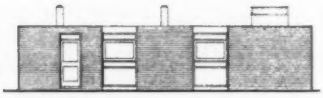
North elevation



West elevation

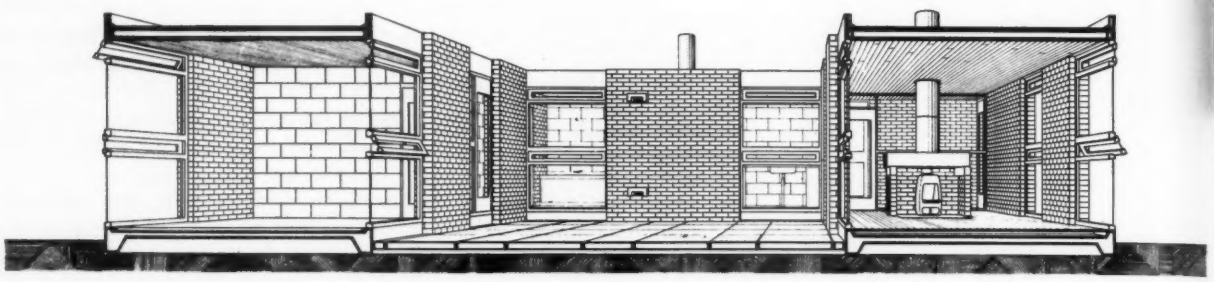


East elevation

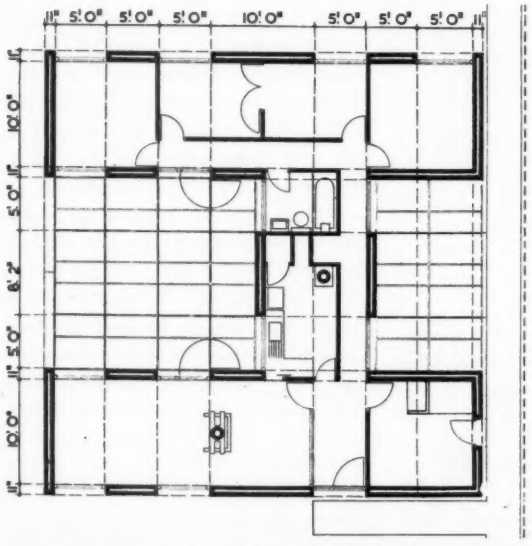


South elevation

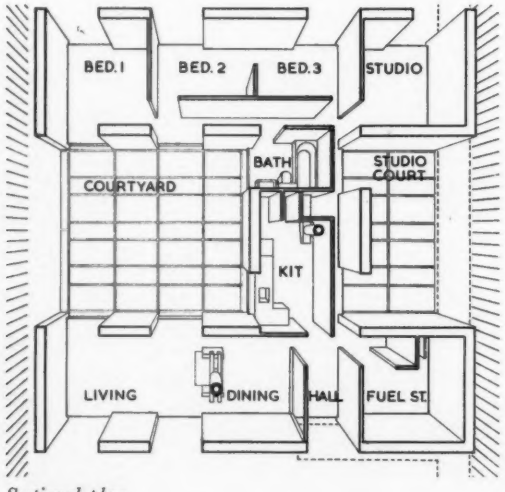
helped by the reduction of the structural elements to so few. All windows, throughout the house, are identical (they are of softwood, clear-varnished, with fixed glazing in the large panes and horizontal opening lights across the centre and at the top), and the doors in external walls (front door, side door and the doors opening from each wing into the larger courtyard) are a slight variation of the same pattern. All external walls are composed of standard lengths of cavity brick-



Cross-section looking south, showing bathroom and kitchen windows looking into courtyard.



Plan showing 10-ft. grid on which the layout of the building is based and 5-ft. standard dimensions of openings.



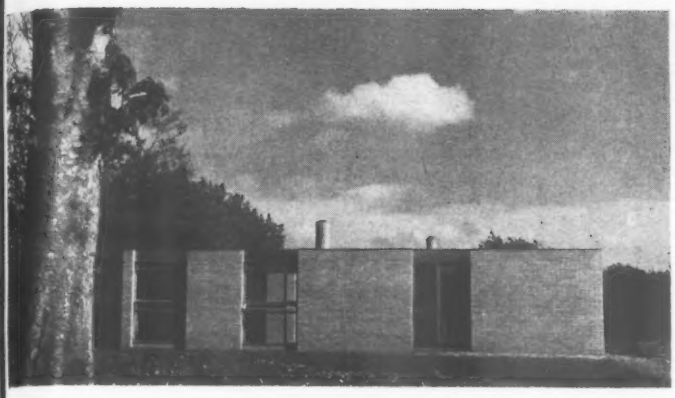
Sectional plan.

work (on discontinuous footings) of identical height, and there is no spanning over openings by brickwork or concrete lintols. Each window or door opening is spanned by a timber trimmer of standard size. Finally, the whole roof-structure consists of 5-in. by 2-in. joists, all spanning 10 ft., covered with boarding and roofing-felt and insulated with glass-fibre quilting.

This is, in fact, in spite of the unorthodox appearance of the house, a brick and timber structure of the most straightforward kind, which is usually the type of structure a small local builder does best; and it is always worth remembering that whether or not it is economical as regards actual cost, an orthodox structure is nearly always economical as regards the builder's willingness to submit a reasonable tender. How often have ingenious, but novel, money-saving ideas had their purpose defeated by a builder being frightened by their very novelty into putting up his tender in order to be on the safe side.

The only unorthodox bits of construction in this house are the fireplaces and flues in the living-room and kitchen, and they are very simple. Both flues are made of precast concrete cylinders. In the sitting-room the flue rests on a concrete beam supported on a brick fireplace surround; in the kitchen it rests on a concrete beam cantilevered from the wall to leave the stove it serves freely accessible. The only other non-standard structural element is a simple timber north-light in the roof of the studio.

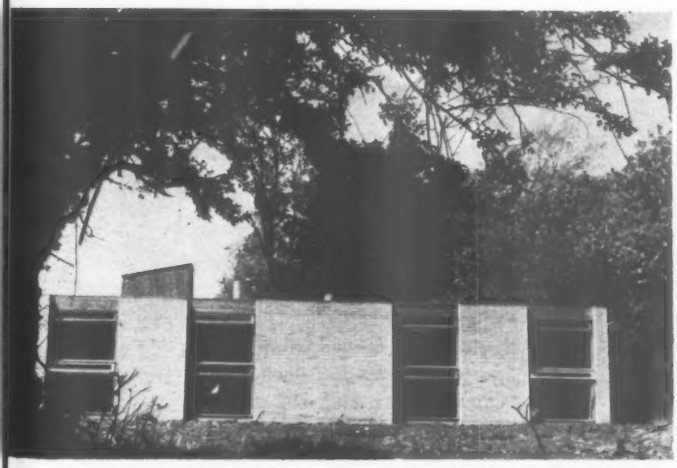
There are two interesting things about the expression given to the simple but highly disciplined style of design on which the whole character of the house depends. One is that the elevations are in fact a straightforward projection upwards of the plan; or, to put it another way, the plan is the same at whatever level it is taken: the wall continues upwards as wall and the window as window. Both simply stop when they reach roof-level, with a slim aluminium angle to finish them off. Drawn in elevation the effect of this may seem rather abrupt, but in fact the depth of the window reveal, though only a few inches, gives sufficient



Exterior from the west (the side from which the house is approached from the road), with three 5-ft. openings (two living-room windows and the front door) separated by 5-ft. and 10-ft. lengths of cavity-wall.

modelling to the façade and, when seen in perspective, gives sufficient variety to the roof-line.

The other interesting point is that the walls are treated identically inside and out. Both brick surfaces are fair-faced; there is no plastering and the windows have the same finishes on both sides. This is not only consistent with the forthrightness of expression that obviously appeals to these architects—the idea of everything being no more and no less than what it seems to be—but it also gives unity to the whole design. When you



From the east (garden side). The two bedroom windows on the right respond exactly to the two living-room windows in the picture above.

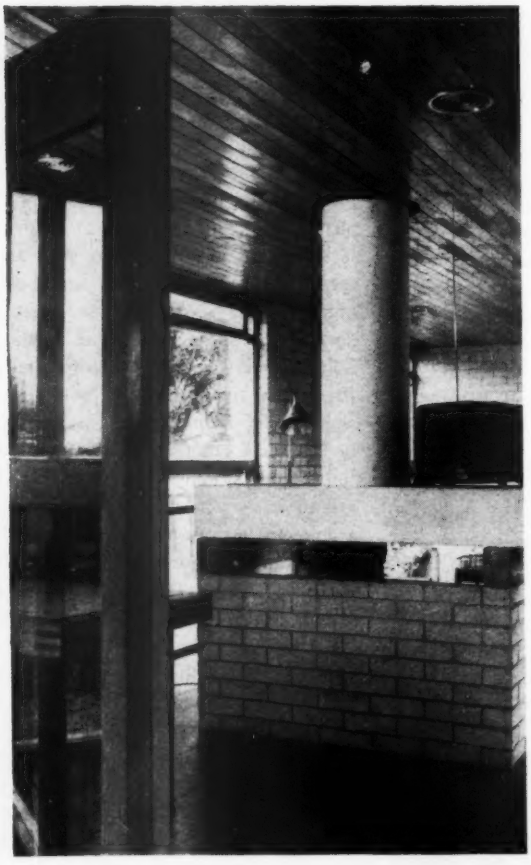
are in the courtyard you are in a room bounded by walls of white brick interrupted by windows of varnished wood, and only another surface underfoot and the absence of a ceiling differentiates this outdoor room from the indoor rooms surrounding it. There is no distinction between indoor and outdoor finishes. And this is emphasized by the cross-views created everywhere by the schematic nature of the plan. Standing, for example, in one of the bedrooms, you look across the courtyard into the living-room through the window that corresponds exactly to your own, and beyond it into the garden through the far window; and standing in the living-room you do the same. There is thus a visual link between front and back gardens.

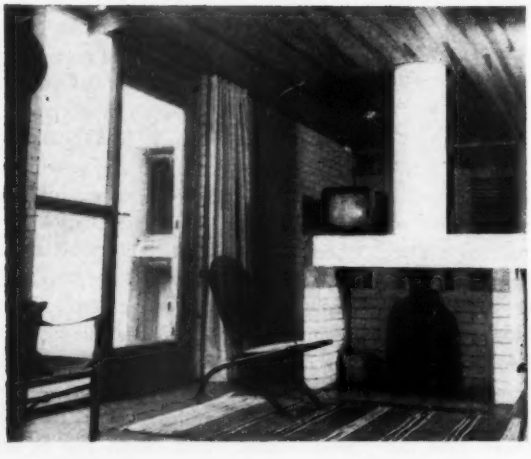
I should perhaps at this stage say something about the placing of the house on its site. It is on a deep, narrow plot, 50 ft. wide, and it fills the whole width all but a passage on either side. It is set some way back from the road behind the building line of the plots next door, which makes it quieter and more secluded and gives a green foreground view to the living-room windows. The bedroom windows have a similar view over a golf-course at the back. The plan-shape of course gives complete seclusion in the main courtyard, and readers looking at the plan may have wondered why this is placed on the north side. South would certainly have been correct, if it had not been for the exigencies of the site. But it happens that the north boundary is well screened by trees; the south is open to the next-door garden. A north-facing courtyard therefore gets much more privacy, and in practice the low roof-line allows plenty of sun to enter it.

It will have been gathered that this is a suburban area. The road along the short west frontage was until recently a country lane, but it is now being developed in conventional suburban style. The house under discussion, however, perhaps because its outline is so simple, does not stand out too aggressively from among its more orthodox neighbours. Its colouring, moreover—white sand-lime brick and blond wood—does not draw too much attention to its uncompromising geometry. The architects, I understand, wanted to use a dark red brick but were prevented by the local authority. My personal feeling is that this would have given too much visual emphasis to the vertical subdivision of the façade by insisting on a contrast of tone, and would also have made the interiors rather gloomy. As it is they are fresh and gay, with none of the effect of chilliness the large expanses of glass might have produced, perhaps because of the warm colour of the fairly low boarded ceilings which, running at the same level through the house, serve also to emphasize its geometrical consistency in the horizontal as well as the vertical plane.

I began by questioning the logic of applying modular planning principles, from which this geometrical consistency derives, to a building type so little susceptible to standardization of room dimensions as a small house, and looking at this plan one has a slight feeling that room shapes may have been forced into the schematic layout—especially the very narrow shape of the living-room. I ought to say, however, that when one is in this room one is not uncomfortably aware of its narrowness, perhaps because of the way the proportions are changed by the use of the fireplace as a partial barrier, dividing it into sitting and dining spaces.

A criticism I am a little more confident in making is that this arrangement of fireplace does not enable it to serve very satisfactorily as the social focus of the room, round which chairs can be grouped. It is not





necessary, of course, though it is traditional, that a room's social focus should be the fireplace; but a sitting-room ought to have something of that sort, and in this room where else can it be? My only other, relatively minor, criticisms of the plan are that the 2 ft. 6 in. corridor is rather cramped and that where it turns the corner by the studio door it is not well lit. Architecture of this kind, where there are no applied surfaces to contribute their own decorative effects, depends for its quality on the fall of light, on proportion and on finishes. The two first are perfectly satisfactory; the last mostly so, a few of the junctions between materials being not perfectly worked out. On the other hand, the architects were wise not to complicate the simplicity of the idea by over subtle detailing. For example it might have been a temptation to give added expression to the nature of the walls as separately articulated vertical slabs, in contrast to the continuous horizontal surfaces of floor and ceiling, by recessing them at top and bottom to encourage the ceiling, as it were, to float with a slight degree of independence. That kind of refinement might be a way to bring out the character of the structure more strongly, but to my eye one of the charms of the house is that it gets its effect without adventitious tricks of emphasis.

One need not be too puritanical. I approve of the neat brass ring that finishes the boarded living-room ceiling where the flue of the fireplace passes through it, though logically a plain hole in the boards, feather edges and all, would have been in the spirit in which materials are used elsewhere. On the other hand, I find the fireplace itself, though designed in the same spirit of frankly revealing the elements of structure, a little crude and unwieldy. Perhaps this again is a matter of junctions between materials. One is happy about the abrupt junction between the surrounding brick walls and the floor-boarding because, looking through the windows, one is aware of the way the walls descend to the ground outside and one accepts the logic of the boards butting against them. But the low brick wall surrounding the fireplace appears to rest on, rather than rise through, the boarded floor. This is a subtle—perhaps a pointlessly subtle—distinction, but it is the fascination of this house that it leads one on to make such distinctions and to analyze relationships of form and material that are often taken for granted. To say so doesn't, I'm afraid, answer the question whether this is a purely intellectual fascination: that is, how much or how little one's appreciation of the intellectual clarity with which the idea of the design has been worked out has to do with the visible qualities of the result.

Top picture, corner of the courtyard, showing the standard units of which the walls are composed: cavity brick walling, 5-ft. window opening with timber fascia above. In this case the opening is filled with a french window giving access to the courtyard from the living-room. Centre, the living-room from the entrance, showing the back of the fireplace and, on the left, part of the glazed screen separating off the entrance-hall. Bottom, living-room looking the other way: on right the fireplace; on left the french window to the courtyard.

We reprint below the report by Michael Rowe, Q.C., to the Minister of Housing and Local Government of the Inquiry into the causes of the Hatfield roofs disaster. Mr. Rowe found that the major causes were "the architect's failure to communicate his intentions to the contractors, and his failure to see that they were carried out, coupled with the Contractors' deliberate departure from the architect's drawings, in order to cope with a position mainly attributable to their own inaccuracies in construction." The Editors refer to this report in a leading article on page 111.

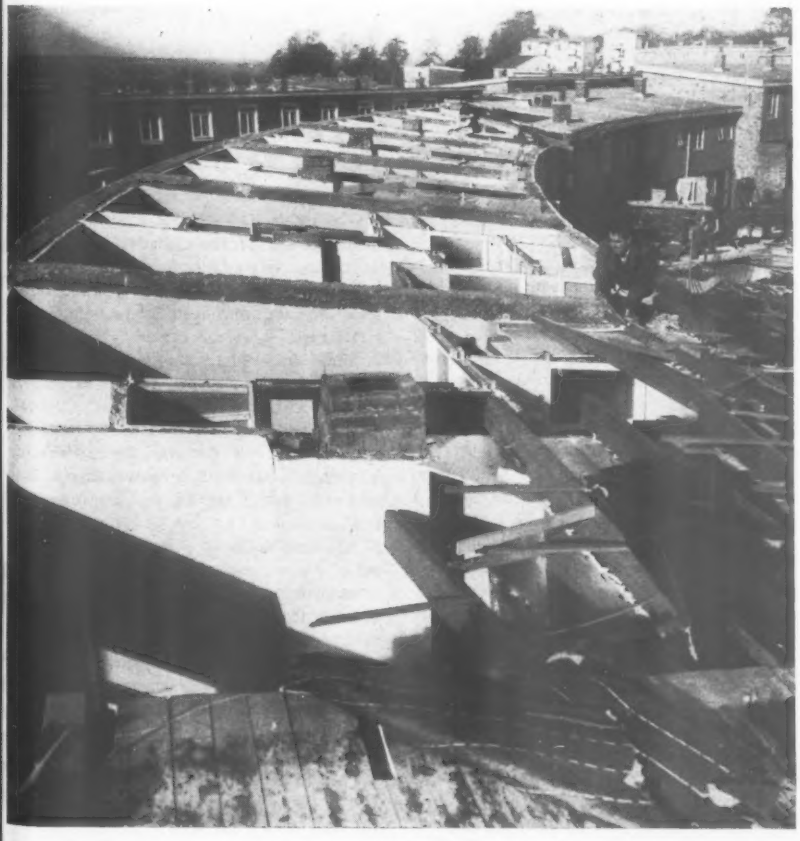
RESULT OF THE HATFIELD ROOFS INQUIRY

"Major Failures By Contractors and Architects"

My terms of reference were to hold a local Inquiry into the causes of the damage to houses at Hatfield during a storm early on November 4, 1957.

The background facts as to which there was no real dispute were as follows:

1. By an agreement dated September 30, 1955, and made between the Hatfield Development Corporation (therein called the Employer) of the one part and George Wimpey & Co. Ltd. (therein called the Contractors) of the other part, the Contractor undertook to erect 383 "C" Type Houses and works in connection therewith at Hazelgrove in the South End Neighbourhood of Hatfield for the consideration therein mentioned. The houses were to be built in accordance with certain drawings and a specification prepared by Messrs. Lionel Brett and Kenneth Boyd who were appointed "the Architect" for the purposes of the Agreement, and upon and subject to the conditions set out in the Agreement, which followed substantially the standard RIBA form, adapted for the use of local authorities where quantities do not form part of the contract.



The first sentence of condition 1 was as follows: "The contractor shall carry out and complete the Works in accordance with this contract in every respect in accordance with the directions and to the reasonable satisfaction of the Architect." Condition 8 entitled the Employer to appoint "a Clerk of Works whose duty shall be to act solely as inspector on behalf of the Employer under the directions of the Architect." The Corporation duly appointed one George Henry Garnett as such Clerk of Works and he acted as such throughout the execution of the works. Possession of the site was given to the Contractors on January 3, 1955. The works were finally completed in January 1957.

2. The site is in the southern part of the New Town being developed by the Corporation. It rises about 50 ft., sloping to the south-west and exposed to the south and south-west. They were of two storeys and were built in terrace blocks of from two to 16 houses. The blocks were curved to follow approximately the contours of the ground. The houses were of cheap construction costing about £1,400 each.

3. All the houses had mono-pitch roofs at an angle of 6 degrees with overhanging eaves front and back. They were of a type rarely, if ever, used before in this country, having an outer covering of aluminium. The walls of the houses were to be made of "No Fines" concrete (*i.e.*, a concrete without sand) in the construction of which the Contractors were admittedly specialists. As designed, at the top of each front and back wall there was to be a dense concrete beam (*i.e.*, ordinary concrete).

4. During the night of November 3-4, 1957 (by which date all the houses were occupied), a deepening depression moved north-east across England. Its centre was to the north of Hatfield and was nearest to the New Town between 3 and 4 a.m. The meteorological experts (Mr. Veryard and Mr. Durst) were in substantial agreement that during that time the maximum "one minute wind" would have had a velocity of about 58 m.p.h. with "five-second gusts" of up to about 70 m.p.h.

The British Standard Code of Practice CP3, Chapter V (1952) deals with the subject of loading in relation to the functional requirements of buildings and contains in summary form the knowledge then available. Table 3 (of the report) shows that these velocities represented conditions in excess of Exposure B and both experts agreed that in the light of the information they had collected the site ought to be regarded as subject to Exposure C. In 1954/5, however, an architect seeking advice from the local authority would have been told Exposure B was applicable. But it became unnecessary to consider the meteorological evidence in detail because it became common ground that the wind on the night of November 3-4, 1958, was not of such force as to be outside the range of factors properly to be taken into account in the design of these

houses. The first question posed in paragraph 3 infra must, therefore, be answered "No."

5. This wind caused very serious damage to the roofs of a number of these houses though it did little or no damage to other roofs in Hatfield. Of these houses no less than 28 lost their roofs completely: 18 lost the whole or part of their roof covering, but kept the greater part of their roof timbers: and in 47 other houses the roof lifted (from very slightly to obviously), but remained intact. The first group presented not only the most striking but the most informative evidence as to what had occurred. From the statements of two eye-witnesses Messrs. Davies and Clements and from the inspection I was able to make of the wreckage of some (which had been very sensibly preserved as evidence) it is clear that the entire roof structure lifted clean off the walls in one piece and then overturned and fell in the garden where it lay virtually intact. Indeed one could see three consecutive roofs in that condition.

6. An examination of the plan of the damage illustrates the unpredictable vagaries of wind forces. It suggests (i) that the roads running in a southerly or south-westerly direction, *e.g.*, Bradshaws, and Redhill Drive-Hazel Grove, acted as funnels for the wind and (ii) that when the wind had done its worst to the first frontal obstacle, it lifted over the next row of houses and fell again upon the row behind, *e.g.*, Furzen Crescent and the two sides of Shallcross Crescent.

There was no evidence that the roofs which were undamaged were more securely held down to the walls than those which were damaged. The conclusion to be drawn from an inspection of the roof structures of some undamaged houses which were uncovered for the purpose, is that they were spared because of their situation in relation to the wind and because of the vagaries of the wind, and not because they were more securely fixed. It would however be going too far in my opinion to say that it is impossible that any were saved by a few more nails.

7. No one found fault with the Fural aluminium sheeting which formed the roof covering nor with the method of its attachment to the roof structure.

In his opening speech Mr. Scarman, Q.C., for the Corporation, posed the questions which he considered were the vital ones in the Inquiry and, although Mr. Stewart Brown, Q.C., had some minor reservations as to their phraseology, they were adopted by the principal protagonists as correct.

They were:

1. Was the wind of such a force as to be outside the range of factors properly to be taken into account in the design of the houses in question?

2. Did the design of the houses make any, and if so what, provision for securing the roofs?

3. Was such provision sufficient on the basis of such factors as the Architect might reasonably have been expected to take into account?

4. Were sufficient steps taken by the architect to communicate to the contractors his intentions for securing the roof to the buildings?

5. Did the Contractors build the roofs in accordance with the architect's design or instructions (including the contract documents and specification) and in a workmanlike manner?

6. Did any failure in design or communication of design or in supervision or in construction contribute in any degree to the causation of the damage?

As I have already said, the roofs of these houses were of an unusual type and it is impossible to understand the contentions of the parties or to answer the questions posed by Mr. Scarman, Q.C., without a full appreciation of the details of their design and structure. I had the advantage of seeing two complete models as well as a number of smaller models to illustrate special details, but the following account (which I have altered only in a few uncontroversial points) was given by Mr. Press, the Senior Quantity Surveyor and Construction Manager to the Corporation, who was nominated as "Surveyor" for the purposes of the contract in question, and was agreed by all parties as correct in all essentials:

"Along the side of each party wall and the end walls of the terrace there is a piece of timber known as a *trimmer* which is 7 in. by 2 in. in cross-section, the 2 in. being its horizontal dimension. Against the inside face of each of these trimmers is a timber fillet 1 in. by 2 in. in cross-section, the 1 in. being the horizontal dimension. Between the pairs of trimmers across the house there run timber *purlins*, 2 in. by 7 in. in cross-section, the 2 in. being the horizontal dimension, which purlins are not continuous in their length from one trimmer to the other trimmer but are in two pieces which lap approximately in the middle of their combined span. The purlins are spiked (*i.e.*, nailed) to the trimmer. The purlin nearest to the front of the house is approximately 1 ft. 6 in. from the front wall: and similarly at the rear the nearest purlin is about 1 ft. 6 in. from the rear wall. From the front purlin there project across the front wall timber *sprockets* (2 in. by 7 in.) which are nailed from behind the front purlin by two nails. These sprockets are 2 ft. centres along the front of the wall and they rest on the front wall. In the top of the front wall there is cast into a dense concrete beam a dove-tailed timber wall-plate, 2 in. by 2 in. A similar description applies to the rear of the house. From the front purlin to the rear purlin in the middle of each span of a part purlin there runs a series of herring-bone strutting—small timber members. In the front part of each house there is a central half-brickwall which runs from the front wall for approximately two-thirds of the length of the house and six pairs of purlins rest on that half-brickwall. Each pair overlap about 1 ft. and are nailed together by two nails but are not attached to the wall. The rear three pairs of purlins rest on two steel angles (or joists) which are back to back. They are notched over the steel angle to give a uniform upper surface. The two steel angles were not attached to the rear wall or to the half-brickwall: they merely rested. The construction of the roof covering is by means of counter-battens which run at right angles to the purlins at approximately 2-ft. centres. Then is laid thereon a layer of insulating quilt of rock wool. On the insulating quilt are laid battens which run over the purlins but not over the sprockets. This batten is the fixing device for Fural sheeting which is made of aluminium and is fixed to these battens. Where a party wall occurs there is timber boarding placed across the party wall and, according to whether the house curves convex or concave, the boarding is narrower at the front or wider to suit the curve because the roof construction is completely rectangular as the Fural aluminium can only run along a straight roof and cannot itself turn a corner. At the party walls where the curve in the roof is made, the boarding is covered with aluminium which is dressed on either side to the main roofing aluminium. The construction of the roof at the end walls of the terrace is similar to the extent that there is a trimmer with a fillet on its face similar to the construction of a party wall but to accommodate the projecting verge there are sprockets which are at 2-ft. centres, 2 in. by 4 in. section, 2 in. being the horizontal dimension. Nails are driven from behind the trimmer into these sprockets and the sprockets then rest in holes left or cut in the wall, which is of concrete with a half-brickwall on the outer side. The perimeter of the roof of a terrace is covered by a fascia which is 7 in. deep all the way round. There is then an asbestos soffit nailed to the underside of the projecting sprockets in every case."

In amplification of the foregoing general description the following further facts are of importance:

1. The fascia had to be level throughout the length of the terrace. Otherwise the external appearance of the terrace would be ruined.

2. The level of the fascia depended on the level of the sprockets to which it was attached.

3. Each house had 11 sprockets over the front wall and 11 sprockets over the rear wall.

4. Each sprocket was designed to rest fairly and squarely on the wall-plate which was intended to be sunk, dove-tailed, in dense concrete at the top of the front and rear walls.

5. The end walls of a terrace had no wall-plate.

6. In order to get the trimmers in the right position to receive the purlins and to secure the intended 6-degree pitch of the roof, five mild steel corbels were to be inserted in the "No Fines" walls, projecting 2 in. from the wall and having two holes in the projecting part. These corbels were about 9 in. long, the end to be put in the wall having a fish-tail shape to give better anchorage.

7. The trimmers were to rest on the projecting part of the corbels.

8. To build "No Fines" walls it is necessary to erect shuttering of the exact height and width required, between which the concrete would be poured. In this shuttering were cut holes through which the corbels could be inserted into the wall as it was being poured.
9. One method of securing the precise positioning of a corbel while concrete was being poured was to fix a wooden block above the corbel in the hole in the shuttering and hold the corbel to it by nails through the holes in the corbel. When the concrete had set both the block and the shuttering would be removed.
10. The trimmer would then be "offered up" and positioned on the corbels.
11. In the ultimate analysis the positioning of the trimmers determined the level of every other part of the roof structure, for the purlins rested on them and the sprockets were nailed through the purlins and both sprockets and purlins had to be at the same pitch if there were to be proper levels both for the Fural covering and for the fascia.

The weight of each roof, including timber structure, quilting and aluminium covering, was approximately 3,600 lb. A modern tiled roof of concrete interlocking tiles at a 30-degree pitch covering the same area (about 500 sq. ft.) weighs approximately 7,400 lb. Both weights include a plasterboard ceiling which itself weighs 1,450 lb. and is fixed to the underside of the main roof timbers.
A traditional pitched roof is not "anchored" to the walls upon which it rests but in order to "position" it, a wall-plate is put on (but not firmly embedded in) the top of each wall and the roof timbers are invariably nailed to the wall-plate. The roof therefore remains on the walls by its own weight but any timber which crosses a wall-plate is nailed to it.
Kenneth Boyd was the partner in Messrs. Lionel Brett and Kenneth Boyd responsible for the design of these houses and for supervising the execution of the works by the Contractor. Mr. Brett was only concerned in the very initial stages of negotiation and after handing over to Mr. Boyd did not indulge in what he called "back-seat driving" and Mr. Boyd did not ask him to do any "front-seat driving."
Mr. Boyd's responsibility, and his experience and skill as an architect, were all matters which were considerably debated. He is now 34 years of age. He became an articled pupil in 1940, joined the Army as soon as he could and remained in it until 1945. He then returned to study at the Architectural Association and became an Associate of the Royal Institute of British Architects in July, 1948. As is customary, his theoretical training at the Architectural Association was combined with practical training in the offices of practising architects. In 1949 he joined Mr. Brett as a salaried assistant and at once became immersed in the development of the New Town. Later he became a partner in the firm of Lionel Brett and Kenneth Boyd. In judging his actions therefore it is right to bear in mind that he was, relatively, a young and inexperienced architect and that the Contractors were a firm of great repute and specialists in the "No Fines" technique. These facts did in my opinion have a bearing on what happened: but it should be recorded that I consider that Mr. Boyd was a truthful, one might fairly say a courageously truthful, witness. Where there were discrepancies between his evidence and those of other witnesses, they were of minor importance and arose in my opinion from the inevitable inaccuracy of the human memory. Neither he nor they were trying to mislead.
I turn now to a consideration of Mr. Scarman's questions (2)-(6), which involve the consideration of a mass of scientific, technical and factual evidence raising a considerable number of differences of expert opinion, differences of recollection, and so on. By persistent examination and cross-examination many of these differences were resolved or so whittled down as to be of far less importance than at first appeared. For example in the early stages of the Inquiry a good deal of evidence was directed to establishing that the sprockets had not been nailed to the wall-plates in any regular manner and that the corbels were not positioned correctly according to the drawings: but as the Inquiry proceeded it became clear that far from disputing these facts the Contractors accepted and indeed relied on them. To attempt a summary of the evidence would certainly fail to do justice to some, indeed most, of the witnesses unless the Report were impossibly long and complicated. I propose therefore to record my own findings and conclusions with only such references to the details of the evidence as are necessary to make them intelligible.

Did the design of the houses make any, and if so what, provision for securing the roofs?

This question must be considered in two parts:
1. What was contained in the drawings and specification as to the matter?
2. What, if anything, did the Architect intend to provide thereby with that end in view?
1 (*a*). The following are the essential provisions in the Specification (all the italic being mine):

"*CARPENTER, JOINER AND IRONMONGER*

A. *Timber generally . . .*
Non-structural timber in wall-plates to be free from loose knots . . .
. . . *All carpenters and joiners work* shall be put together framed and *fixed in the best and most workmanlike manner.*

B. *Floor boarding . . .*
The wood floors are to be laid with boarding . . . and *securely fixed to each joist with 2½-in. brads punched down.*

E. *Roof*
Fix at first floor ceiling level 7-in. × 2-in. purlins at 2-ft. centres with 7-in. × 2-in. and 7-in. × 3-in. trimmers as indicated on the drawings properly framed and tusk tenoned. The ends of the joists to be *supported on* 7-in. × 2-in. vertical wall-plates* *fixed in* metal corbels, cast in concrete party walls. Fix 2-in. × 1-in. trimmer lath to face of wall-plate and notch ends of joists over lath and box ½ in. deep into wall-plate for one half the depth of the plate.
Provide and fix 2-in. × ¾-in. fixing battens and 1½-in. × ½-in. counter battens *with and including nails to receive aluminium roof* sheeting at 2-ft. centres.

F. *Eaves and Verges*
Fix at roof level 7-in. × 2-in. and 4-in. × 2-in. sprockets with and including softwood fascia and bargeboards. All timbers where built in to be twice creosoted before fixing. Provide and fix softwood battens with and including $\frac{3}{16}$-in. asbestos cement sheeting as soffits fixed as before described.

A. *First Floor*
Fix at first floor level 7-in. × 2-in. joists at 18-in. centres with 7-in. × 2-in. and 7-in. × 3-in. trimmers as indicated on the drawings. Trim opening for staircase and around chimney stack, all as shown, properly framed together with tusk tenoned joints. Two joists shall be bolted together with ½-in. diameter bolts and set below partition walls where these occur. The ends of the joists at party walls to be supported on 7-in. × 2-in. vertical wall-plate, *fixed on metal corbels* cast into concrete wall. Fix 1-in. × 2-in. timber lath to face of wall-plate and notch ends of joists over lath and box ½ in. deep into wall-plate for one half the depth of the plate."
It should be added that on page 37 under "Bricklayers—A. Sundries" the Specification provided for "Bed plates in cement lime mortar." "Bed plates" here were the same as the "wall-plates," referred to elsewhere in this Report.
(*b*) The following drawings were provided:
(i) Contract Drawing 17. Upon this drawing (which was of course one of the Architect's drawings) appear the words "Purlins notched into 7-in. × 2-in. wall-plate [= trimmer] *carried on mild steel corbels.*"
(ii) Contractors' Drawing 751/8, which was approved by the Architect in August, 1955. The Notes to this stated (inter alia): "'C' denotes metal *corbel* built in 'No Fines' wall *to support* 7-in. × 2-in. wall trimmer." The drawing itself showed 11 7-in. × 2-in. sprockets resting on a 2-in. × 2-in. wall-plate for both front and back walls and five 'C's on each party wall.
(*c*) Neither the Specification nor the Drawings made express provision for nailing of the sprockets to the wall-plate or of the trimmer to the corbels through the holes in the latter.

2. First did the architect intend to make any provision for securing the roof? I find that he did so intend. I do not think that the existence of the problem had struck him until his assistant Mr. Watson brought for his approval what were intended to be the final drawings to be agreed with the Contractors. Those drawings showed only 3-in. × 1-in. wall-plates resting on and not embedded in the walls. Mr. Boyd then realized that the wall-plates must be thicker and must be secured to the wall, possibly by rag-bolts, and instructed Mr. Watson

* *Note.* These "wall-plates" are the trimmers referred to throughout the Report.

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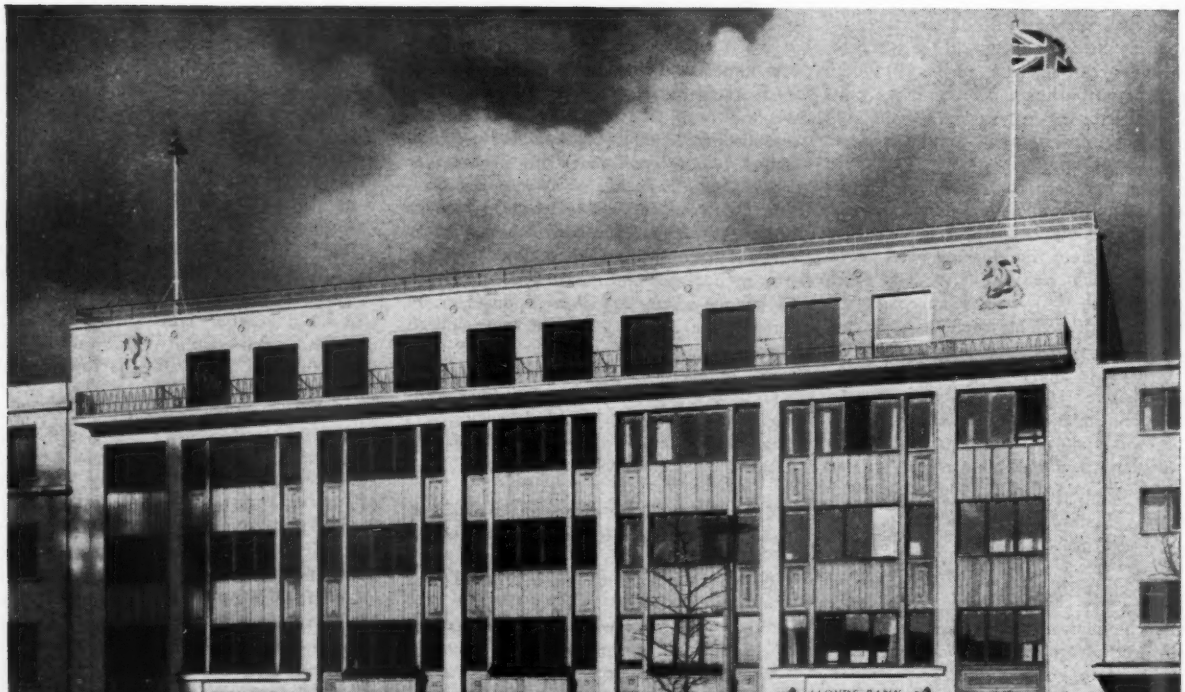

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that since the roof must withstand suction from the wind, these points must be dealt with, but that as a connection with "No Fines" was involved, the Contractors should be consulted.

The drawing 119/C/26 was sent by Mr. Watson to the Contractors and returned by them showing the 3-in. × 1-in. straight wall-plates amended to 2-in. × 2-in. dove-tailed wall-plates. Mr. Boyd took no further action in relation to the Specification which had already been prepared or in preparing the final contract drawings.

Secondly, what provision then did he intend to make? I accept his evidence that his intention was that the roof should be secured to the front and back wall primarily by double skew-nailing ("tosh" nailing) through each sprocket to its wall-plate and secondarily by two 4-in. nails driven vertically into the trimmers through the holes in each corbel.

Was such provision sufficient on the basis of such factors as the Architect might reasonably be expected to have taken into account?

Mr. Boyd did not consult any engineer or any other architect in connection with this problem. He was not aware of the relevant Code of Practice. He arrived at his appreciation first by consulting a text-book—Hyde Blake's Building and Structural Tables—from which he concluded that for a roof of this very low pitch one should anticipate a suction or negative wind pressure of 10 lb. per square foot. He estimated the weight of the roof at 3,000 lb. or 6 lb. per square foot or 2,000 lb. for the whole roof area*. Professor Pippard and Mr. James agreed that the estimate was in truth considerably too high. No criticism can be made therefore of this part of Mr. Boyd's calculation. He then considered whether the design as he intended it to be carried out would provide the required anchorage. He assumed that the roof was "a rigid thing in itself" and accordingly to his mind the question was simply whether the intended nailing on the perimeter of the roof was adequate for the purpose. In the course of his work he had once seen a clerk of works test a joint somewhat similar to that proposed for the sprockets and wall-plate by hanging on it: he had himself tested joints in the same way. It was a rough and ready but practical test. Applying it, he concluded that the nailing of the sprockets alone would give well over 2,000 lb. holding strength against suction. He further considered that the nailing of the trimmers through the corbels with 4-in. nails would "almost double the value of the sprockets." By this means he satisfied himself that the roofs would be secure.

If his assumption of the rigidity of the roof was correct, it seems reasonably certain that provided the nailing had been done as he intended, the roofs would have held on the night of November 3-4, although the engineering evidence was unanimous in condemning the use of nails in tension as a method of anchorage, and although criticism could be made of the methods of nailing envisaged as not being in accordance with the recommendations of another Code of Practice CP112 (1952) pages 30-31, and of the risks of ultimate corrosion of the nails. But while these and other criticisms of the design could be and were justifiably made, the basic criticism levelled at it by Mr. James and Mr. Turner, both consulting engineers called by the Contractors, was that the assumption that the roof was rigid was wrong: that while adequate to deal with a downward load, it was structurally incapable of transmitting a wind load to the points of nailing, which were therefore virtually useless and therefore that the design provided very little anchorage, if indeed any at all, and certainly insufficient to cope with a wind of anything approaching that in fact experienced. Mr. James and Mr. Turner approached the problem from somewhat different angles, but to both the crucial fact was that where the purlins overlapped on the top of the central or spine wall of the house, they were merely nailed together and not secured in any way to the wall, with the result that they could not transmit the load of an upwards suction but would "hinge" or cause the purlins and therefore the roof to "balloon," thereby putting an impossible strain on any nail fastenings on the perimeter. In their view the degree of nailing was "irrelevant" and a negligible factor as a means of anchorage. Nor did they—especially Mr. Turner—regard the subsidiary roof timbers, such as the battening and counter-battening or the herring-boning, as in any substantial degree capable of overcoming this fatal weakness.

The debate on this matter was considerably complicated by the fact that Professor Pippard (who with Mr. Kenyon and Mr. Ferrington had made a preliminary investigation into the causes of the damage at the invitation of the Corporation) had himself assumed that the roof was a rigid structure and in particular that the purlins were effectively jointed where they met at the spine wall. He had therefore to reconsider his conclusions in the light of these criticisms and was recalled towards the end of the Inquiry. He agreed that the criticized joint did constitute a "line of weakness" and that it was bad to use nails for holding down. "I think it is quite the last way I should have chosen myself for doing it. . . . I do not mean by that that there is no strength but it is a bad method." Founding himself however primarily upon what he had himself observed when inspecting the wreckage and particularly the fact that some of the roofs had apparently come off and overturned in one piece, and also upon the accounts given by eye-witnesses and upon the results of certain tests carried out during the period of the Inquiry by the Building Research Station he concluded that the roof structure was capable of transmitting load and did in fact do so and that therefore the nailing or absence of nailing at the sprockets and corbels was of vital importance.

In the result his views were first that the roofs would have stayed on that night despite the defects in design if all the intended nailing had been carried out, but secondly that it was doubtful if they would have done so if the nailing had been confined to one skew nail through each sprocket.

I accept these conclusions as the right ones to draw on the evidence. I have no doubt that the theories propounded by Mr. James and Mr. Turner have much substance and would have to be provided for in any alternative design for such roofs but I think that they must have under-estimated the degree of rigidity achieved by the totality of the roof structure. If they were completely right, I find it difficult to understand why the damage was not far worse and more widespread (even allowing for a very large measure of eccentricity in the wind) or why there was so little sign in the houses in which the roofs had lifted but remained on, that the focal point of weakness had been over the spine wall.

My answer to this question therefore is that while the design was theoretically bad in several respects, the roofs would have remained on that night if the architect's intentions had been fully carried out.

It would be right perhaps to add that the disaster to these roofs provoked a great deal of research into the problem of negative wind pressures and that without it, the errors of design might not have appeared so glaring and might well have been perpetrated by many competent architects.

Were sufficient steps taken by the Architect to communicate to the builders his intentions for securing the roofs?

It is I think quite clear that Mr. Boyd did not expressly communicate his intentions to the Contractors and also clear that they never in fact realized that there was any problem of anchorage of the roofs at all. As I have stated above, Mr. Boyd had instructed Mr. Watson to discuss with the Contractors the points he had raised with regard to the wall-plates. Mr. Watson said that he did have a conversation with someone in the Contractors' architectural department and told him that in Mr. Boyd's view the wall-plate was inadequate and required reconsideration from the holding down point of view. He was however unable to identify the person to whom he spoke: nor were the Contractors able to trace him. I am satisfied that whatever the truth as to this conversation Mr. Watson failed to convey to the Contractors the real importance of the point: that they amended the design with regard to the wall-plate because a dove-tailed plate was from their own point of view more efficient, whatever sort of roof was to be used, and not because they understood that it was to perform a vital anchoring function: and that at the subsequent meeting to discuss the amendments the misunderstanding was not removed. It may well be however that the fact that the amendment was made led Mr. Boyd to believe that the Contractors did understand his intentions. Later Mr. Boyd did have a talk with the Contractors' general foreman, a Mr. Anderson, who has since died, in which the nature of the roof was discussed and Mr. Boyd was at pains to assure Mr. Anderson that though in some respects novel, the essential roof structure was traditional. I think it is possible that this emphasis on the traditional

* See ASTRAGAL's comment on page 113.

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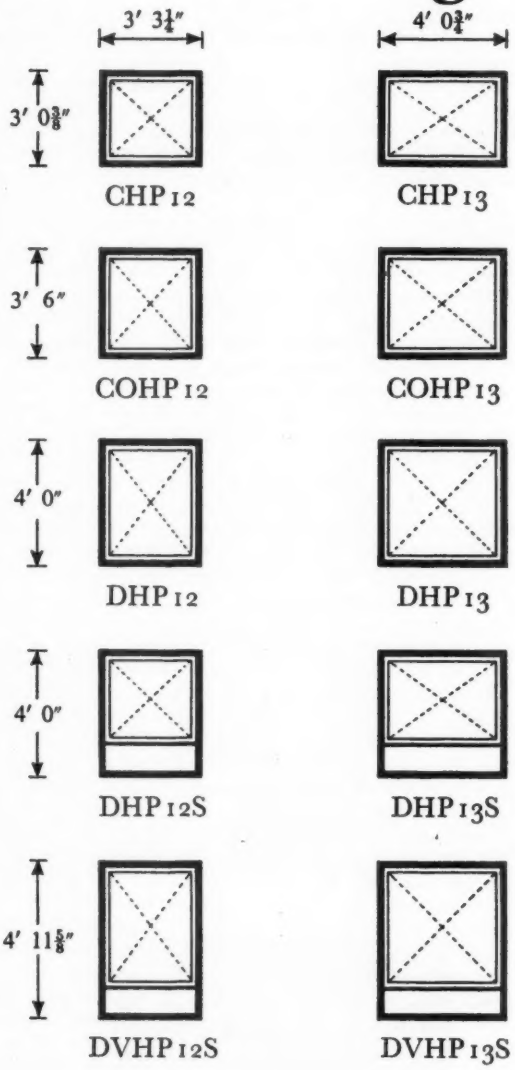

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character of the structure may in fact have been misleading since traditional roofs do not require "anchoring." But however that may be, it must be accepted I think that if Mr. Boyd's intentions were communicated to the Contractors at all, it was through the Specification and the drawings. They contained no express reference to nailing at the sprockets or at the corbels nor any indication that anchorage for the roof was necessary. Why then did Mr. Boyd expect nailing to be done in accordance with his intentions; and was he justified in such expectation?

As to the corbels. Mr. Boyd's expectation with regard to the nailing of the trimmers through the corbels was based partly on impressions derived from Mr. Watson's accounts of his discussions with the Contractors which led him to believe that the trimmers were to be "fixed" by nailing through the corbels but mainly I think on the conviction (shared by other distinguished architects) that an ordinary competent builder confronted with two holes of a size to take a 4-in. nail in a corbel supporting a trimmer and being told in the Specification that the trimmer was to be "fixed in metal corbels" would as a matter of course see that 4-in. nails were driven through each hole into the trimmer.

I agree with Mr. Kenyon's ultimate conclusion that there were other facts which make it impossible to say that the Contractors can be blamed for not appreciating that this nailing was to be done. I mention the two most important ones:

1. The language used in the Specification was the same in relation to the trimmers to be used for the first floor as for those to be used for the roof and the corbels were identical. The only possible purpose of the holes in the first floor corbels was for positioning the trimmer. In the absence of express instructions an ordinary competent builder might reasonably assume that their purpose was the same at roof level.
2. The Contractors' drawing 751/8 which was approved by the architect contained the Note "'C' denotes metal corbel built in 'No Fines' wall to *support* 7-in. by 2-in. wall trimmer." These two facts alone would in my opinion be sufficient to excuse the Contractor from being under any obligation to do more nailing than was sufficient to position the trimmer.

In this respect therefore I find that the architect failed to communicate his intention to the Contractor.

As to the sprockets. The drawings showed the sprockets on the front and back walls crossing the wall-plate. The Specification required all carpenter's work to be "fixed in the best and most workmanlike manner." All the architects called agreed that an ordinary competent builder, and indeed an ordinary competent tradesman, could reasonably be expected as a matter of course to put at least one nail through each sprocket so as to hold it firmly to the wall-plate. There was a division of opinion as to whether ordinary practice demanded single or double skew-nailing. In the circumstances I think the Contractors should have understood that it was the architect's intention that the sprockets on the front and back walls should be fixed to the wall-plates by at least one nail. Neither the fact that the sprockets on the end walls of a terrace could not be so fixed nor the fact that in other parts of the Specification the word "fix" could only mean "placed on" nor that for some connections the form of nailing was specified nor the fact that the purpose of the nailing had not been made clear to them would suffice in my opinion to excuse a failure to nail each and every one of these sprockets. In this respect I find that the architect did take sufficient steps to communicate his intentions to the Contractors.

Did the Contractors build the roofs in accordance with the Architect's design or instructions (including the contract documents and specification) and in a workmanlike manner?

Mr. Stewart Brown, Q.C., for the Contractors preferred to put this question thus: "Did the Contractors build the roofs in accordance with the contract documents and to the reasonable satisfaction of the architect?" I do not think the precise form of the question is of any great significance in determining the causes of the damage. What is important is what in fact happened, and as to that I find the following facts:

1. Though there was some variation in the practice, in the initial stages of the contract at any rate the corbels were correctly positioned in the "No Fines" walls through the shuttering. Where any were displaced on the removal of the shuttering or otherwise, they were put right.
2. At no time were nails driven through the holes in the corbels as a regular practice but only as and when required to position the trimmer—which was not very often.
3. When the walls were complete, the trimmers and purlins were put in.
4. The purlins had to be levelled throughout the terrace and if in order to achieve that result a trimmer had to be raised, it was raised, either by supports from the first floor or by packing up on the corbel.
5. The sprockets, fascia boards and soffit had then to be fixed. At this stage it was found that for reasons referred to later it was impossible to get the fascia board level along the terrace and at the same time keep the sprockets resting on the wall-plate.
6. In order to get the fascia board level, the trimmers were raised wherever necessary. This in turn raised the purlins and consequently the sprockets.
7. Thus was created a gap between sprockets and wall-plates of varying size but in places as large as 3 in. This gap was filled by packing, sometimes mortar, sometimes wood or plaster-board, sometimes even bricks.
8. The result was that regular nailing of the sprockets to the wall-plates became impossible. Here and there nails could be and were driven, but entirely haphazardly. To all intents and purposes the wall-plates ceased to serve any useful purpose.
9. After the trimmers had been got into their final position a skilled man dealt with the corbels, by cutting out some of the concrete above them and then knocking them up into contact with the trimmer or if that were not possible by taking them out and replacing them under the trimmer.

The result undoubtedly was that the roof structure was not built in accordance with the drawings and Specification. It was in truth a totally different structure in respect of the points of fixation. The alteration in the level of the corbels may have seemed of no importance to the men on the job but nonetheless it did involve an alteration in the design of the roof and was, therefore, a fact of which the Contractors should have notified the Architect before doing it. But far worse in my opinion was their failure to tell the Architect that it was proposed to abandon the use of the wall-plate as a means of holding the sprockets. This was a clear-cut departure from the design. In my opinion it is impossible to come to any conclusion but that the Contractors gravely failed in their duty to the architect in not telling him that they were proposing in substance to abandon his design, because they had found it impossible to carry out. And this failure cannot in my view be excused either on the ground that the architect or the Clerk of Works must have seen or should have seen what was being done or that the Contractors had no idea that the departure from design was as important as in fact it was.

On behalf of the architect it was contended that the impossibility was due to the bad workmanship on the part of the Contractors and/or of the sub-contractor, one Haydon, responsible for the carpentry. On behalf of the Contractors it was contended that the design was really an impossible one to achieve. It was said that the effect of the curves in the terraces must result in an irregularity in the level of the sprockets which could account for a gap up to $\frac{3}{8}$ in. between certain sprockets and their wall-plate. Mr. Boyd said that he had realized this but considered, and I think rightly, that this by itself would not prevent a satisfactory joining of the two. It was further said that having regard to normal "tolerances" in this class of building it was inevitable that there should be further irregularities in level at the top of the walls due to inaccuracy in the pouring of the concrete along the whole length of a terrace of houses or to permissible variations in the size of the timbers used: that these legitimate tolerances would account for the gap which was found to exist: and that in the absence of any instruction as to anchoring, what was done was a reasonable solution to a practical "in the field" problem.

In my opinion the main cause of the "gap" was the failure to get a proper level at the top of the walls. In the vast number of "No Fines" houses with traditional roofs which the Contractors had erected it was possible to adjust the level of the wall-plates to remedy any "tolerable" inaccuracy in the pouring of the concrete. In the case of these houses no means of adjustment was provided. If, as Mr. James suggested, the design demanded the impossible, the Con-

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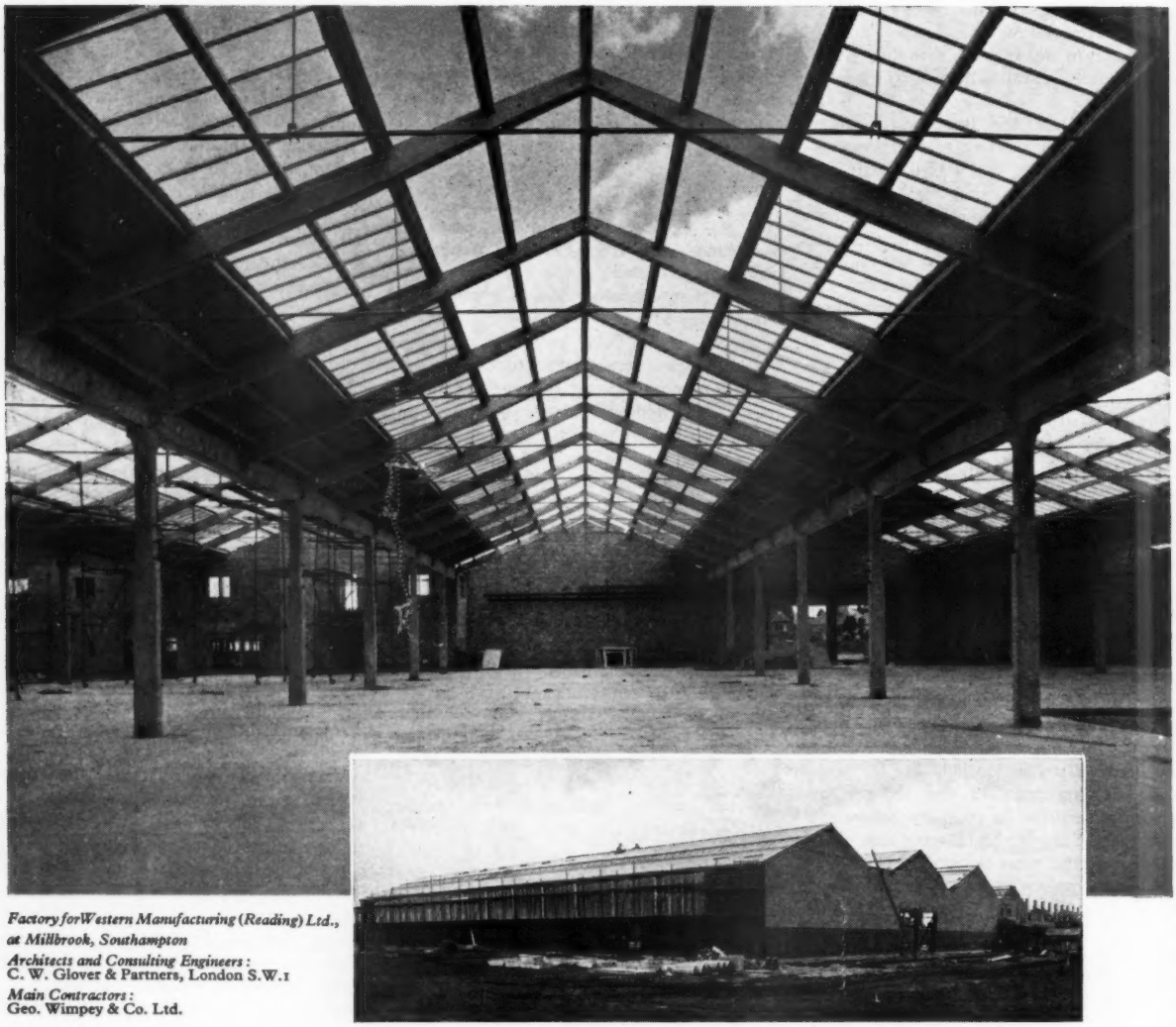

Factory for Western Manufacturing (Reading) Ltd., at Millbrook, Southampton
Architects and Consulting Engineers: C. W. Glover & Partners, London S.W.1
Main Contractors: Geo. Wimpey & Co. Ltd.

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tractors as the experts in "No Fines" work should have said so. I was not persuaded that it would have been impossible to have avoided creating a gap so large as to frustrate the design. I think there was bad workmanship in this respect. And if I am wrong and it was impossible, it was the duty of the Contractors to inform the architect.

It should be added that the problem of this gap was apparently discovered by the Contractors as soon as the first terrace was ready for the fitting of its fascia, and the practice of packing was begun then and continued throughout the contract.

Did any failure in design or communication or in supervision or in construction contribute in any degree to the causation of the damage?

1. As to failure of design. I have already said that in my opinion though the design was not a good one the disaster would not have occurred when it did if it had been fully implemented in the execution of the works.

2. As to failure in communication of design. I have no doubt that Mr. Boyd was at fault in failing to make clear to the Contractors that the light roofs required "anchoring." Nor did he make it clear to the Clerk of Works. And I am by no means sure that even his own assistants fully understood the vital need for proper nailing at the sprockets and corbels. To him the matter was quite plain. Nothing more was required than elementary good carpentry. Therefore, there was no need for special explanation. While this is intelligible, I cannot say that this failure was not a material factor in the chain of causation.

3. As to failure in supervision. Mr. Fox-Andrews, Q.C., defined the general duty of an architect as being to give such periodical supervision and inspection as may be necessary to ensure that the works are being executed in general in accordance with the contract. He pointed out however that when dealing with State-aided housing schemes architects were required to undertake "general supervision of the work but not constant superintendence." Mr. Boyd and his assistants probably made more visits to the site than they were bound to do. There was no lack of keenness. But the plain fact remains that neither he nor his assistants nor the Clerk of Works realized that things were going seriously wrong. This is the most incomprehensible part of the whole case. Mr. Boyd himself visited the works often and must have had opportunities of seeing that the work was not being done as he intended. In fact he went when some of the first roof structures, including the sprockets, were being put in. When asked whether he was surprised that he had not noticed the state of affairs discovered after the disaster he replied "I have put that question to myself every day since November. I visited the roof many times and at no time did I see anything to equate with what I discovered in the debris . . . at no time, while I did not go up on anything like all the roofs—far from it—did I see anything approaching the malpractice, that is all I can call it, at the top of the walls. How it came not to be revealed to me when I was up there, if I was on a block, defies my explanation." And later he said that at no time did he see packing and sprockets being put together and that he was completely ignorant that there was any packing until after the event. I accept his evidence, astonishing though it may be. I think he failed to see what was happening because his mind was on other problems. This question of anchorage was never to him a burning vital problem and therefore he did not see what must have been at some comparatively early stage under his very nose. I see no escape from the conclusion that Mr. Boyd ought to have seen what was happening and to have realized its significance. His failure to do so must in my opinion be regarded as one of the major factors in the chain of causation. His assistants who also visited the site frequently may perhaps not be blamed for not realizing its full significance but again it is difficult to understand how they never even mentioned to Mr. Boyd that the whole roof structure was being raised. The position of Mr. Garnett, the Clerk of Works, is equally mysterious. Not a quick-witted man it is true, but no one suggested that he was unconscientious and yet apparently he never realized that neither the sprockets nor the corbels were being nailed as he understood they should be (though not the real reason why) or that the sprockets were being regularly packed with permanent packing. Nor did he report to the architect that corbels were being regularly repositioned, a fact which he did observe. Mr. Wells, the contractors' assistant, and later general foreman, said that Mr. Garnett had instructed him to pack up under the sprockets with mortar. Mr. Garnett agreed that he had given such an instruction to close a gap between soffit and wall which Mr. Boyd and he had observed extending over a short distance but strongly maintained that he had never sanctioned permanent packing under the sprockets. On this issue I think Mr. Garnett's account is the more reliable in that it is to some extent corroborated by Mr. Boyd and by at least one photograph. But it is I think impossible to acquit Mr. Garnett altogether. He ought to have seen what was being done and if he did see it, he ought to have reported it, even if he did not realize its full significance, for it was a clear departure from the architect's instructions as shown in the drawings.

Lastly there is the position of the Contractors. For the first half of the contract the general foreman was Mr. Anderson: he died and with him, his evidence. Mr. Wells had been his assistant and became his successor, and was called to give evidence. His attention was directed to photograph 13 in Exhibit B which showed the top of a wall with something like 3 in. of packing. He admitted that that showed a state of affairs that ought not to have existed, that he knew that it was being brought into existence, that it was not in accordance with the architect's drawings but that he did not call this departure to the attention of Mr. Boyd or his assistants. (In parenthesis I should say that the two nails to be seen in photograph 13 were certainly not nails through sprockets. I saw several other examples and whatever their purpose, it was not to nail sprockets to wall-plates.) Mr. Wells was clearly not very happy about his position but it is only fair to him to say that he was only continuing a practice apparently sanctioned by Mr. Anderson and by the sub-contractor Mr. Haydon. Mr. Haydon was not represented at the Inquiry: neither his evidence nor that of the foreman he employed on the site was available. Mr. Anderson had died. The Contractors' Area Manager was not called. It may well be that the decision to depart from the drawings was taken as a bona fide attempt to overcome a practical difficulty which was considered to be of no great practical importance. Nonetheless it was a deliberate breach of instruction and if the difficulties had been brought to Mr. Boyd's attention as soon as they were encountered and the proposed solution suggested to him, it is I think inconceivable that he would not have realized that the whole basis of the anchorage of his roof would thereby be destroyed or that he would not have insisted on some different solution. I do not think that this deliberate breach of instruction can be justified by asserting that everything was done quite openly and that the architect alone was to blame for not seeing and correcting the breach.

While neither Mr. Boyd nor his assistants nor the Clerk of Works can avoid the charge of failure to supervise properly, I think the Contractors (who did not seek to shelter behind their sub-contractor who was apparently content to allow silence to be golden) must bear a substantial measure of blame in that they took it upon themselves to remedy a position mainly brought about by their own bad workmanship by varying the architect's design in a material particular.

4. As to failure in construction. The Contractors should have levelled the tops of the walls with greater precision. If they considered this impracticable, they should have reported it to the architect.

I have therefore to report that in my opinion upon the evidence and arguments put before me the major causes of the damage to the roofs in question were the architect's failure to communicate to the Contractors his intentions as to the anchorage of the roofs and his failure to see that his intentions were carried out coupled with the Contractors' deliberate departure from the architect's drawings, in order to cope with a position mainly attributable to their own inaccuracies in construction. It would be fair to the architect to add that the Clerk of Works ought to have realized that the design was not being carried out and ought to have told him so. But the failures of the Clerk of Works cannot in my opinion excuse the major faults of the Contractors (who have to bear any faults of their sub-contractors) or of the architect (who cannot excuse himself by reason of any faults of the Clerk of Works or of his assistants).

technical section

THE INDUSTRY

From the industry this week Brian Grant describes a new demountable partition, new wash basins, sink traps, curtain track, radio and TV installations and plastics for panelling.

Internal partitioning

Stramit have just introduced a new demountable partition called Movaflush, which is made of 2-in. Stramit slabs, framed on all four sides with timber and faced on both sides with ¼-in. hardboard. The top and bottom edges of the panels are finished square, while the long edges are rebated and grooved so that the panels can be fitted together. The edges of the hardboard are bevelled to give a V joint, and the panels are supplied in standard widths of 3 ft. with a height of 8 ft. Other heights and widths are obtainable with make up panels, and any required dimension can be achieved without difficulty. The partitions can be either solid or glazed and are supplied complete with all the necessary timbers, though door fittings and glass must be obtained separately. The partitions weigh about 6 lb. per square foot, and the cost per foot, delivered on site, should not be more than 5s. a square foot, again excluding glass and door fittings. (*Stramit Boards Ltd., Packet Boat Dock, Cowley Peachey, Uxbridge, Middx.*)

Basins for Unataps

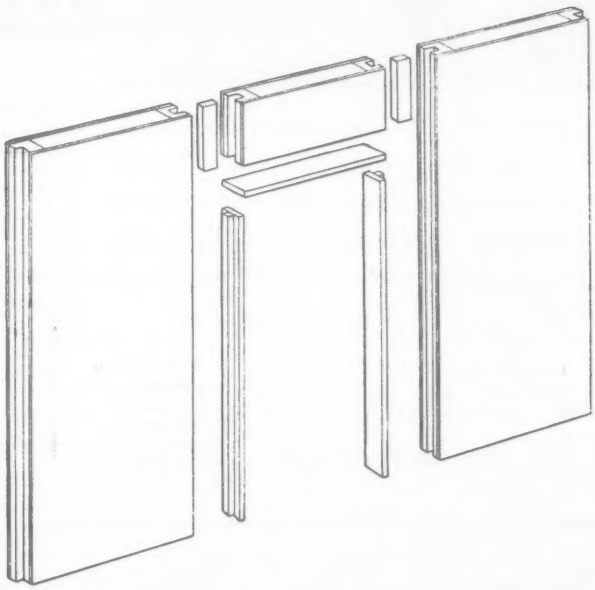
Most readers will by now be familiar with Unatap, a spray mixing tap under which it is intended that hands should be washed in running water. This method of washing saves a considerable quantity of hot water, but it is also possible to dispense with overflows and with plug and chain fittings, while the single tap makes it unnecessary for the basin to be symmetrical. So far eight different manufacturers of sanitary ware have produced designs specially for use with this tap, whose manufacturers have illustrated all eight designs in a leaflet, giving sizes, materials and other relevant information. Copies from *Walker, Crossweller & Co. Ltd., Cheltenham, Glos.*

Sink traps

The illustration on the right shows a new Econa sink trap in which a stout transparent glass jar is screwed into the special base of a 1½-in. bottle trap. The jar provides a large sump which should collect most of the solids which might otherwise block the sink waste, and because it is easy to see when it is full it is quite likely to be emptied at proper intervals, a simple process which should take only a minute. Since even architects presumably have to help with the washing up I recommend all readers to install one of these fittings forthwith. There is the possibility that the glass jar may break, but Econa are a sensible firm (I suspect their designer of using his own products) so no doubt replacements are available. (*Econa Modern Products Ltd., Aqua Works, Highlands Road, Shirley, Solihull, Warwickshire.*)

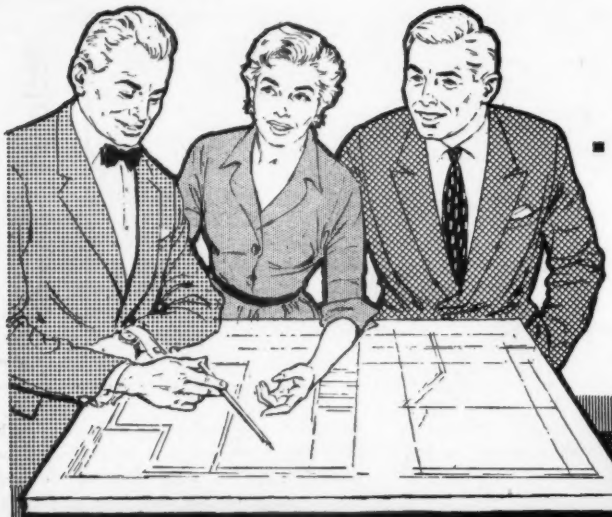
Plastic curtain track

The new Tubeway curtain track consists of a plastic tube with the track within it, the runner carrying the eyes for the curtain hooks being entirely enclosed so that they keep clean, while nylon rollers mean very silent operation. End stops are moulded with a wedge so that they hold more tightly when the runners touch them, and the moulded support brackets (one is supplied for each foot of rail, can be fixed either



Above: the Econa sink trap.

Left, make-up of a door opening with Stramit Movaflush partitions.



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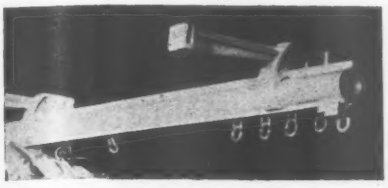
technical section

to walls or ceilings. Valance rail extensions, which plug into the brackets, support a strong pelmet rail. The track is available in lengths from 3 to 8 ft. and costs 2s. 6d.



The Tubeway curtain track.

a foot including not less than three runners, brackets and valance rail. Bends up to 90 degrees can be made and the whole assembly is available in white, cream, grey, green, blue, pink or yellow, though if a valance is used the colour is relatively immaterial: to my mind the most important point is that there can be no corrosion and that the track should be very easy to keep clean with a damp cloth. Whether, like other plastics, it becomes brittle over the years remains to be seen. (*Tubeway [Sales] Ltd., 59, Brompton Road, London, S.W.*3.)

Radio and TV installations

Reference has already been made in these notes to the use of central distribution systems for radio and TV. A firm in the Nottingham area is now producing a distribution system for all TV services and for VHF radio, making use of a single central aerial with an amplifier system which allows aerial sockets to be provided in as many rooms as is necessary. If a site contains more than a single flat block the whole layout can be wired from the central station. (*Television Installation Services (Mansfield) Ltd., Nursery Street, Mansfield, Notts.*)

Plastics for panelling

A new moisture-resistant Warerite faced hardboard has been introduced for use on all vertical surfaces and on ceilings. It is known as Warerite Wallboard and consists of a high-density hardboard faced on both sides with melamine resin impregnated papers moulded under heat and pressure. On one face is a decorative pattern and on the other is a plain compensating surface to protect the core from moisture and prevent warping. It is intended for surfacing walls, ceilings, doors, partitions, counter and cupboard fronts, and its moisture resistance makes it particularly suitable for use in kitchens or bathrooms, though any cut edges should be sealed with paint. The material is available in 16 of the most popular Warerite patterns and colours and the standard sheet size is 8 ft. by 4 ft. Price is 3s. 4d. a square foot. (*Bakelite Ltd.*, 12, *Grosvenor Gardens, London, S.W.*1.)

CLASSIFICATION FOR TECHNICAL ARTICLES AND INFORMATION CENTRE

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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.

10.166 design: building types
SHOPS

Shops and Stores. Morris Ketchum, Jr. (Chapman and Hall Ltd. for Reinhold Publishing Corporation. 60s.)

A revised edition of Morris Ketchum's *Shops and Stores*, considerably re-written in the light of the last ten years' development and with additional material. This is a masterly statement of the problem of sheltering retail marketing, adequately indexed and with an up-to-date bibliography.

Every aspect of the problem is propounded, discussed and illustrated with almost entirely American examples. There is a brief reference to the contribution made by Europe; we on this side of the Atlantic may regret a little that the opportunity of showing the newer work in Germany and Holland, for instance, has been missed. Nevertheless, the American requirements are ours, complicated by more motor cars. Mr. Ketchum covers everything from the small speciality shop to the Roosevelt Field Shopping Centre and on to its logical outcome, the downtown re-development at Rye, N.Y. and the monster Fort Worth project.

The book is at its best, forthright and sure, on the programme; there are indications that in matters of the aesthetic it is less sure. The new chapter on colour is particularly disappointing. Special paper leads one to expect splendid coloured illustrations, but there are, in fact, five partly coloured sketches of interiors to back up a highly suspect over-generalization about five ways of arranging colours—the "Basic Colour System." The "Basic Colour System," comprising the bulk of this chapter, provides five desperate straws for architects drowning (in paint) to clutch at. The chapter on materials is little more than a catalogue, with many half truths and teasing omissions.

No book of this kind can be beyond criticism. Few traders in this country will agree with Mr. Ketchum that artificial light is best for selling clothes, they will, however, be happier to read that "The *sole* function of a store is to sell" whatever their designers might feel. Planners will be confused by being urged to incorporate *down* escalators and at the same time to do all in their power to entice the customer *into* the store. But in spite of these things this is a very good book indeed.

10.167 design: building types
OLD PEOPLE'S FLATS

Flatlets for Old People. MOHLG. (HMSO. 2s.)

This booklet envisages a kind of accommodation in which each old person (or old couple) has a room and cooking facilities of his (or their) own, but shares w.c. and bath and is within earshot of a warden. A fair amount of experience is beginning to accumulate on this subject and the purpose of this booklet is to gather it together and to formulate standards. Little that is very startling emerges. Recommended living-room sizes are 140 sq. ft. for one person, 220 sq. ft. for two, with a further 30-40 sq. ft. for a kitchen. It seems that the kitchen-in-a-cupboard idea, which cuts the kitchen space by about a half, saves only about £40 per dwelling and is not recommended. Three (rather pedestrian) plans are given in which the cost per unit varies between £831 and £935. There are also some interesting comparative heating costs which show that oil firing is already the cheapest fuel, showing a saving of 10d. per person per week over its nearest rival (solid fuel), but at an additional outlay (for an installation to heat 16 units) of £600.

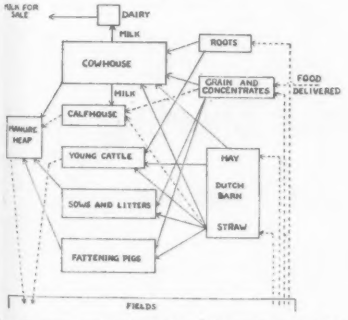
10.168 design: building types
FARM BUILDINGS

Planning the Farm to save Labour. F. G. Sturrock and G. H. Brayshaw. (Farm Economics Branch, School of Agriculture, Cambridge University. 4s. 6d. post free.)

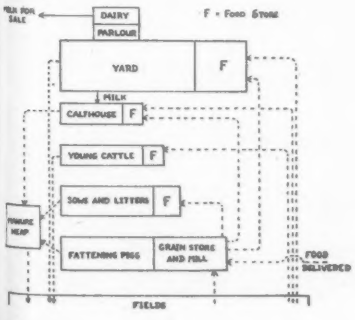
Though the authors might be surprised to learn it, this booklet and the study it reports are together a model in architectural user research. *Planning the Farm to Save Labour* is the result of a time and motion study carried out on 60 farms by the Farm Economics Branch of the Cambridge School of Agriculture. The emphasis throughout is on livestock, since this is evidently the part of farm work most susceptible to economies. 50 per cent. of all farm work is spent on livestock and of this 50 per cent. some 80-90 per cent. is spent in carrying materials—a legacy of the days when labour was cheap. Mechanization has, of course, already attracted the farmer but, like the builder, he tends to be somewhat random in his use of it. To quote the authors, "a farmer may

technical section

be prepared to spend £500 on a machine used for only two or three weeks in a year, and grudge £50 on a trolley or pathway that would save labour 365 days of the year." It is the authors' contention that a reorganization of the farm buildings themselves and of the liturgy that goes on in them is the greatest potential means of labour-saving in British farming today. As an example of what they have in mind we reproduce two diagrams. Fig. 1 shows the layout of an orthodox farmyard and marks the different journeys that would have to be made to transport food, litter and manure. The authors calculate that if such a farm were to have 20 cows and 5 sows with their litters, nearly 2½ tons of material would have to be moved every day, representing perhaps £12 a week in wages. They are of the opinion that a better conceived layout, on the lines of that shown in Fig. 2, would save between a quarter and a half of this. The essence of this second layout is that the food is stored close to the consumer and that it can be delivered at relatively rare intervals when the tractor is available. This is one example out of many of the very practical conclusions the authors reach as a result of their enquiry. They treat in the same way milk production, the design of the cowhouse and of yards, and the housing of young stock. It is tempting to summarize their findings on all of these subjects, but this would be a mistake, as there is in reality no substitute for following the careful, detailed argument given in the book itself. This is an excellent reference which should be in every architect's office.



Two diagrams reproduced from Planning the Farm to save Labour, *reviewed above. Fig.* 1 *(above) shows the layout of an orthodox farmyard, and the transportations of food, litter and manure—*17 *daily (continuous line) and* 10 *occasional (dotted lines). In the improved layout in Fig.* 2 *(below) the daily movements are reduced to two and the occasional ones become* 14.



18.197 construction: theory
PRESTRESSED CONCRETE DESIGN

The Gifford-Udall-CCL Handbook. (Cable Covers Ltd. 1957. 25s.)

A design handbook which is primarily an advertisement for the Gifford-Udall system of stressing.

The system was introduced in 1953 as the first single wire prestressing system and has been used extensively both in England and overseas. The components of the cable, anchorage, jacks, etc., are described in some detail and many applications are noted, backed up by photographs and descriptions of examples in practice. The sections on concrete materials, placing, testing, etc., and the tables of properties are applicable to any system.

In addition to prestressing work the handbook describes all the other Udall products.

22.89 sound insulation and acoustics
NOISE IN THE HOME

Noise in the Modern Home. E. E. Mikeska. (Noise Control. Vol. 4 No. 3 May 1958.)

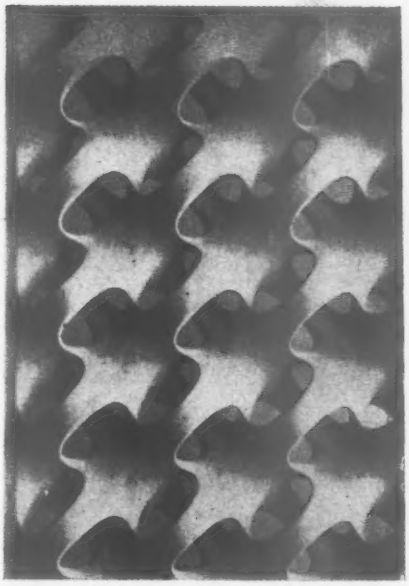
This article gives an exhaustive report of the measured values of noises found both inside and outside the typical "fully gadgeted" American home.

Apart from the noise menace of passing aircraft, trains and traffic, which is now widely recognized, it appears that a new crop of noise sources will demand architects' attention as the English home becomes more mechanized. Nor are many of these sources of minor importance as will be seen from the following few examples:

Source	Overall noise level dB
Window air conditioner unit	69
Central heating systems	65-75
Clothes drier	72
Dishwasher	75
Refuse disposal units	76-85

There are two ways in which these noises must be combated. The first is by the use of sound absorbents and is mentioned in the article. Although, up till now it has been considered that the normal furnishing of a house provides all the necessary sound absorption, with surface finishes, particularly in kitchens and bathrooms, tending to become harder and smoother (the use of metal, glass and plastics) and the introduction of comparatively loud noise sources, the need for specially introduced sound absorbent materials is becoming insistent.

The other aspect of the problem, hardly touched on in the article, is the protection of the occupants of other parts of the building (whether they are of the same household or another one) from the noise by sound insulation. This can be a serious problem in flats because many of the machines which make the noises do so not only by airborne sound radiation, but also by structure-borne energy, due to their contact with the building. This poses problems of impact insulation as well as airborne sound insulation.

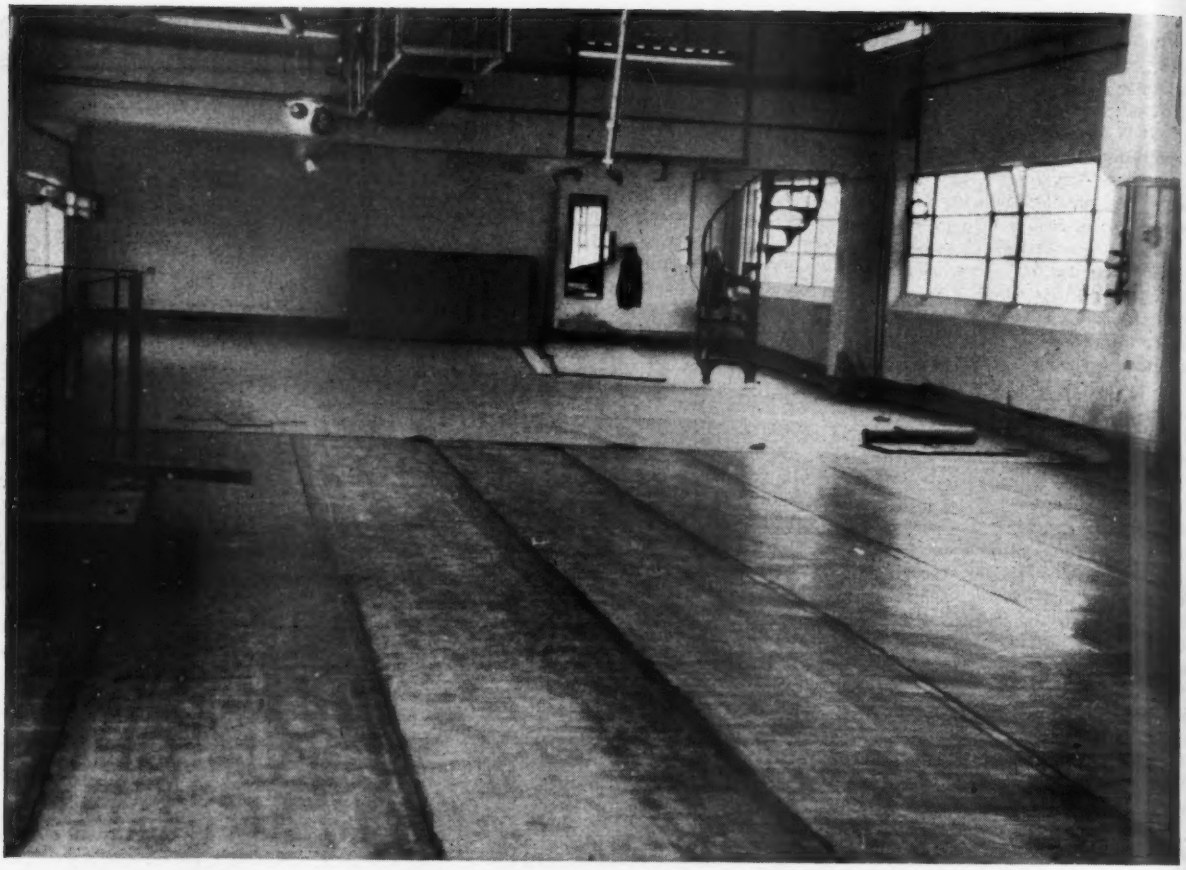


Sculptured acoustic screen, designed by Irwin Hauer, and reproduced from Acoustic materials for use in monumental spaces, *reviewed below.*

22.90 sound insulation and acoustics
SPECIALLY DESIGNED SOUND ABSORBENTS

Acoustical materials for use in monumental spaces. W. R. Farrell. (Noise Control, Vol. 4 No. 1 January 1958.)

This article puts the case for specially designed materials of high aesthetic significance for sound absorption in "monumental" buildings. The term "monumental" is used in the sense of buildings for which the architect seeks to create a property of permanence, and one might add, originality. The use of one of the stock range of acoustic absorbents, however wide the variety available, will often not satisfy these requirements. The problem frequently boils down to the provision of a facing material having sufficient apertures (perforations or slits) to allow the sound waves to pass through and become absorbed in some porous material such as rock wool, or by a vibrating membrane type of absorber. A warning is given against the use of any material in which subsequent painting can block the holes and thus destroy the material as an absorbent. The use of facing bricks built as a perforated wall in the Massachusetts Institute of Technology (Saarinen) is cited and it is pointed out that materials of this nature completely eliminate the problem of paintability. Similarly many of the stock kinds of perforated metal or board can be used in combination with timber or metal frames or trim to form materials which are both functional and decorative in the best sense. Lastly there is the possibility of using specially sculptured or moulded units to form screens of great originality such as that designed by sculptor Irwin Hauer and illustrated here.



Photograph shows suspended floor lined with Oppanol BA 1.5 mm at the Torridge Vale Dairies (Devon) Ltd, a member of the Cow and Gate Group.

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building illustrated

Houses for old people at East Horsley, Surrey

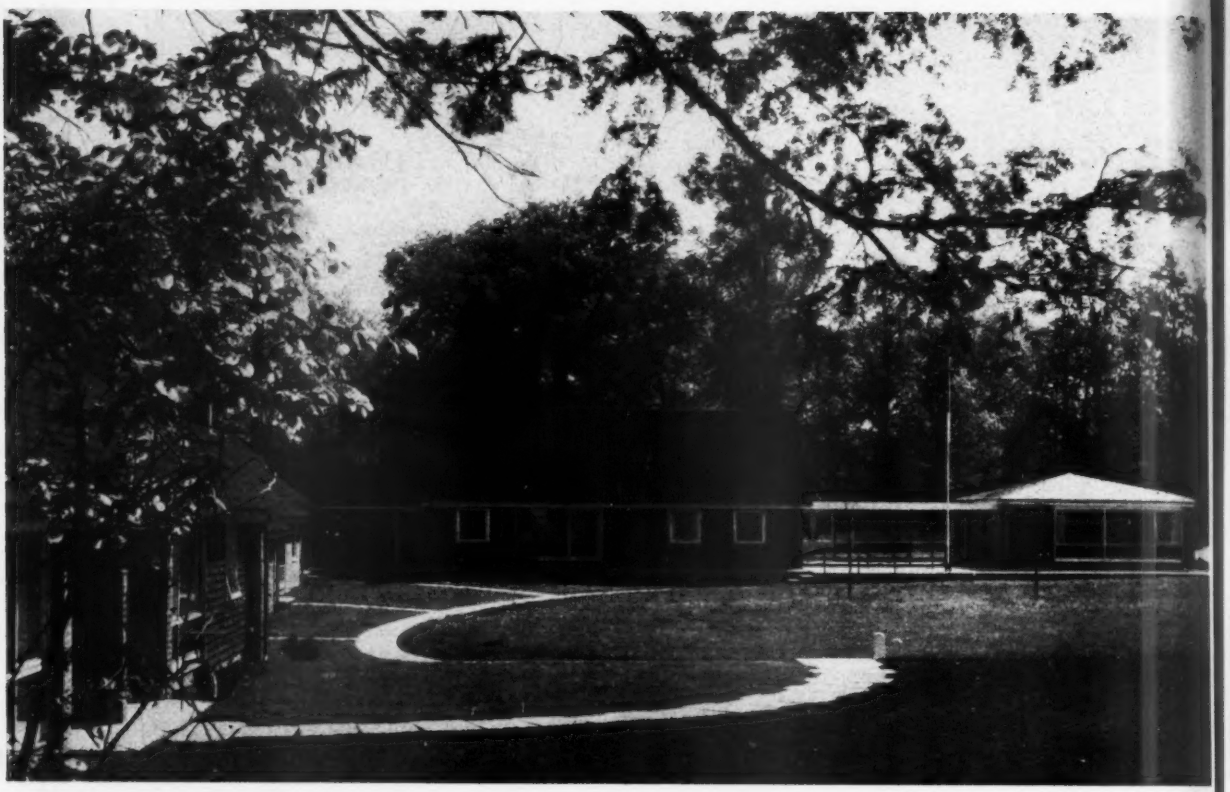
HOUSES FOR OLD PEOPLE

at FRENCHLANDS HATCH, OCKHAM ROAD SOUTH, EAST HORSLEY, SURREY; designed by CLIFFORD CULPIN; associate-in-charge ANTHONY SARGEANT; consultant (landscape) BRIAN ROBSON quantity surveyors DONALD HARWIN and PARTNERS

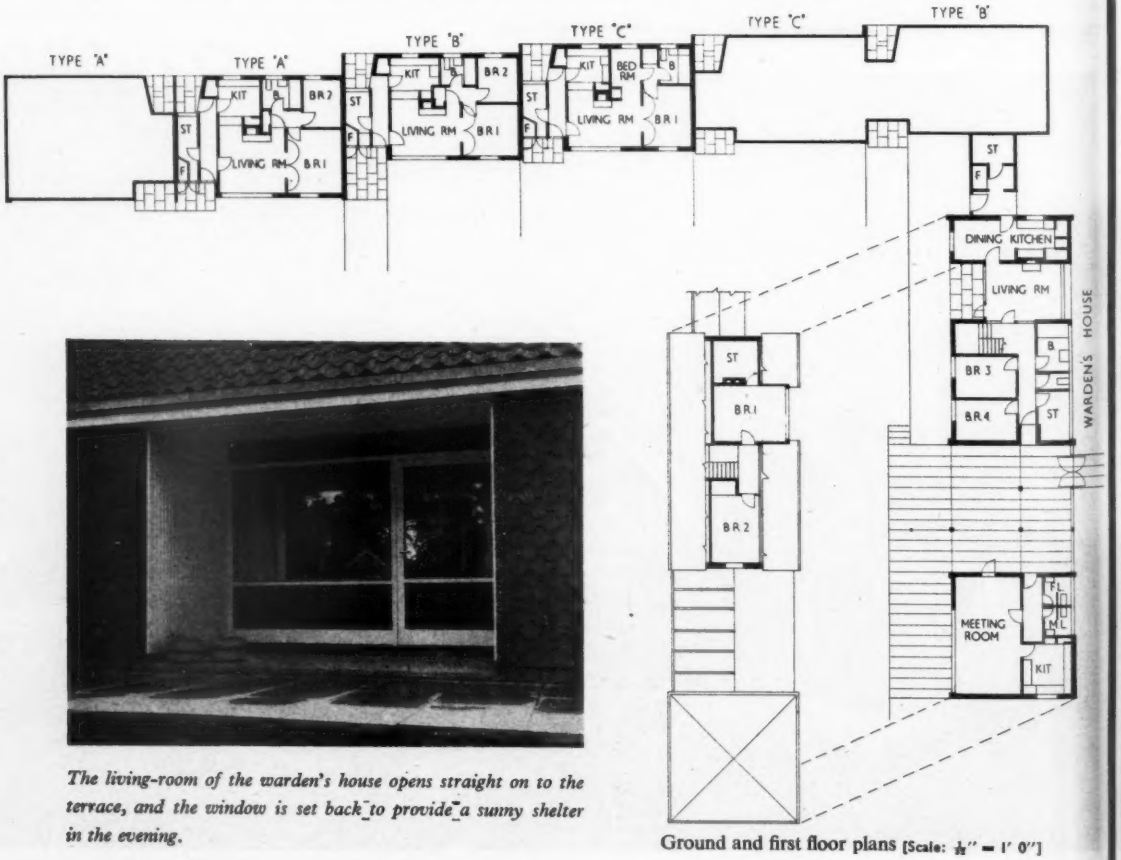
The six one-storey houses, warden's house and meeting room illustrated here are the first instalment of the Architects' Benevolent Society's scheme to provide 20 houses for retired members, and the design was the winner of the open competition held in 1956 by the ABS.

The main entrance, meeting room and warden's house from the south-east.

building illustrated



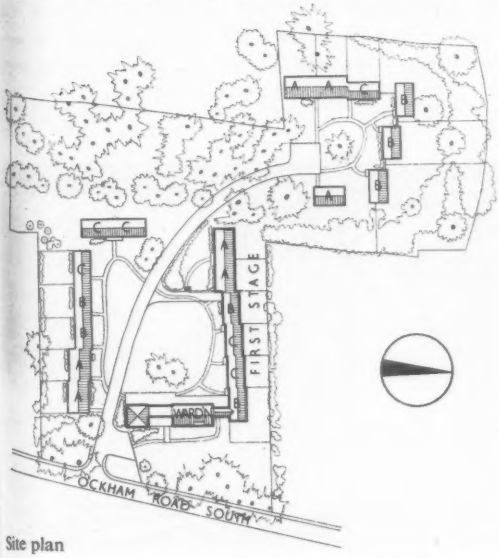
The group from the west. The warden's house, meeting room and glass-backed link, with old people's houses on the left. Nearly all the fine old trees on the site have been preserved and the grounds landscaped as a wild garden, with meadow grass and flowers.



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

The living-room of the warden's house opens straight on to the terrace, and the window is set back to provide a sunny shelter in the evening.

Two typical houses, from the south-east. There are three slightly different types of house in the scheme, with different internal arrangements of bedrooms, bathroom and kitchen space, but externally they are alike, with pitched roofs covered with dun-coloured clay pantiles, Ewhurst multi-coloured facing bricks and clad in parts with deep red sand-faced club-headed tiles.



Site plan

The terrace between the warden's house and the meeting room is sheltered by a glass screen on the east. Vines are to be grown over the pergola.

analysis

The design for these old people's homes was the winner out of 68 entries in an open architectural competition held in the spring of 1956, for which the assessors were H. S. Goodhart-Rendel, Arthur W. Kenyon and G. Grenfell Baines. The accuracy of the drawings submitted for the competition was such that they could be issued as part of the set of contract drawings. The competition report too was prepared in such a way as to be suitable for handing to the quantity surveyors as complete specification notes for the job. Except for one detail, the construction, equipment and finish all followed the competition report. The exception is glazing, as it was found that double glazing would be too expensive.

PLANNING AIMS

The building is being carried through in at least two phases, so the layout had to be planned so that Phase I would become part of a larger whole. Some dwellings are close together, others will be more isolated.

The buildings now completed form an L-shaped group, and are stepped to hug the ground so that underbuilding is reduced to the minimum. This stage comprises six old people's dwellings (two each of the three types designed), a warden's house and a common meeting room. The completed scheme will comprise 20 dwellings.

The three types of dwelling are all bungalows but differ slightly in the accommodation they provide:

Type A:	L.R., 152 sq. ft.	B.R.1, 133 sq. ft.
	B.R.2, 71 sq. ft.	K., 72 sq. ft.
Type B:	L.R., 150 sq. ft.	B.R.1, 100 sq. ft.
	B.R.2, 70 sq. ft.	K., 72 sq. ft.
Type C:	L.R., 150 sq. ft.	B.R., 110 sq. ft.
	Bed recess, 43 sq. ft.	K., 67 sq. ft.

(Type A is the one illustrated and cost analysed in the following pages.) Despite these differences, windows, entrances, plumbing, layout, etc., have been standardized throughout, and in addition the dwellings are " reversible," to suit the changed orientation in the later phases of building. The living space remains as drawn in relation to the sun, but the entrance/store unit reverses for aspect.

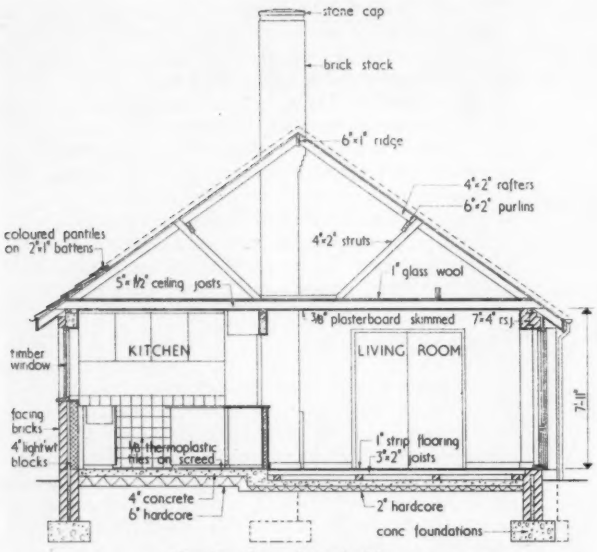
The warden's house: to avoid over-dominance of the low dwellings, this house has been made one-and-a-half storeys high, with bedrooms in the roof space.

The meeting room: this communal room, with a pyramidal copper-covered roof, contains lavatories and a kitchen. The main room faces west. It is linked to the warden's house by a pergola-covered terrace, protected from wind by a glazed screen.

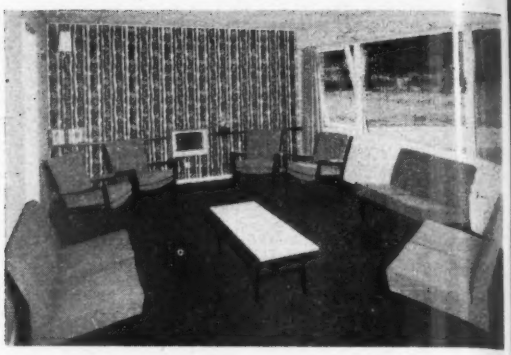
External appearance: the materials employed externally comply with the competition conditions, which demanded materials which would " not go shabby quickly but rather improve with age." Roofs, except for the copper roof of the common room, are covered with dun-coloured clay pantiles laid to a pitch of 35 deg. in single-storey dwellings and 42 deg. to the warden's house. Facing bricks are Ewhurst multi-coloured, machine-made stocks with flush joints, contrasting with dead-white paintwork. Parts of the elevations are clad in deep red sand-faced club-headed tiles. Gutters and pipes are painted grey, and colour, apart from that of the natural materials, is restrained. Some low retaining walls have been faced with knapped flints, a characteristic local material.

Landscaping: the aim has been to enhance the natural beauty of the site rather than compete with it. Only three trees will have been sacrificed to road-making when the scheme is completed. The central area of the grounds is to be left to long grass and wild flowers, with a few silver birches planted here, and surrounded by a mown sward. Ground covering plants will be established round the walls, out of which taller plants, such as funkia, rhubarb, mahonia and butcher's broom will rise, and vines will be planted by the pergola.

building illustrated

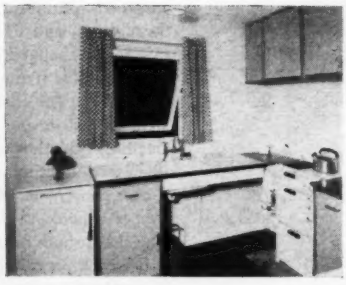


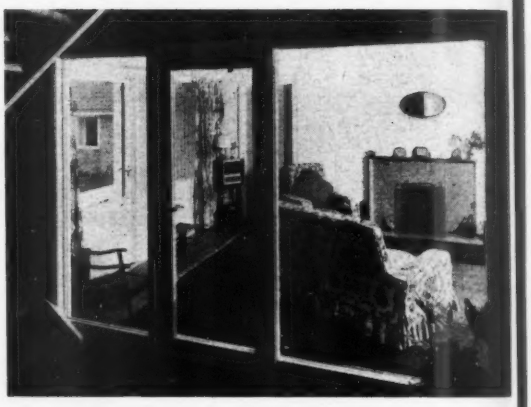
Section through typical house [Scale: ⅛" = 1' 0"]



The meeting room will look more friendly when use breaks up the orderly two-by-two of chairs around the walls. Here rich colour is provided by a boldly patterned wall-paper. The floor has a fitted carpet and the ceiling is covered with acoustic tiles. This room has been furnished largely with gifts.

Below left: A typical living-room in one of the bungalows, with double doors open to show one of the bedrooms beyond. Below right: One of the fitted kitchens, with continuous work top and horizontal pivot window. The kitchens face east to take the morning sun.





Above: the warden's living-room, through the glass screen which separates it from the entrance-hall and stairs. Through the west window can be seen the white vertical timber boarding which lines the set-back terrace in front of the house. Below: The back of the warden's house, seen from the road through the trees bordering the site.

analysis

SUMMARY

	Bungalows (together)	*Warden's house and meeting room*	*Together*
Ground floor area	3,620 sq. ft.	1,340 sq. ft.	4,960 sq. ft.
Total floor area	3,620	1,920	5,540

Type of contract: RIBA.
Tender date: May 6, 1957.
Work began: June, 1957.
Work finished: April, 1958.
Tender price of foundations, superstructure, installations and finishes: £17,422 12s 5d.
Final contract price: not yet known.
Tender price for external works: £3,070 7s 7d.
Final contract price: not yet known.
Total tender price: £20,493 0s 0d.

cost per sq. ft.	*Bungalows* s	d	*Warden's house and meeting room* s	d
Preliminaries and insurances	5	4¼	5	11½
Contingencies		11½	1	1¾
Work below ground floor level	8	1½	9	3

Traditional type strip concrete 2 ft. × 1 ft., 3 ft. minimum depth, and brick underbuilding with cavity filled with fine concrete.

STRUCTURAL ELEMENTS

External walls — 5 10¼ | 5 2½

Cavity walls, generally faced with Ewhurst brick with inner leaf of 4 in. lightweight concrete blocks. Some elevations clad with red sand-faced club-headed tiles: here both leaves are of concrete blocks:

Ratio: $\frac{\text{solid wall}}{\text{floor area}}$

Bungalow	House and meeting-room	Together
1·32 / 1	1·26 / 1	1·29 / 1

Windows — 1 10½ | 1 0½

Purpose-made to the architect's design and limited to three types only throughout the bungalows. The large " picture " windows are fixed; opening lights horizontally pivot hung. Softwood frames.

Ratio: $\frac{\text{windows}}{\text{floor area}}$

Bungalow	House and meeting room	Together
0·14 / 1	0·18 / 1	0·15 / 1

	Bungalows s	d	*Warden's house and meeting room* s	d
External doors	10¾		6½	

Front doors, softwood frame and glass panel. Rear doors, external quality ply flush door. Store doors, ledged and braced.

Ratio: $\frac{\text{doors}}{\text{floor area}}$

Bungalow	House and meeting room	Together
0·083 / 1	0·053 / 1	0·06 / 1

Floors

(Cost of ground floor given under work below ground floor level.)
To provide space for pipe-runs, floors on the living-room half of the dwellings are hollow and on the kitchen side of the spine wall are solid. Suspended floors are TDA construction with 1-in. nom. t. & g. flooring, insulated with aluminium foil with paper backing.
Solid floors have waterproofed concrete and thermoplastic tiles generally and cork tiles in bathrooms.

Upper floor — 2¾

2 bedrooms in roof space of warden's house on timber joists.
Total span, 22 ft., of which centre 9 ft. 6 in. is used in rooms.
Dimension into former, 14 ft. Area of upper floor 433 sq. ft.

Staircase — 6½

To bedrooms in warden's house. Width, 2 ft. 11 in., total rise, 8 ft. 4 in. No. of treads, 14. 9 in. × 1⅛ in. softwood strings, 1¼ in. hardwood treads with 3½ in. × 1 in. hardwood half-risers.

Roof construction — 3 5½ | 4 3½

4-in. × 2-in. rafters at 16-in. centres, covered roofing felt and tiling battens. 35 deg. pitch on bungalow: 43 deg. pitch on warden's house.

Glazing — 9¾ | 1 10¾

Large living-room window, ¼-in. plate. Others, 32 oz.

Total of structural elements:

Bungalows	**12s 10¾d**
Warden's house and meeting room	**13s 8¾d**

PARTITIONS AND FITTINGS

Internal partitions — 1 2¾ | 1 6½

3-in. light concrete blocks.

Screens — 1 0

24-ft. long softwood painted frame and ¼-in. plate glass beside terrace linking warden's house with meeting room.

analysis

	Bungalows s	Bungalows d	Warden's house and meeting room s	Warden's house and meeting room d
Internal doors No. in each bungalow, 12 including larder, broom and linen cupboard. Standard doors. Warden's house and meeting room, 13. 1 double door in each dwelling. All standard hardboard faced.	2	1½	1	3½
Ironmongery British aluminium door furniture.	1	0½		10¾
Fittings Kitchen fittings. Sink unit with cupboards underneath and dresser with flush, painted door in polished beech frames. Bench tops covered red and blue plastic.	2	8½	1	3½
Total of partitions and fittings:				
Bungalows	7s 1¼d			
Warden's house and meeting room	6s 0d			

FINISHES

Floor finishes T. & g. strip; thermoplastic tiles; cork tiles	2	0¾	2	0
Wall finishes ⅝-in. plaster.	1	10	1	7½
Ceiling finishes Plasterboard and ⅛-in. skim plaster. In the meeting room a patent acoustic ceiling.		11	1	11
Roof finishes Clay roofing, pantiles, Norfolk pattern, dun coloured, on bungalows and warden's house. Area: 924 sq. ft. on bungalow, 1,610 sq. ft. on warden's house. Pyramid roof of meeting room is copper covered. Area, 676 sq. ft.	3	6¾	4	4¾
Decorations Archrome N.9 emulsion paint to walls. Gloss paint on doors and woodwork. To avoid clashing with tenants' cherished possessions, internal treatment and colour schemes are of utmost simplicity. In non-living areas, however, such as circulation spaces colour has been used on ceilings: e.g. red in bedroom lobbies, blue in entrance halls.	2	5	2	3½
Total of finishes: Bungalows	10s 9½d			
Warden's house and meeting room	12s 2½d			

SERVICES

External plumbing Cast iron rainwater goods, half-round gutters in bungalows, box section to warden's house and meeting room. No soil pipes showing. Copper wastes to gulleys	1	0½	1	11¾
Hot and cold water installation Copper pipes.	3	3¾	3	0½
Sanitary fittings One 5-ft. 6-in. bath in each bungalow and warden's house. One 24-in. × 20-in. pedestal basin in each bungalow and warden's house. Syphonic low-level w.c.s in each bungalow, warden's house and lavatory to meeting room. White vitreous enamel single-drain sink in each kitchen.	2	6¾	1	3½
Heating and ventilation *Bungalows:* an all-night burning fire, placed in centre of each to conserve warmth, serves two radiators and a towel-rail. Electric points for " topping-up," and electric immersion heaters for summer use. *Warden's house:* open fire in living room, solid fuel boiler in kitchen, serving radiators in principal rooms. *Meeting room:* electric tubular heating and 3-kW electric wall radiator as focal point. Thermal insulation and conservation of heat throughout is ensured by aluminium foil under the floors, closely-fitting windows, 4-in. lightweight concrete insulating blocks, and 1-in. bitumen-bonded glass-fibre quilt over ceiling joists. " U " of walls: 0·22. " U " of roof: 0·23.	2	4½	1	10
Gas installation Three points each in bungalows and warden's house. None in meeting room.		10½		4½
Electrical installation	2	6½	2	9½

	Type of point Triple points	13-*amp.*
Bungalow	4	3
Warden's house and meeting room	14	7
Total of services: Bungalows		12s 7¾d
Warden's house and meeting room		11s 3½d

Drainage 4-in. salt-glazed earthenware	4	6	4	2¾

Total per sq. ft. of floor area:
Bungalows:
£11,296 (net cost excluding external works) / 3,620 sq. ft. (measured inside external walls) = 62 5

Warden's house and meeting room:
£6,127 (net cost excluding external works) / 1,920 sq. ft. (measured inside external walls) = 63 9¾

For Cost Comments and Contractors see page 142.

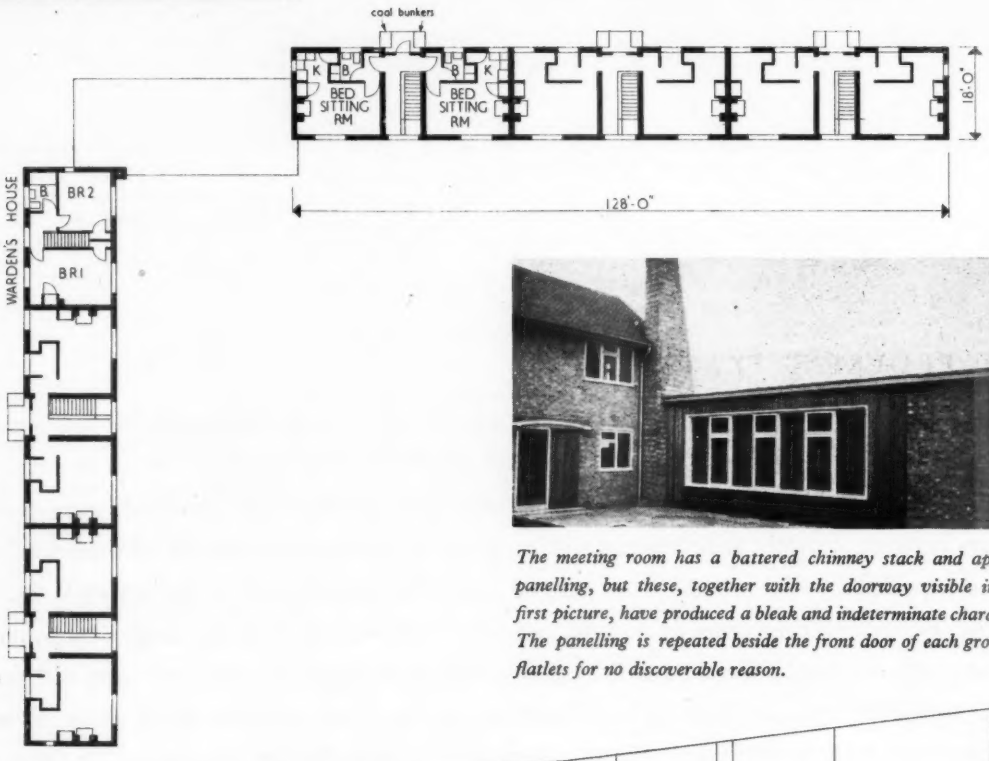
OLD PEOPLE'S FLATS

in GLAMIS WALK, OWTON MANOR ESTATE, WEST HARTLEPOOL; designed by A. G. SINCLAIR, borough architect; assistant-in-charge A. W. AYRES; quantity surveyor R. H. DUNS

These 20 self-contained flats, with a warden's house and meeting room attached, were designed to bridge the gap between entirely independent old people's bungalows and hostel accommodation. A mid-day meal is supplied by the school meals service and the presence of a warden and the communal life provided by the meeting room enable old people to live on their own for longer by providing help and company when needed. We are publishing these as an example of very low cost old people's housing which is probably typical of much local authority work. They provide three times as many dwellings at a lower standard for the same price as the houses at East Horsley illustrated on pages 133-138.

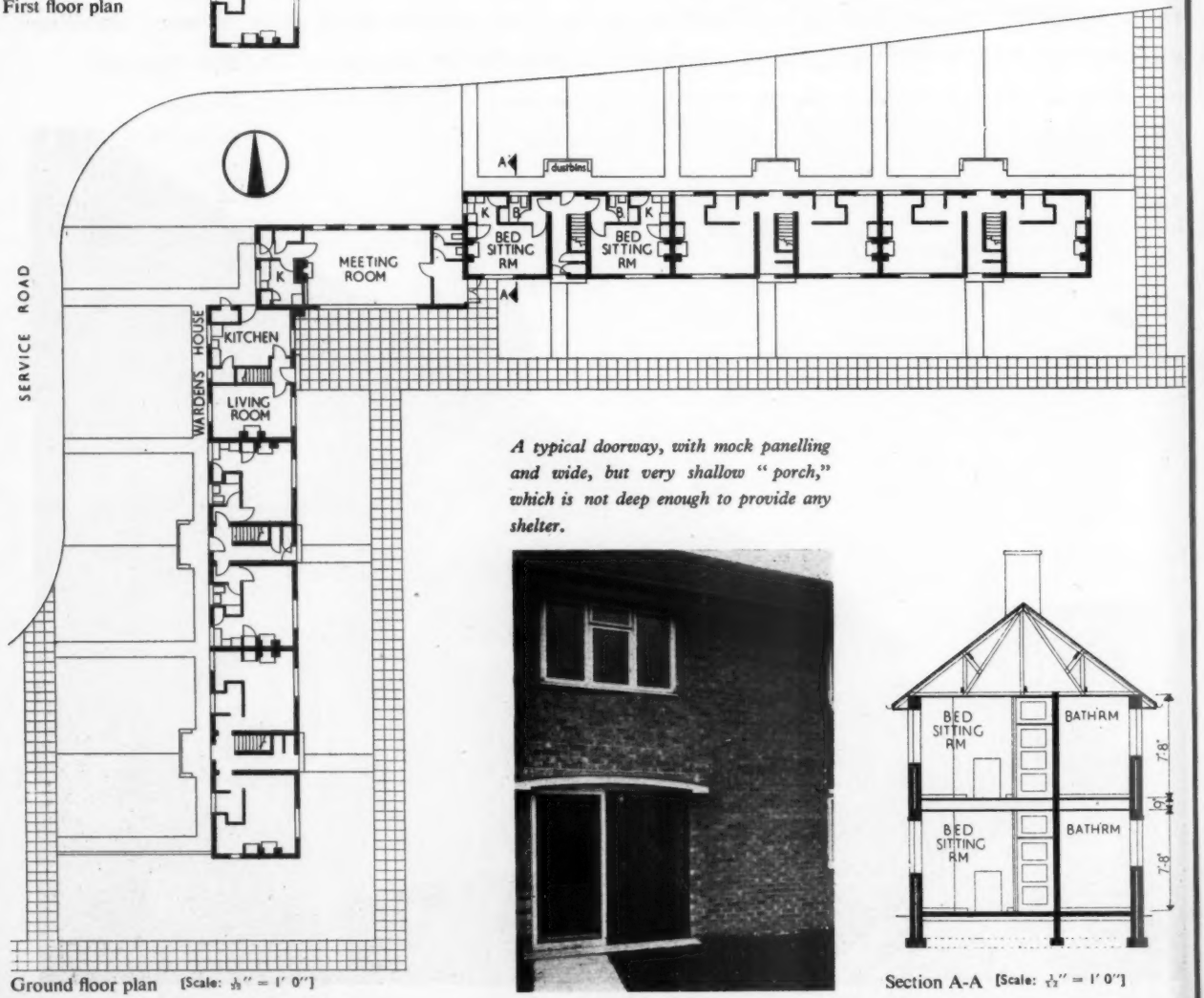
One of the two two-storey blocks of flatlets, looking west to the warden's house and meeting room, which link it with the second block.

building illustrated



First floor plan

The meeting room has a battered chimney stack and applied panelling, but these, together with the doorway visible in the first picture, have produced a bleak and indeterminate character. The panelling is repeated beside the front door of each group of flatlets for no discoverable reason.



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

A typical doorway, with mock panelling and wide, but very shallow "porch," which is not deep enough to provide any shelter.

Section A-A [Scale: $\frac{1}{32}$" = 1' 0"]

analysis

CLIENT'S REQUIREMENTS

These flatlets for old people were designed by the Borough Architect's Department for the County Borough of West Hartlepool. The scheme provides 20 self-contained flatlets, each with an area of 252 sq. ft., and a warden's house, contained in two 2-storey blocks, linked by a meeting room.

The scheme is designed to bridge the gap between the normal aged people's bungalows and hostel accommodation for old people, both of which are already provided by the local authority.

Mid-day meals are supplied by the School Meals Service.

The Ministry of Housing and Local Government approved the scheme for the purposes of the Housing Subsidies Act of 1956.

All 20 flatlets have identical plans with the following accommodation: a small entrance lobby with pin rail and hat and coat hooks; combined bathroom and w.c. with special sit-down bath with safety handles; a bed-sitting room with slabbed tile fireplace and raised hearth; a kitchen recess off this room with sink, cupboard unit, gas cooker and larder. There are electric power points in the bed-sitting room and kitchen recess.

SITE

Flat agricultural land with open views to the south and east. The buildings back on to an existing service road in the centre of a post-war housing estate, within easy reach of an existing shopping centre and future amenities.

SUMMARY

Ground floor area: 4,281 sq. ft.
Total floor area: 7,950 sq. ft.
Type of contract: RIBA/Q competitive tender.
Tender date: September 1956
Work began: February 1957
Work completed: January 1958
Tender price of foundations, superstructure, installations and finishes: £17,771.
Tender price of external works: £1,530.
Total: £19,301.

	cost per sq. ft. s d
Preliminaries and insurances	3½
Builder's general expenses	3
Contingencies	8

Work below ground floor level 3 0½
Strip foundations, walls to d.p.c. level, hardcore, d.p. membrane and base concrete to floors.

STRUCTURAL ELEMENTS

Frame or load-bearing element 10 0½
External and internal load-bearing walls, cross walls and stacks in brickwork.
R.s.j.'s over meeting room and load-bearing partitions.

Ratio: $\frac{\text{solid wall}}{\text{floor area}} = \frac{1 \cdot 65}{1}$

Windows 10½
Standard EJMA to flatlets and warden's house.
Purpose made to meeting room.

Ratio: $\frac{\text{windows}}{\text{floor area}} = \frac{0 \cdot 182}{1}$

External doors s d 7
Flush doors with glazed panels to BS 459.
Lead-covered timber hoods over 6 front entrances.

Ratio: $\frac{\text{doors}}{\text{floor area}} = \frac{0 \cdot 044}{1}$

Upper floors and balconies 2 5
Precast concrete to flatlets, *in situ* concrete balconies.
7-in. × 2-in. timber joists and boarding to warden's house.

Staircases 3½
5 staircases to upper flatlets, with precast non-slip concrete steps. *In situ* quarter space landings.
Traditional timber closed staircase to warden's house.
Width: 3 ft.
Total rise: 8 ft. 6½ in.

Roof construction 2 2
Pitched roof to blocks of flatlets and warden's house. TDA trusses, purlins and rafters at 37½ deg.
Flat roof over meeting room, 6-in. × 2-in. joists and wood-wool slabs with sand/cement screed.
Area of pitched roof: 6,003 sq. ft.
Area of flat roof: 738 sq. ft.

Glazing 4½
Sheet glass generally. Plate to meeting room.
Georgian wired to entrance doors.

Total of structural elements 16s 9d

PARTITIONS AND FITTINGS

Internal partitions 8
2½-in. thick foam slag blocks.

Internal doors 1 9
Four panels 1½ in. thick to BS 459.

Ironmongery 9
Mortice latch and lever handle furniture to all doors.
Cylinder night latches, to main entrance doors and entrance doors to individual flats. T-handle fasteners to cupboards.
Cost includes galvanized coal bunkers to flatlets.

Fittings 2 4½
Fireplaces, kitchen cupboards and cylinder cupboards to flatlets and warden's house. Built-in wardrobes in warden's house. Purpose-made slab tiled fireplace in meeting room.

Total of partitions and fittings 5s 6½d

FINISHES

Floor finishes 2 6¾
Thermoplastic tiles and screed to flatlets, warden's house and meeting room.
Granolithic concrete to communal entrances and landings.

Wall finishes 1 9½
All internal walls, ⅜-in. plaster.
Fuel and other stores, fair-faced brickwork.

analysis

	s	d
Ceiling finishes Ground floor flatlets, ½-in. insulation board. Remainder, plasterboard and skim.		8½
Roof finishes Pitched roofs: concrete plain tiles and roofing felt. Flat roof: 3 layers of felt.	1	6½
Decorations Walls of flatlets and warden's house, oil-bound water paint. Walls of meeting room and communal entrance and stairs, emulsion paint. All ceilings, oil-bound water paint. All woodwork, balustrades, etc., gloss paint. Stair handrails and fireplace surround and bookshelves to meeting room, french-polished.	1	8
Total of finishes	8s	3½d

SERVICES

External plumbing Asbestos cement 4½-in. h.r. gutters and fall-pipes. Flashings and soakers in 5 lb. lead.		9½
Hot and cold water installation Back boiler, cylinder and tank system to each flatlet and warden's house. Internal piping copper, service pipes in polythene. Cost includes Water Company's charges.	2	8½
Sanitary fittings Sit-down bath, lavatory basin, w.c. and sink in each flat. Bath, lavatory basin, w.c. and sink in warden's house. Lavatory basin, w.c. and sink in meeting room.	3	0½
Gas installation Cooker in each flat, warden's house and meeting room. Boiler in warden's house. Boiler and water heater in meeting room. Cost includes Board's service charges.	1	7¾
Electrical installation 104 light points. 48 power points. Lighting with time-lag switches to 5 communal entrances and stairways. Cost includes Board's service charges.	1	9
Total of services	9s	11¼d
Drainage Combined system 4-in. and 6-in. salt-glazed pipes. 12 manholes, 2 connections to sewer.	1	8
Paths and pavings Concrete flags in front of meeting room. 2-in. concrete on 3-in. hardcore elsewhere.	1	0¼
Fencing and screen walls Concrete posts at 6-ft. centres with 1½-in. galvanized tubes filled in with square mesh fabric. 8 hardwood gates. 45 sq. yd. of 9 in. brickwork.	1	2¾
Total per sq. ft. of floor area = £17,771 (net cost excluding external works)		
7,950 sq. ft. (floor area measured inside external walls)	44	8½

COST COMMENTS

A critical comparison between these two schemes would be invidious: one was built by a local authority for aged people who prefer flatlets to bungalow or hostel accommodation; the other for tenancy by a selected class of people. Other things being equal, bungalows cost more per square foot than the same area contained in flats or houses. Moreover the ABS scheme provides many more of those things which make for the physical and mental comfort of old people. Differences in quality that lie behind differences in price may be summarized.

	ABS	*West Hartlepool*
Accommodation	Bungalows; some terraced, some more isolated.	2-storey terraced flatlets
Types	3 different types, ranging from 370 to 428 sq. ft.	1 type of 252 sq. ft.
Materials	Chosen as much for appearance as for economy: *e.g.* clay pantiles, purpose-made windows, c.i. rain-water goods, etc.	Chosen with an eye to economy: concrete plain tiles, EJMA windows (except to meeting room), asbestos cement rain-water goods, etc.
Landscaping	A feature.	Not mentioned.
Cost	6 bungalows, 1 meeting room and warden's house, 5,540 sq. ft., £17,422.	20 flatlets, 1 meeting room and warden's house, 7,950 sq. ft., £17,771.

Where has the money gone? In the ABS scheme more than usual (5s. 4½d.) is swallowed in preliminaries. Work below ground floor level at 8s. 1½d. reflects the additional cost of bungalow foundations and also appears to include at least part of the suspended ground floor costs. Adequate provision seems to have been made against cold, arch enemy of old people. Roof construction and finish is responsible for 11 per cent. of the total cost. The steep fall across the site has inevitably led to stepped terraces, which entail extra cost in roof verges, facings and flashings, etc.

West Hartlepool: By the choice of the materials previously mentioned and of grano to communal entrances and landings, concrete finish staircases, etc., net cost (without drainage) has been kept to the surprising figure of 44s. 8½d. per sq. ft. Small self-contained flats would appear to require no further heating than is provided by a central fireplace with a back boiler. No mention is made of providing an immersion heater for summer use, nor is there sound insulation between the upper and lower flats.

CONTRACTORS

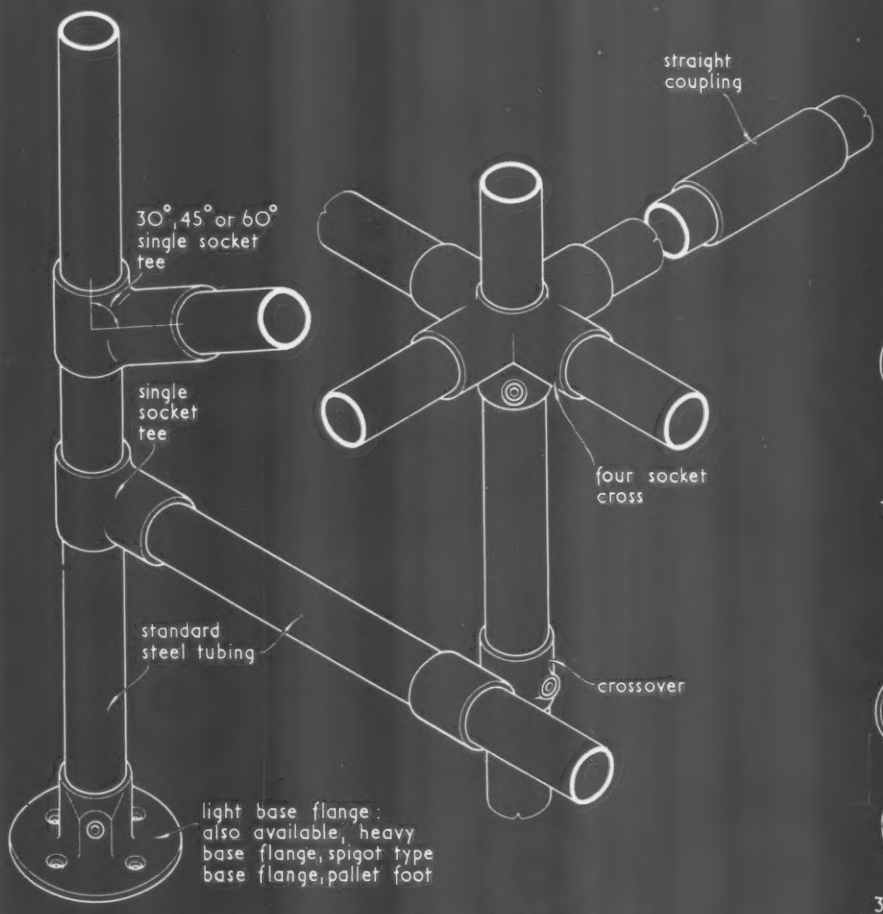
HOUSES FOR OLD PEOPLE, EAST HORSLEY

General contractor: Carlton Contractors Ltd. *Sub-contractors: Acoustic ceiling tiles:* Celotex Ltd. *Cork and thermoplastic floor tiling:* Armstrong Cork Co. Ltd. *Flush doors and kitchen fittings:* Jayanbee Joinery Ltd. *Furniture and curtains:* Heal's Contracts Ltd. *Electrical services:* Electric Power Installation Co. *Ironmongery:* Stedall & Co. Ltd. *Joinery and timber windows:* Hollis Bros. Ltd. *Plasterboard ceilings:* Gyproc Products Ltd. *Facing, bricks, roofing and tile hanging:* Henry J. Greenham (1929) Ltd. *Copper roofing:* Broderick Insulated Structures Ltd. *Terrazzo fireplaces:* The Mosaic & Terrazzo Precast Co. (Staines) Ltd. *Gas installation:* South Eastern Gas Board. *Insulating blocks:* Thermalite Ltd. *Sanitary goods:* B. Finch & Co. Ltd. *Television aerial system:* Belling & Lee Ltd. *Landscaping:* Astolat Nurseries Ltd. *Flagpole:* J. W. Grey & Son Ltd. *Nameplates:* Drakard & Humble Ltd. *Fencing:* W. A. Skinner & Co. Ltd. *Paint and emulsion paints:* ICI Ltd.

FLATS FOR OLD PEOPLE, WEST HARTLEPOOL

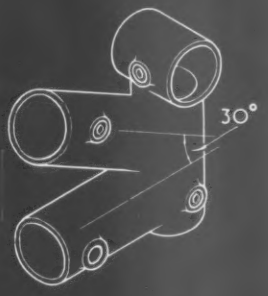
General contractors: W. W. Brazell Ltd. *Sub-contractors: Electrical installation:* E. Phillips Ltd. *Roof tiling:* G. & W. H. Carter Ltd. *Thermoplastic floor tiling:* Semtex Ltd. *Mylk concrete floors:* G. Greenwood & Sons.

The Architects' Journal Library of Information Sheets 681. Editor: Cotterell Butler, A.R.I.B.A.



ISOMETRIC SKETCH SHOWING ASSEMBLY OF COMPONENTS.

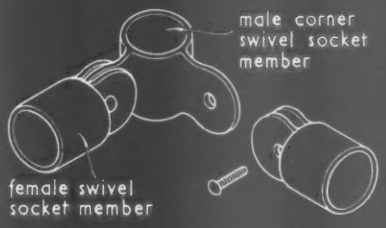
TWO SOCKET CROSS.



30° ROOF ANGLE.

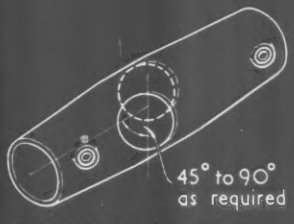
ELBOW. (with or without side outlet)

TWO SOCKET TEE.



SWIVEL SOCKETS. (single, double or corner)

90° THREE SOCKET TEE: SIDE OUTLET TEE.



ANGLE TEE OR CROSS.

COMBINATION TEE AND CROSSOVER (single or double)

·KEE KLAMP· FITTINGS FOR TUBULAR STEEL CONSTRUCTIONS: [illegible]

42.Z1 ·KEE KLAMP· FITTINGS FOR TUBULAR STEEL CONSTRUCTIONS: 1.

This Sheet is the first of a series on Kee Klamp fittings, a wide range of which is available for jointing and fixing steel tubular members to produce various types of structure. Other Sheets in the series deal with specific applications of the system, e.g. storage racking, pedestrian guard railing, cycle racks, staging, etc.

Principle

Each socket on a Kee Klamp fitting is provided with a grub screw fixing. The hexagon-socket grub screw is tightened by a special key so that it grips the tubing. This simple principle has been applied to produce a very wide range of components for accommodating single and multiple junctions, crossovers, base flange fixings, etc., so that the flexibility of the system is almost without limit.

Material and Construction

The fittings are of malleable iron and are for use with standard steel gas, steam and water tubing to B.S.1387: 1957. The drawings on the face of the Sheet show a selection from the range available for constructing most types of racking and staging. In addition, there are components specifically designed for handrailing and balustrading: these are shown in detail on Sheet 26.Z2

Sizes

The standard sizes in which the fittings are obtainable vary according to function and the manufacturer should be consulted for details. Straight couplings and most of the right-angled junctions are obtainable to take tubing from $\frac{3}{8}$ in. to 2 in. internal diameter and the sizes of other components vary between these limits. Where the required sizes for a particular application are not available from stock, they can normally be supplied to special order.

Additional Fittings

The manufacturer can also supply 18 or 22 gauge sheet steel shelving boards, sheeting and panel clips, hookbolts, hook and pin fittings, collars, etc.

Finish

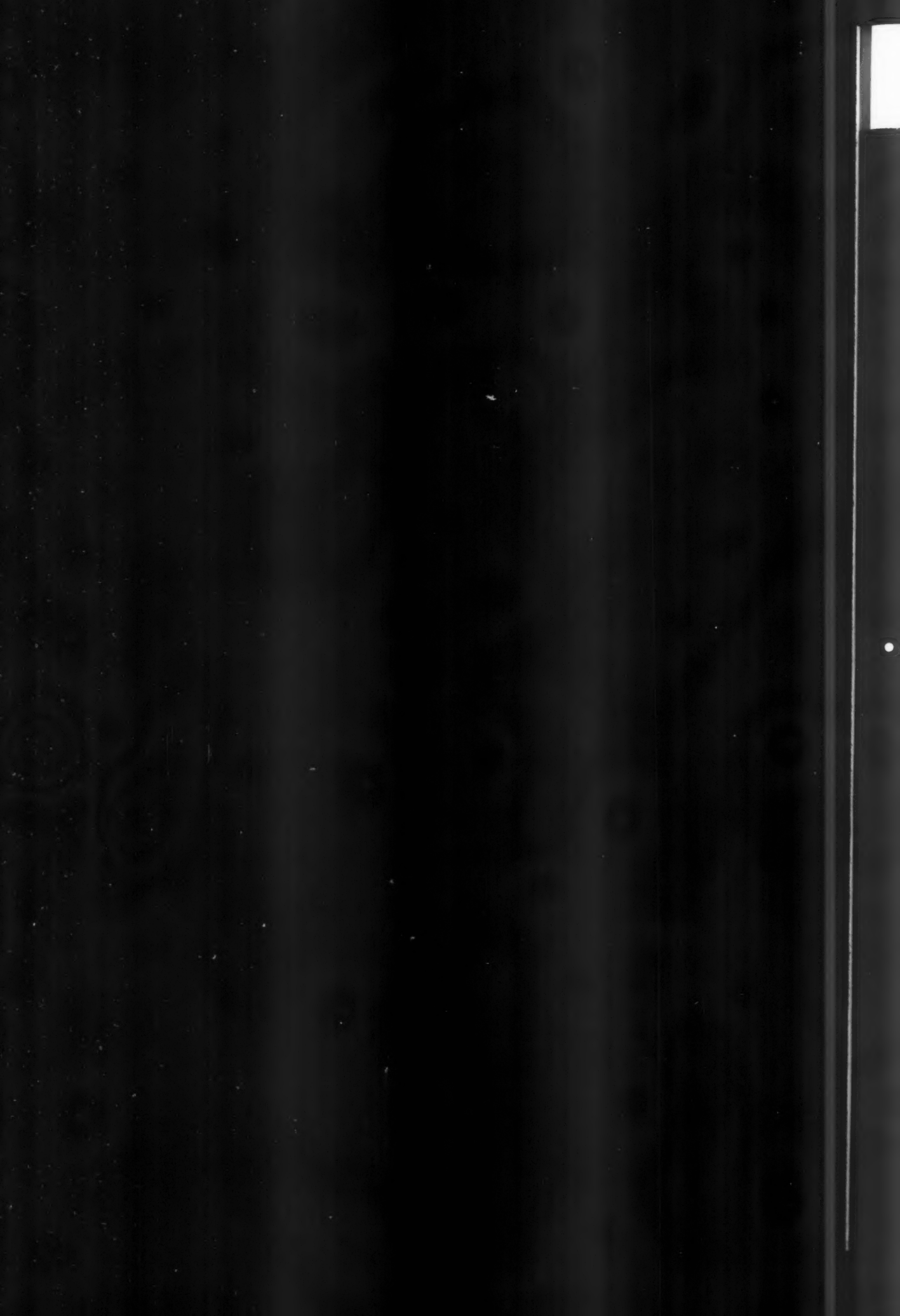
The fittings and tubing may be left untreated or galvanised.

Further Information

The manufacturer maintains a technical advisory service available to answer questions and prepare schemes for Kee Klamp installations.

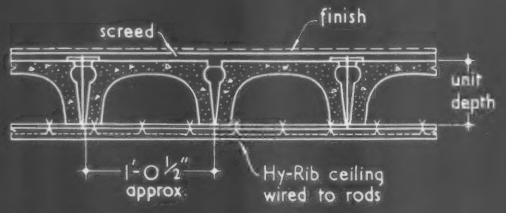
Compiled from information supplied by:

Geo. H. Gascoigne Co. Ltd.
Address: Berkeley Avenue, Reading, Berks.
Telephone: Reading 54417-9.
Telegrams: Keklamps Reading.



FLOOR AND ROOF STRUCTURAL ELEMENTS | CONCRETE

The Architects' Journal Library of Information Sheets 682. Editor: Cotterell Butler, A.R.I.B.A.

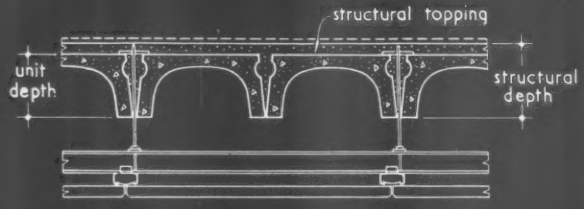


the ceilings illustrated are typical but any type of ceiling may be fixed: for other typical ceilings see Sheet 20.D 4

UNITS ONLY.

unit depth (in.)	maximum spans (ft. and in.) for given superimposed loads (lb./sq. ft.)								dead wt. (lb./sq. ft.)
	15	30	50	60	80	100	150	200	
5	20-3	18-6	17-0	16-0	14-9	13-9	12-0	10-9	30
6	23-9	21-9	19-6	18-9	17-6	16-3	14-3	12-9	32
7	28-0	25-6	23-0	22-0	20-6	19-0	16-6	15-0	35
8	31-0	28-0	25-6	24-6	22-6	21-0	18-6	16-6	38
9	32-0	31-0	28-0	27-0	25-0	23-6	20-6	18-6	41
10	32-0	32-0	30-0	29-0	27-0	25-6	22-0	20-0	44

an allowance of 15lb./sq.ft. has been made for screed and finishes

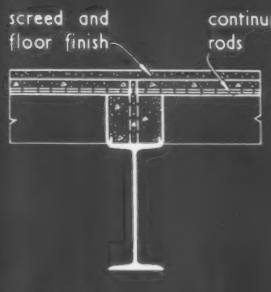


depth (in.)		maximum spans (ft. and in.) for given superimposed loads (lb./sq. ft.)																dead weight (lb./sq. ft.)
struct. total	unit only	15		30		50		60		80		100		150		200		
		a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	
6	5	22-3	26-0	20-9	23-6	19-0	21-0	18-0	20-3	17-0	18-6	16-3	17-6	14-3	15-0	13-0	13-6	44
7	6	25-9	29-3	23-9	26-6	22-0	24-0	21-0	23-0	19-9	21-3	18-6	19-9	16-6	17-3	14-9	15-6	48
8	7	28-9	32-6	27-0	29-9	24-9	27-0	23-9	25-9	22-3	24-0	21-0	22-6	18-9	19-6	17-0	17-6	52
9	8	32-0	35-9	29-9	32-9	27-6	30-0	26-6	28-9	25-0	26-9	23-6	25-0	20-9	22-0	19-0	19-9	56
10	9	34-3	37-6	32-0	34-6	29-6	31-6	28-6	30-3	26-9	28-3	25-3	26-6	22-6	23-3	20-6	21-0	60
11	10	37-0	41-0	34-9	37-9	32-3	34-9	31-3	33-3	29-3	31-0	27-9	29-3	24-9	25-9	22-6	23-3	64

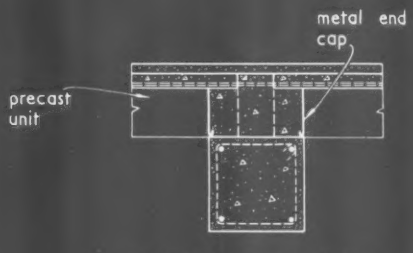
a: without propping. b: with temporary propping

an allowance of 10lb./sq.ft. has been made for finishes

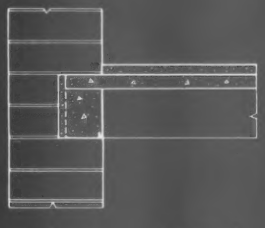
UNITS WITH IN-SITU STRUCTURAL CONCRETE TOPPING.



open r.s.j.



reinforced concrete beam



end bearing on brickwork

TYPICAL BEARINGS.

·TRUSCON· PRECAST PRESTRESSED CONCRETE FLOOR TYPE 3.

Manufacturer: The Trussed Concrete Steel Company Limited

20.D5 ·TRUSCON· PRECAST PRESTRESSED CONCRETE FLOOR TYPE 3

This Sheet describes the construction of floors and roofs using Truscon Type 3 precast prestressed concrete units. The drawings on the face show the design of the units and typical bearings. Reinforced units (Truscon Type 1), available up to 21 ft. 6 in., are dealt with on Sheet 20.D4, and the typical ceiling treatments shown are applicable also to the Type 3 floor.

Construction

The units are purpose-made to suit individual span and load requirements. The floor can be constructed either as a simple assembly of prestressed concrete units, to take normal screed and finish, or as a combination of units and in-situ structural concrete topping. Further, where the combination is used, its efficiency is much increased where temporary propping is feasible during construction. The span/load tables on the face of the Sheet cover the three conditions. It will be noted that the second table assumes that the topping will serve also as screed and reduces the weight allowance for finishes accordingly.

Sizes

The units are available in lengths up to approximately 40 ft. 0 in. The standard overall width is approximately 1 ft. 0½ in. varying by fractions of an inch according to depth.

Fire Resistance

A 7-in. Truscon Type 3 floor with a Hy-Rib ceiling plastered three coats, and a ¾-in. cement and sand screed (similar to the first section illustrated on the face of the Sheet), has been tested by the J.F.R.O. and rated for four hours' fire resistance.

Further Information

The manufacturer maintains a technical advisory department available to answer questions and to supply preliminary and detailed drawings. Units can be supplied only delivered to the site or if required the manufacturer will also undertake the fixing and site work.

Compiled from information supplied by:

The Trussed Concrete Steel Co. Ltd.

Head Office: Truscon House, 35-41, Lower Marsh, London S.E.1.
Telephone: Waterloo 6922.
Birmingham Office: 133, Edmund Street, Birmingham 3.
Telephone: Central 2345/6.
Bristol Office: Royal London Buildings, Baldwin Street, Bristol 1.
Telephone: Bristol 21861.
Glasgow Office: 10, India Street, Glasgow C.2.
Telephone: Central 0157/8.
Liverpool Office: 3, Tithebarn Street, Liverpool 3.
Telephone: Central 5281/2.
Manchester Office: 50, Seymour Grove, Old Trafford, Manchester 16.
Telephone: Trafford Park 2766.
York Office: 56, Shipton Road, York.
Telephone: York 24594.

Factories (producing precast units): London, Birmingham, Manchester and Edinburgh.

working detail

LEATHER-FACED WALL: BANK IN LONDON, W.1

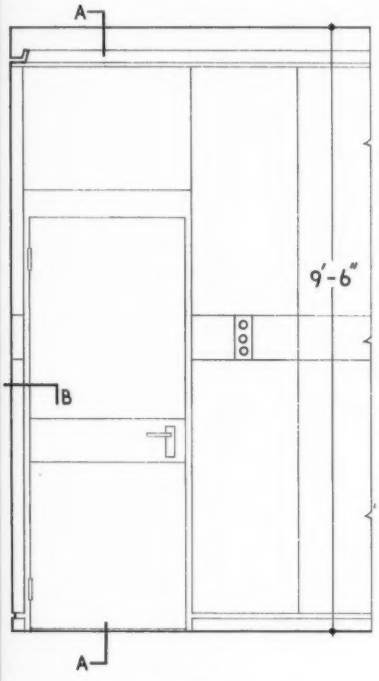
Gotch and Partners, architects

We illustrate on this sheet a luxurious wall finishing technique which is not often to be seen. The leather is "pure hide," the colour, powder blue. The articulation of the panels is in part determined by the maximum available sizes of the leather. Each panel is padded with kapok and backed with ¼-in. ply, the leather being stretched over the ply, "skived" at the corners (i.e. the turn-overs cut out in the manner of book-binding to avoid wrinkles on the face), and glued to the back of the ply. Each panel is fixed by means of brass slots in the back which engage in screws in a laminboard backing. A silver-bronze edging plate protects the edges of the leather on the door.

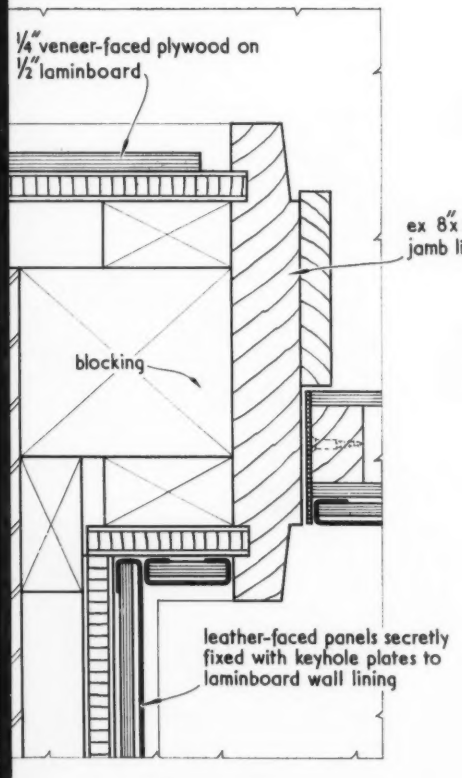
working detail

LEATHER-FACED WALL: BANK IN LONDON, W.1

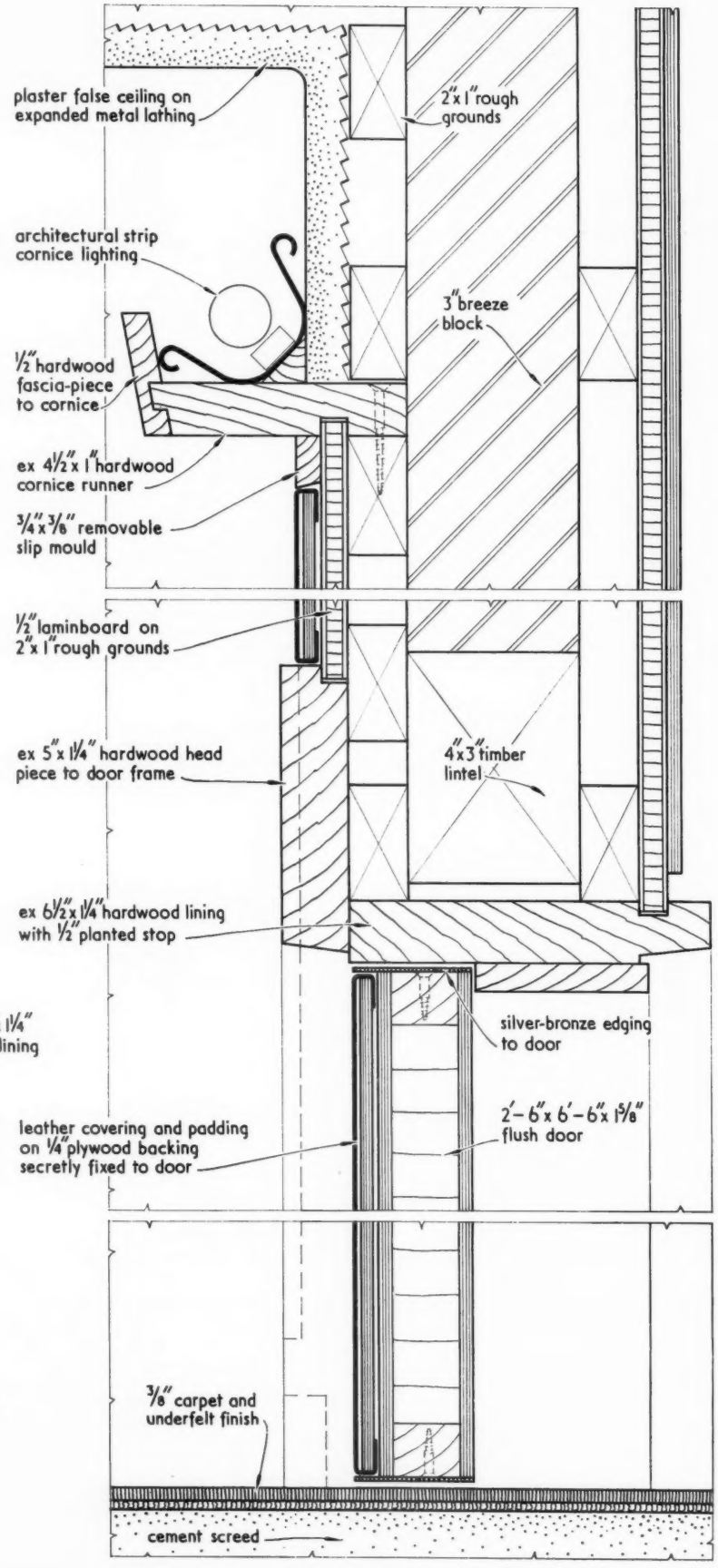
Gotch and Partners, architects



ELEVATION. scale 3/8" = 1'-0"



PLAN AT B. scale 3/8 full size



SECTION A – A. scale 3/8 full size

GLUED LAMINATED TIMBER

This modern technique lends itself to the introduction of flowing transition curves for arches, portals and beams. It is thus capable of being moulded to the particular requirements of the architect as shown in this illustration of a sports arena.

ARCHITECT:	James Van Alst.
SPAN:	206 ft.
HEIGHT:	65 ft. at apex.
LENGTH:	350 ft.
COVERAGE:	72,100 sq. ft.
CONSTRUCTION:	Three pinned arches made up of glued timber laminates, supporting standard timber purlins.

Before you decide . . .

Please do not hesitate to consult the T.D.A. who will gladly supply you with information on the uses of softwoods, hardwoods, plywoods, modern timber design and the names of timber fabricators.

CONSULT TDA

ISSUED BY THE TIMBER DEVELOPMENT ASSOCIATION LIMITED · 21 COLLEGE HILL · LONDON · EC4 and branches throughout the country

TGA TD131

MEN'S HOSTEL IN COVENTRY

This four-storey hostel, just opened in Coventry and designed by the City Architect and Planning Officer, A. G. Ling, replaces wooden hutments originally provided for munition workers in 1916. *It provides bed-sitting rooms with running hot and cold water for* 405 *men, including single old-age pensioners as well as itinerant workers. Each* 25 *residents share the use of bathrooms, a sitting room and a kitchen with individual food lockers. The two-storey administration block in the centre houses a shop and tea bar and billiard room, and behind is a communal laundry and a flat for the warden above. The building is constructed on the Intergrid system of Gilbert-Ash Ltd.*

THE LIBRARY OF INFORMATION SHEETS COMPLETE TO JUNE, 1958

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All Information Sheets published since the new series was started in October, 1947, have been reprinted. Specially-designed binding cases to hold approximately 100 Sheets may be obtained at the price of 6s. 0d. each. (Postage 1s. 1d.)

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

Oct., 1947-June, 1958 ... £5 5s. 0d.
(Postage 2s. 9d.)

ORDER FORM

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Name .....
(block letters)

Address .....

.....

Announcements

PROFESSIONAL

White & Mileson, F.R.I.B.A., have been joined in partnership by J. Drummond Clapp, A.R.I.B.A. The practice will continue under the same name and in the same office at Old Station Road, Loughton, Essex.

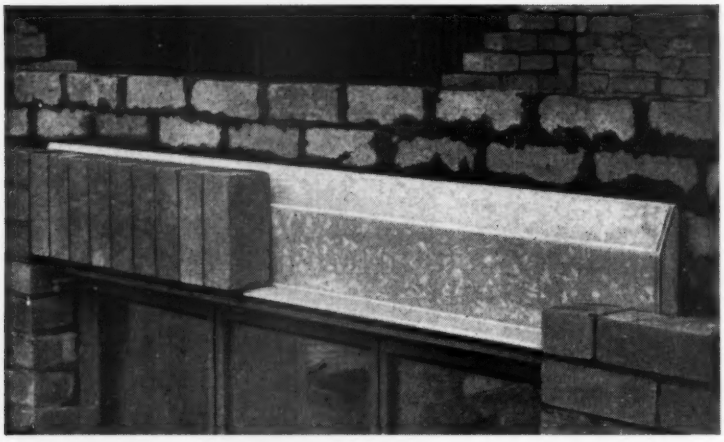
TRADE

W. Langley & Co. Ltd., 14/16, Magdalen Street, S.E.1, have appointed R. A. Baker, 22, Mersey Road, Blundellsands, Nr. Liverpool, as their northern technical sales representative and A. W. Side, 424, Bath Road, Saltford, Bristol, as their north-western sales representative.

Sulzer Bros. (London) Ltd. announce that W. R. Walton, their district manager in the north-western area, will relinquish his duties in that area on July 31 in order to undertake special duties relating to research and development at the Leeds factory. His successor in the north-western area will be J. H. Rutter, who has recently returned from Malaya where he has represented the company for several years.

The Building and Civil Engineering Divisions of Blackburn (Dumbarton) Ltd., have been integrated to form one organization under the overall management of B.G.L. Preston.

On June 27 at the offices of MacAndrews & Forbes Ltd., 2, Caxton Street, S.W.1, a private cocktail party was held at which a presentation was made to E. G. Mehew to mark his retirement from business after almost 38 years' service.



THE DORMAN LONG LINTEL

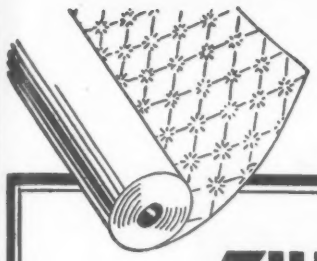
Combined Angle Arch . Support & Dampcourse Tray

IN HOT-DIP GALVANIZED STEEL, FOR USE AT THE HEADS OF OPENINGS IN EXTERNAL CAVITY WALLS

Comes on site to required length ready to fix. Large saving in site labour costs. Cannot be damaged in cavity cleaning. The Dorman Long Lintel has only to be placed into position over the head of the opening and without delay the work carries on.

Prices and details from:
DORMAN LONG *(Steel)* LTD., Sheet Dept., Middlesbrough or from district offices at London, Birmingham, Manchester, Newcastle, Belfast, Glasgow.

DORMAN LONG



THE PERFECT BASE *for Decoration*

A decorative scheme may be made or marred by the material behind it. It is no coincidence that, at a time when so much attention is paid to interior decoration, the demand for the premier plaster should be greater than ever before.

'SIRAPITE' *(Anhydrous)* PLASTER

used neat in accordance with the manufacturers' recommendations, combines all the attributes necessary to ensure a satisfactory base for decoration. It produces a smooth, jointless surface over any area, flat, angled or curved, and when set and dry has a natural affinity for all oil-bound and water-bound decorative media and adhesives. It is very economical.

Over 2½ Million Tons used since 1891

Literature on request. Full technical service, on site if desired.

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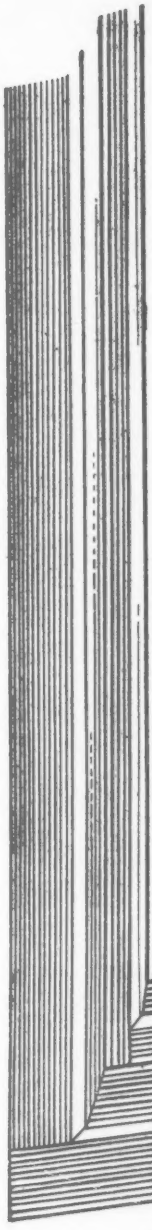
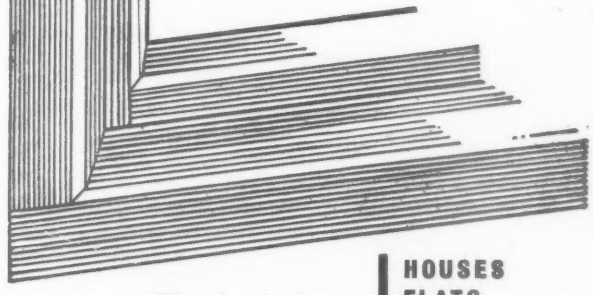


you'll be glad you chose WOOD windows



Wood windows are ideal in every way for . . .

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FLATS
SCHOOLS
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OFFICES
FACTORIES

Wood is functional, economical to install and maintain, and provides maximum flexibility in expression. Furthermore, wood windows reduce heat losses, sound transmission and condensation. Remember, too, with wood windows you are ensured a quick delivery.

A CASE IN POINT Wood windows have been used in the new Administrative Block at London Airport with a view to combining functional efficiency with the required style of contemporary design. For advice on wood windows suitable for all types of buildings, consult E.J.M.A. Write to the address below.

THE ENGLISH JOINERY MANUFACTURERS' ASSOCIATION (INCORPORATED)
(with which is associated the Scottish Joinery and Door Manufacturers' Association)
SACKVILLE HOUSE · 40 PICCADILLY · LONDON, W.1 · Telephone: REGENT 4448/9

CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

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

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies for (1) ARCHITECTS, Grade III, starting salary up to £1,090 a year. (2) ARCHITECTURAL ASSISTANTS, starting salary up to £860.

Full and interesting programme of Houses, Flats, Schools and General Buildings.

Application form and full particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council, The County Hall, S.E.1, quoting Ref. AR/EK/21/58. (799) 9375

LINDSEY (LINCOLNSHIRE) COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies on the permanent staff for:—

(*a*) ASSISTANT ARCHITECT, Grade IV £1,025/£1,175.

(*b*) ENGINEERING ASSISTANT, Grade III £845/£1,025.

(*c*) ENGINEERING ASSISTANT, Grade II £725/£845.

Applicants for (*a*) should be A.R.I.B.A. and capable of controlling large schemes. (*b*) Should be Graduate I.H.V.E. and capable of designing heating installations for large schemes. (*c*) Preference for Graduate I.H.V.E., but applicant must have a practical knowledge and be responsible for designing small schemes, advice to stokers, and maintenance and repair of existing installations.

In special circumstances consideration will be given to starting salary above minimum of the grade. N.J.C. Conditions of Service. Canvassing will disqualify. Candidates must disclose in writing whether to their knowledge they are related to any Member or Senior Officer of the Council.

Applications, stating post applied for, giving age, qualifications, experience, present post and salary, and the names of at least two persons to whom reference can be made, to be sent not later than 31st July, 1958, to the County Architect, County Offices, Lincoln. 9966

COUNTY BOROUGH OF SOUTHEND-ON-SEA
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the following posts:

ASSISTANT ARCHITECT } Salary Scales
ASSISTANT QUANTITY SURVEYOR } £750 by annual increments of £40 to £1,030

Candidates must be suitably qualified and experienced.

The appointments will be subject to the provisions of the Local Government Superannuation Acts and the National Joint Council's Scheme of Conditions of Service so far as adopted by the Council. Medical examination.

Applications, stating age, qualifications and experience, with the names of two referees, should be submitted to the Borough Architect, 39 Alexandra Street, Southend-on-Sea, by July 31st.

Canvassing will disqualify. Any candidate who is related to member or officer of the Council is required to disclose the fact.

ARCHIBALD GLEN, *Town Clerk.*

9964

SURREY COUNTY COUNCIL
COUNTY PLANNING DEPARTMENT
PLANNING ASSISTANTS

The Development Plan Section at Headquarters at Kingston is being enlarged for additional work on Town Maps, areas for comprehensive redevelopment and similar work. Applications are invited for the following posts:—

(*a*) One GRADE IV (£1,025 × £50—£1,175 plus London Allowance). To prepare schemes for comprehensive redevelopment and to advise on layouts and design. Experience in this work is essential. Applicants must be corporate members of the Town Planning Institute and preference will be given to those holding a further qualification in architecture.

(*b*) One SPECIAL (QUALIFIED) GRADE post (£750 × £40—£1,030 plus London Allowance). To be responsible for preparation of Town Maps. Experience of Development Plan work is essential.

(*c*) Three GRADE I ASSISTANTS (£575 × £30—£725 plus London Allowance). For work connected with Town Maps, redevelopment schemes and in the review of the Development Plan. A degree in Geography, Economics or Estate Management would be an advantage.

Applications (endorsed "Confidential—County Planning Vacancies") stating age, qualifications, experience and interests, together with details of present post and salary, should be forwarded with the names of two referees to the County Planning Officer, "Elmhurst," Penrhyn Road, Kingston-upon-Thames, not later than 16th August, 1958. 1612

BASILDON DEVELOPMENT CORPORATION

which is building the New Town of Basildon invites applications for the superannuable post of DEPUTY CHIEF ARCHITECT/PLANNER at a salary within the range £1,682—£1,967 p.a. Wide experience of contemporary architecture and planning must be combined with ability to organise and co-ordinate the work of a large department and to represent the Chief Architect/Planner as necessary. Applications should be made on the special form (obtainable from the Chief Architect) to the General Manager, Basildon Development Corporation, Basildon, Essex, by 7th August, 1958, quoting reference: GM 5705. 9952

AUSTRALIA—UNIVERSITY OF SYDNEY
LECTURESHIP IN ARCHITECTURAL SCIENCE

Applications are invited for the above position, within the Faculty of Architecture. Applicants should preferably have an Honours Degree in Architecture, in Civil, Mechanical or Electrical Engineering, or in Physics.

The salary for a Lecturer is within the range £A1,500 × £90—£2,100 per annum, plus cost of living adjustment and will be subject to deductions under the State Superannuation Act. The commencing salary will be fixed according to the qualifications and experience of the successful applicant.

Under the Staff Members' Housing Scheme in cases approved by the University and its Bankers, married men may be assisted by loans to purchase a house.

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

The closing date for the receipt of applications, in Australia and London, is 30th September, 1958. 9998

COUNTY COUNCIL OF ANGUS
ASSISTANT ARCHITECT

Applications are invited for the post of Assistant Architect in the Department of the County Architect and Planning Officer. Applicants should hold the A.R.I.B.A. qualification and have experience subsequent to qualification. The salary will be A. & P. VIII (£1,005—£1,085) and placing may be given according to experience.

Applications on the prescribed form, which can be obtained from the undersigned, should be lodged with the County Architect, County Buildings, Forfar, by the 4th of August, 1958.

IAN A. MACKNIGHT, *County Clerk.*

County Buildings,
Forfar.
14th July, 1958. 1006

CORPORATION OF LONDON
require for
CITY PLANNING OFFICE
(Civic Design Section)
PLANNING ASSISTANT

Salary scale £620 to £985 by 8 increments. Point of entry dependent on age and experience, to work on design, detailing and modelling of reconstruction proposals in the City of London, and general work. Applicants should be A.R.I.B.A., with good architectural background, a sensitive and contemporary approach to design and capable draughtsman.

Local authority experience not essential. Superannuation; medical examination. Applications, with details of age, training and experience and two recent references to City Planning Officer, Guildhall, E.C.2, within 14 days. 1029

BOROUGH OF HESTON AND ISLEWORTH

Applications are invited for the undermentioned appointments in the Borough Engineer and Surveyor's Department:—

(*a*) VALUATIONS SURVEYOR (Grade A.P.T. III—£845—£1,025). Plus London weighting. Applicants should be experienced in the preparation of valuations for mortgage advances under the Housing Acts, the examination of applications for improvement grants and negotiations for the acquisition of land and properties. Applicants should be Chartered Surveyors or hold an equivalent appropriate qualification. A car allowance at the rate of £65 per annum will be paid at the pleasure of the Council to the successful applicant if he provides and uses a car in the performance of his duties.

(*b*) DRAUGHTSMAN/TRAINEE — Architects Section (Grade: Higher General Division—£230—£560 per annum). Plus London weighting. Applicants should have a good school record, be interested in architectural drawing, and have obtained a General Certificate of Education.

Commencing salary will be fixed in accordance with ability and experience.

The Council is unable to assist with housing accommodation.

Applications are to be submitted by Tuesday, August 5th, on forms to be obtained from and returned to the Borough Engineer and Surveyor, 88, Lampton Road, Hounslow.

D. MATHIESON, *Town Clerk.*

Town Hall,
Hounslow. 9945

ROYAL BOROUGH OF KINGSTON-UPON-THAMES
APPOINTMENT OF SECOND ARCHITECTURAL ASSISTANT

Special Scale £750 × £40 to £1,030

Commencing at not less than £870 per annum plus London weighting. Applicants must be qualified and have had at least five years' experience, including periods spent on theoretical training. Details and application form from Borough Surveyor, Guildhall, Kingston-upon-Thames. Closing date 9th August, 1958.

A. B. ROGERS, *Town Clerk.*

Guildhall,
Kingston-upon-Thames. 1011

CITY OF BELFAST

Applications are invited for the following positions in the Education Architect's Department:—

STRUCTURAL ENGINEER

Candidates must hold a recognised qualification in Civil or Structural Engineering, *e.g.*, A.M.I.C.E. or A.M.I.Struct.E. and have sound experience in the design of structural steelwork and reinforced concrete, including foundation work and should also have a practical working knowledge of site investigation and general experience of levelling work. A minimum practical experience of five years after qualifying, including three years' office designing is also necessary.

Salary: £970 × £40—£1,250 per annum.

ARCHITECT CLASS I (2 vacancies)

Applicants must be registered and qualified by examination, and should be capable of supervising architectural staff. Preference given to those with experience in modern school designing and construction.

Salary: £970 × £40—£1,250 per annum.

ARCHITECT CLASS II (1 vacancy)

Applicants must be registered architects with experience in general design and construction of modern buildings.

Salary: £620 × £30—£860 × £35—£1,000 × £40—£1,040 per annum.

ARCHITECTURAL ASSISTANT CLASS I (2 vacancies)

Applicants must have passed the Intermediate Examination of the R.I.B.A. and should have a sound practical experience in design and construction and preparation of specifications.

Salary: £590 × £30—£770 × £35—£875 per annum.

Commencing salary will be fixed according to experience. Superannuation contributions of approximately 6 per cent. of remuneration will be payable. Reciprocal pension arrangements exist between the Corporation and certain Public Authorities.

Canvassing will disqualify.

Application forms, etc., are obtainable from the Education Offices, 40, Academy Street.

Completed applications must reach the undersigned by Saturday, 16th August, 1958.

JOHN DUNLOP, *Town Clerk.*

City Hall,
Belfast.
14th July, 1958. 1013

BOROUGH OF SOLIHULL
BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT

LANDSCAPE ARCHITECT, A.P.T. GRADE IV

Applications are invited for the above appointment of Landscape Architect, A.P.T. Grade IV (£1,025 × £50 to £1,175), in the Department of the Borough Engineer and Surveyor.

Applicants should be Members of the Institute of Landscape Architects, and have considerable experience.

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

Half the reasonable cost of removal expenses will be paid at the end of six months' service and where applicable housing accommodation will be provided.

Applications giving names and addresses of two referees should be forwarded to Mr. C. R. Hutchinson, B.Sc., A.M.I.C.E., Borough Engineer and Surveyor, 90, Station Road, Solihull, Warwickshire, not later than Friday, August 15th, 1958.

W. MAURICE MELL, *Town Clerk.*

16th July, 1958. 1026

WEST SUSSEX COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:—

(*a*) ASSISTANT STRUCTURAL ENGINEER at a salary in accordance with A.P.T. Grade IV (£1,025 × £50—£1,175). Commencing salary according to experience.

(*b*) SENIOR ASSISTANT ARCHITECT, with advanced knowledge of the Theory of Structures applied to Reinforced Concrete and Structural Steelwork, at a salary in accordance with A.P.T. Grade IV (£1,025 × £50—£1,175). Commencing salary according to experience.

Further particulars should be obtained from the County Architect, County Hall, Chichester, to whom all detailed applications must be submitted not later than first post on 16th August, 1958.

T. C. HAYWARD, *Clerk of the County Council.*

County Hall,
Chichester.
12th July, 1958. 9985

CITY AND COUNTY OF THE CITY OF EXETER

Applications are invited for the appointment of SENIOR ASSISTANT QUANTITY SURVEYOR on the establishment of the City Architect's Department, at a salary within the Special Grade, i.e., £750 to £1,030 per annum.

Applicants must be thoroughly experienced in all branches of the work of a Quantity Surveyor and should be Associate Members of the Royal Institution of Chartered Surveyors (Quantities Section).

The appointment will be subject to one month's notice on either side and to the provisions of the Local Government Superannuation Acts 1937 and 1953. The successful candidate will be required to pass a medical examination. Canvassing will disqualify and applicants must disclose whether to their knowledge they are related to any member of the Council or to the holder of any senior office under the Council.

Applications, stating age, qualifications, previous and present appointments and salaries, full details of experience and the earliest possible date when available, should be sent to H. B. Rowe, F.R.I.B.A., A.M.I.Struct.E., City Architect, Municipal Offices, Exeter, not later than the 5th August, 1958.

C. J. NEWMAN,
Town Clerk.

Exeter.
July, 1958. 9982

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies for: 1. ARCHITECT/PLANNERS. Tasks include three-dimensional planning within London's eight major comprehensive development areas (including Stepney/Poplar, the South Bank and Elephant and Castle) and other redevelopment areas. The work includes the preparation of comprehensive layouts for all important areas of new development throughout the County including areas to be redeveloped in connection with road improvements.

2. TOWN PLANNING ASSISTANTS. Duties include investigation of development proposals, surveys, report writing, preparation of data for public inquiries.

Starting salaries in each case up to £860 according to experience and qualifications. Application forms and further particulars may be obtained from Hubert Bennett, F.R.I.B.A., Architect to the Council, The County Hall, London, S.E.1, quoting Ref. AR/EK/35/58. (1397) 1034

LANCASHIRE COUNTY COUNCIL

ASSISTANTS required in the Architectural Section of the Planning Department Headquarters at Preston, salary Special Scale (£750—£1,030). Applicants should be qualified architects, planning experience is desirable but not essential. Duties include the design of housing layouts and central area re-development schemes and the preparation of working drawings for houses, flats and shops. Applications giving age, qualifications, present appointment, experience, etc., and two referees to County Planning Officer, East Cliff County Offices, Preston, by August 4, 1958. 9981

COUNTY BOROUGH OF DUDLEY

(*a*) ASSISTANT ARCHITECT. Special grade (£750 × £40—£1,030).

(*b*) TWO ARCHITECTURAL ASSISTANTS. Grade II (£725 × £30—£845).

Applications are invited for the above permanent posts in the Borough Architect's Department.

Applicants for post (*a*) must be A.R.I.B.A. and have good experience. The posts are superannuable and subject to the conditions of service for Local Authorities.

Applications, stating age, qualifications and all relative information, and giving the names and addresses of three referees are to reach me by Thursday, 31st July, 1958.

P. D. WADSWORTH,
Town Clerk.

The Council House,
Dudley, Worcs.
11th July, 1958. 9986

CENTRAL ELECTRICITY GENERATING BOARD
ARCHITECTS

Applications are invited from Fellows or Associate Members of the Royal Institute of British Architects for the following posts in the Chief Design and Construction Engineer's Department at the Board's Headquarters, Sumner Street, London, S.E.1:—

(*a*) ARCHITECT.
To advise on the architectural aspects of the Board's activities which include the construction of new power stations, switching stations and transmission lines; to act as Secretary to a Panel of Consulting Architects under the Chairmanship of Sir William Holford, and to be responsible for executive action arising therefrom, including furnishing guidance to and maintaining liaison with the Executive Architects dealing with individual major projects. Salary within provisional range £2,560 to £2,760 per annum.

(*b*) ASSISTANT ARCHITECT.
To assist the Architect and in particular to advise on materials and standards of building construction and to maintain liaison with the Building Research Station. Salary within provisional range £1,760 to £1,960 per annum.

(*c*) ASSISTANT ARCHITECT.
To assist the Architect and in particular to advise on industrial design and maintain liaison with the Council of Industrial Design. Salary within provisional range £1,760 to £1,960 per annum.

Applications, stating age, qualifications, experience, present position and salary, and also quoting specific vacancy being applied for, should be forwarded to S. S. Scott, 24-30, Holborn, London, E.C.1, by 5th August. Envelopes should be marked "Confidential—Ref. AJ/203." 9987

FEDERAL GOVERNMENT OF NIGERIA
ARCHITECTS, PUBLIC WORKS DEPARTMENT

To prepare sketch plans, working drawings and detailed specifications for various types of buildings and carry out general work of an architectural office.

Contract appointments. Salary range £1,416 to £2,166 p.a. Gratuity of £37 10s. for each three months' service payable on satisfactory completion of contract.

Free passages for officer and wife and refund of up to cost of two adult passages for children. Allowance of £75 each for two children maintained outside the territory. Quarters, if available, at low rent. Generous home leave on full salary.

Candidates must be A.R.I.B.A. with wide general experience.

Write Director of Recruitment, Colonial Office, London, S.W.1, giving briefly age, qualifications and experience quoting BCD 112/14/05. 1036

EAST RIDING OF YORKSHIRE COUNTY COUNCIL

Applications are invited for the following permanent appointment on the staff of the County Architect.

ASSISTANT QUANTITY SURVEYOR
N.J.C. Special Scale (£750—£1,030).

Applications giving particulars of qualifications, age, experience, past and present appointments with salaries, together with the names of three referees, should be sent to the County Architect, County Hall, Beverley, not later than Friday, 8th August, 1958.

THOMAS STEPHENSON,
Clerk of the Council.
1035

HOLBORN BOROUGH COUNCIL

CLERK OF WORKS required in Borough Architect's Department to supervise erection of multi-storey flats, including reinforced concrete framing. Salary £15 15s. p.w. Candidate to be member of Institute of Clerks of Works. Application with names of three referees to Town Clerk, Town Hall, High Holborn, W.C.1. 9984

NATIONAL COAL BOARD
EAST MIDLANDS DIVISION
ARCHITECT GRADE II
(Salary £815 × £30—£1,125)

Applications are invited for the above post in the Divisional Architect's Department, Nottingham. Candidates should be corporate members of the R.I.B.A. with varied practical experience.

The architectural work of the department covers the design of colliery surface buildings of all types, including workshops, stores, power plants, offices, pithead baths, canteens, medical centres and recreation buildings.

The point of entry into the salary scale will depend on qualifications and experience. The post is superannuable and superannuation rights under Local Authority and certain other schemes are transferable.

Applications giving age, present salary and full details of education, qualifications and present appointment should be addressed within 14 days to The Divisional Chief Staff Officer, National Coal Board, East Midlands Division, Sherwood Lodge, Arnold, Nottingham. Please quote S.V.912. 1028

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD
WELWYN/HATFIELD NEW HOSPITAL
SENIOR CLERK OF WORKS required to supervise the erection of a new hospital at Welwyn, Hertfordshire. The work is expected to commence between November 1958 and January 1959, and to last three to four years.

Candidates must have a thorough knowledge of all building trades in a multi-storey building having a reinforced concrete frame, and have had considerable experience in projects of similar size and value.

Salary £1,000 per annum.

(A separate Resident Structural Engineer will also be employed.)

For this appointment the Welwyn Development Corporation have agreed to make a house available, if required, on a rental basis.

Apply, giving age, qualifications and experience, with names of two referees (preferably employers) to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, quoting reference 661, by 5th August. 9983

GOVERNMENT OF EASTERN NIGERIA
ARCHITECTS, PUBLIC WORKS DEPARTMENT

To prepare sketch plans, working drawings and detailed specifications for various types of buildings and to carry out the general work of an architectural office.

Contract appointment. Salary range £1,032 to £1,962 p.a. Gratuity of £37 10s. for each completed three months of resident service. Generous home leave. Low income tax. Free passages for officer and wife. Free passages and allowances for children. Candidates must be A.R.I.B.A. with general experience.

Write Director of Recruitment, Colonial Office, London, S.W.1, giving age, qualifications and experience, quoting BCD 112/411/08. 1033

BOROUGH OF EDMONTON
BOROUGH ARCHITECT'S DEPARTMENT
JUNIOR ARCHITECTURAL ASSISTANT (temporary) required. Candidates should be about 18-20 years of age and have achieved some progress in their studies for professional qualification. Excellent opportunity of gaining valuable experience in a Borough Architect's drawing office dealing with all aspects of building. Salary on Higher/General grade rising to £560 plus London weighting with opportunities for promotion.

Time off and financial assistance for studies. Alternate Saturdays free.

Applications on forms obtainable from Town Clerk, Town Hall, Edmonton, must be delivered by 8th August. 1032

Architectural Appointments Vacant

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra

CO-OPERATIVE WHOLESALE SOCIETY LTD. ARCHITECT'S DEPARTMENT, MANCHESTER APPLICATIONS are invited for the appointment of ASSISTANT ARCHITECTS with experience of work on commercial and industrial projects, capable of preparing working drawings from preliminary details. Five-day week in operation. Applications stating age, experience, qualifications and salary required to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4. 9585

ARCHITECTURAL ASSISTANTS for University and Hospital Work. Good Salary, dependent on experience. Non-contributory Pension Scheme in being after probationary period. Three weeks' holiday a year, and five-day week. Reply, stating age, experience, etc., to:—Thomas Worthington & Sons, 178, Oxford Road, Manchester, 13. 9869

ARCHITECTURAL ASSISTANTS required. Five-day week. Salary range £600—£750 per year. Write full particulars age, experience, salary, etc.—R. H. Gallannaugh, L.R.I.B.A., 54, Queen Anne St., London, W.1. 9900

ASSISTANT required for small office in Middlesex; about Intermediate standard; previous office experience an advantage; opportunity to gain varied practical knowledge. Apply Box 9960.

GOLLINS, MELVIN, WARD & PARTNERS, owing to staff leaving for Army Service, have vacancies for school-trained ASSISTANTS interested in the design of University and Hospital buildings. Five-day week, quarterly bonuses, pension scheme. Telephone WEL 9991 for appointment. 9958

ELIE MAYORCAS requires SENIOR ASSISTANT with minimum of three years' office experience in this Country. Write, giving particulars of architectural education and experience, and salary required, to: 13, David Mews, Baker Street, W.1. 9956

ARCHITECTURAL ASSISTANT of Intermediate standard or over required for varied practice. Salary according to experience and qualifications. Write James Hartley & Son, A.R.I.B.A., Swadford Chambers, Skipton, Yorks. 9955

TREHEARNE & NORMAN, PRESTON & PARTNERS have a vacancy for a SENIOR ASSISTANT. Salary according to experience and qualifications. Apply: 83, Kingsway, W.C.2 (HOL 4071). 9942

ROBERT POTTER & RICHARD HARE, F./A.R.I.B.A., require qualified ASSISTANT ARCHITECT with experience of preparation of working drawings and supervision of contracts for work on interesting projects. Write stating age, experience and salary required to De Vaux House, Salisbury, Wilts. 9940

COMPETENT ASSISTANT required in Architect's Department. Good opportunity for capable man, five-day week, and Superannuation Scheme in operation. Applications giving details of age, qualifications, experience and salary required to H. M. Robinson, F.R.I.B.A., George J. Mason Ltd., 68, Bradford Street, Birmingham. 9928

TWO ASSISTANTS wanted by progressive London Office with wide variety of interesting work Must have had office experience and be capable of taking a leading position under an Associate Partner. This year's holiday by arrangement. Salary range £700—£850 according to experience. Write Box 9929.

ARCHITECTURAL ASSISTANT of Intermediate standard required by Sparrow & Clater, F./A.R.I.B.A., 52, North Hill, Colchester. Salary commensurate with experience. Write stating age, full details of training, etc. 9930

SENIOR and INTERMEDIATE ASSISTANTS required. Write only, giving full particulars to Russell Diplock Associates, 235, Vauxhall Bridge Road, London, S.W.1. 9931

SENIOR ARCHITECTURAL ASSISTANT required in Architect's Department of London Brewery Company. Must be good draughtsman. Write stating age, qualifications, experience, salary required. Box 9932.

F. W. WOOLWORTH AND CO. LTD. Architects Department, Kensington District Office. Applications are invited for the following appointment:—

ARCHITECTURAL ASSISTANT of Intermediate R.I.B.A. standard, capable of carrying out surveys, preparing sketch schemes, working drawings and details.

The appointment is pensionable, five-day week. Dining room facilities. Application stating age, experience, qualifications and salary, to District Architect, F. W. Woolworth & Co. Ltd., 26/40, Kensington High Street, London, W.8. 9972

SENIOR and INTERMEDIATE ASSISTANTS required immediately with experience in private practices for full and interesting programme in medium sized office. Full particulars and salary required to Deacon and Laing, Chartered Architects, 65, Goldington Road, Bedford. 9935

F. W. WOOLWORTH AND CO. LTD. Architects Department, Kensington District Office. Applications are invited for the following appointment:—

JUNIOR ASSISTANT to prepare working drawings from sketch plans, etc., etc.

The appointment is pensionable, five-day week. Dining room facilities. Application stating age, experience, qualifications and salary, to District Architect, F. W. Woolworth & Co. Ltd., 26/40, Kensington High Street, London, W.8. 9973

ASSISTANT ARCHITECT required. Must be neat and expeditious draughtsman. Capable of preparing designs and working drawings for new buildings and shopfitting. Apply giving age, experience and salary required to D. Greenwood, B.Arch., A.R.I.B.A., Prices Tailors Ltd., Cardigan Crescent, Leeds, 4. 9977

ASSISTANT immediately required Chichester area; must be fully qualified with some practical experience and used to organizing and taking charge of works in progress; interesting high-class domestic work in Sussex. Good salary. Box 1009.

SOUTH WALES BREWERY COMPANY requires ARCHITECTURAL ASSISTANT. Ability to work quickly and accurately essential. The work mainly consists of extensions and alterations to licensed premises. Pension scheme. Commencing salary £750. Apply, giving full details, to Company Architect, Andrew Buchan's Breweries, Limited, Rhymney, Mon. 1010

ARCHITECTURAL ASSISTANT required, Intermediate Standard, for General Practice in Dartford. Please write, stating age, experience and salary required, to Box 1007.

ARCHITECTURAL ASSISTANTS required for Office, University and Laboratory Buildings; some office experience necessary. Intermediate or Final standard. Five-day week. Apply Adams, Holden & Pearson, 38, Gordon Square, W.C.1. 1008

ARCHITECTURAL ASSISTANTS with imagination and initiative required immediately by Brighton office of London practice. Applicants should have had at least two years' office experience since completion of training. Congenial working conditions; five-day week; staff pension scheme. Commencing salary in the £700-£750 range. Apply Box 1005.

ASSISTANT ARCHITECT and ARCHITECTURAL ASSISTANTS required for interesting work on multi-storey flats, housing, etc. Apply in writing to Peter J. Lee, B.A., A.R.I.B.A., Chief Architect, Reema-Boot, Ltd., Storforth Lane, Chesterfield. 1004

EXPERIENCED SENIOR ASSISTANTS required to take charge of Contracts with minimum supervision. Medium sized office. General practice with present emphasis on local authority housing. Apply in writing only, stating age, qualifications, experience and salary required, to: Thomas Sibthorp, F.R.I.B.A., A.R.I.C.S., A.M.T.P.I., 10, Manchester Square, W.1. 1003

ARCHITECTURAL ASSISTANTS required by Sir William Halcrow & Partners for Architects' Department. Intermediate and Final Standard. Salary arranged according to age and experience. Apply, giving particulars of age, qualifications and experience, to E. J. D. Mansfield, A.R.I.B.A., Sir William Halcrow & Partners, 47, Park Lane, London, W.1. 1000

ASSISTANT ARCHITECT, qualified and experienced, required by Wolverhampton Office of expanding practice. Five-day week. Apply: Diamond, Hodgkinson and Partners, 31, Queen Street, Wolverhampton. Telephone 21404. 1001

JUNIOR ASSISTANT required in busy West End practice. Good opportunities for obtaining all round experience. Write giving age, salary required, etc., Box 1002.

RONALD WARD & PARTNERS require ARCHITECTURAL ASSISTANTS with contemporary outlook, and willing to use own initiative. Salary range £600 to £900. Congenial working conditions. Five-day week. Apply: 29, Chesham Place, Belgrave Square, S.W.1. Telephone: Belgravia 3361. 9999

SENIOR ASSISTANT required in progressive office. Apply: F. W. B. Yorke, Harper & Harvey, Architects, Central Chambers, Stratford-upon-Avon. Tel.: S-on-A 2556, stating qualifications and salary required. 9996

JUNIOR ARCHITECTURAL ASSISTANT required in City Office. Five-day week. Salary £350 to £500. Apply Box 9995.

MIDLOTHIAN COUNTY COUNCIL require qualified ARCHITECTURAL ASSISTANTS with experience of school and/or housing work. Salary within range £880—£1,085 (Grades A. & P. VI—VIII). Applications with full particulars to the County Clerk, County Buildings, George IV Bridge, Edinburgh, 1. 9991

ARCHITECT (Qualified) required by Scottish Special Housing Association, Limited. Salary scale £700—£1,055 per annum with placing for age on entry up to £915 at age 31. Superannuation under local Government Acts. A house may be available if required. Application forms with full particulars from the Secretary, 19, Palmerston Place, Edinburgh, 12. 9992

ARCHITECTURAL ASSISTANTS required immediately for an interesting programme of school work. Applicants must be capable of preparing quickly, good working drawings and details. Excellent prospects. Apply in first place by letter to G. L. Thompson, F.R.I.B.A., Penny Bank Chambers, 46a, Coney Street, York. 9993

LONDON Architects, Clifford Tee & Gale, F/F.R.I.B.A., require an ARCHITECTURAL ASSISTANT with good drawing and detailing experience for contemporary industrial project near London. Five-day week. Apply to Mr. S. H. Fisk, A.R.I.B.A., 5, Buckingham Palace Gardens, S.W.1; telephone Sloane 2296. 1018

NORTH WALES—SENIOR ASSISTANT ARCHITECT required in Mold Office of F. C. Roberts, B.Arch., F.R.I.B.A. Intermediate qualification and sound practical experience essential. Approx. salary £800, for suitable person. Write, giving details of experience and present salary, to Earl Chambers, Mold. 1024

ARCHITECTURAL ASSISTANTS with experience of contemporary work and administration required. C. H. Elsom & Partners, 10, Lower Grosvenor Place, S.W.1. VIC. 4304. 1021

MODERN OFFICE BLOCK INTERIOR—Qualified ASSISTANT with two or three years' experience required urgently. Salary about £750. Ring or write Miller & Tritton, 39, Sydney Street, S.W.3. FLAxman 4314. 1023

ARCHITECTURAL ASSISTANT (age not over 45) required for West Riding of Yorkshire Brewery Architects' Office. A good draughtsman fully conversant with construction, design and detailing, and capable of proceeding from sketch stage to completion is essential, and knowledge of Quantity Surveying desirable. Full details, age and salary required to Box 1022.

TAYLOR WOODROW CONSTRUCTION LTD. require ARCHITECTURAL ASSISTANT of Intermediate to Final standard. Good salary commensurate with experience. Pension scheme. Canteen. Apply Personnel Manager, Ruislip Road, Southall, Middlesex. 1027

ARCHITECTURAL ASSISTANTS, preferably of Intermediate standard, required in Eastbourne Office. Five-day week, good salary and prospects. Apply with full particulars and stating salary required, to H. Hubbard Ford, F.R.I.B.A., 24, Cornfield Road, Eastbourne. 1014

ARCHITECTURAL ASSISTANTS, preferably of Intermediate standard, required in Eastbourne Office. Five-day week, good salary and prospects. Apply with full particulars and stating salary required, to H. Hubbard Ford, F.R.I.B.A., 24, Cornfield Road, Eastbourne. 1020

MORRISON AND PARTNERS, F/A.R.I.B.A., urgently require for their Derby Office qualified or near qualified ASSISTANT ARCHITECTS to work on an interesting and varied programme. Some practical experience desirable. Please write to St. Alkmund's House, 103, Belper Road, Derby. 1019

ARCHITECTURAL ASSISTANT required. Good Draughtsmanship and London office experience essential. Apply, stating experience and salary required, to Percy V. Burnett & Partners, 12, Bloomsbury Square, London, W.C.1, for the attention of Mr. D. W. Burford. 1031

Architectural Appointments Wanted

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra

QUALIFIED ARCHITECT, age 44, with several years' overseas experience on various types of work, now relinquishing own practice, desires position of responsibility with large firm having interesting and important work, either at home or abroad. Box 9971.

Other Appointments Vacant

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SALES PROMOTION ASSISTANT required as technical correspondent by leading manufacturer of prefabricated buildings (Home Counties). Essential characteristics are architectural or building trade background, flair for selling, sound executive sense with ability to write concise and fluent technical sales letters of a high standard. Send full details of education, career, salary, etc., to Box 9949.

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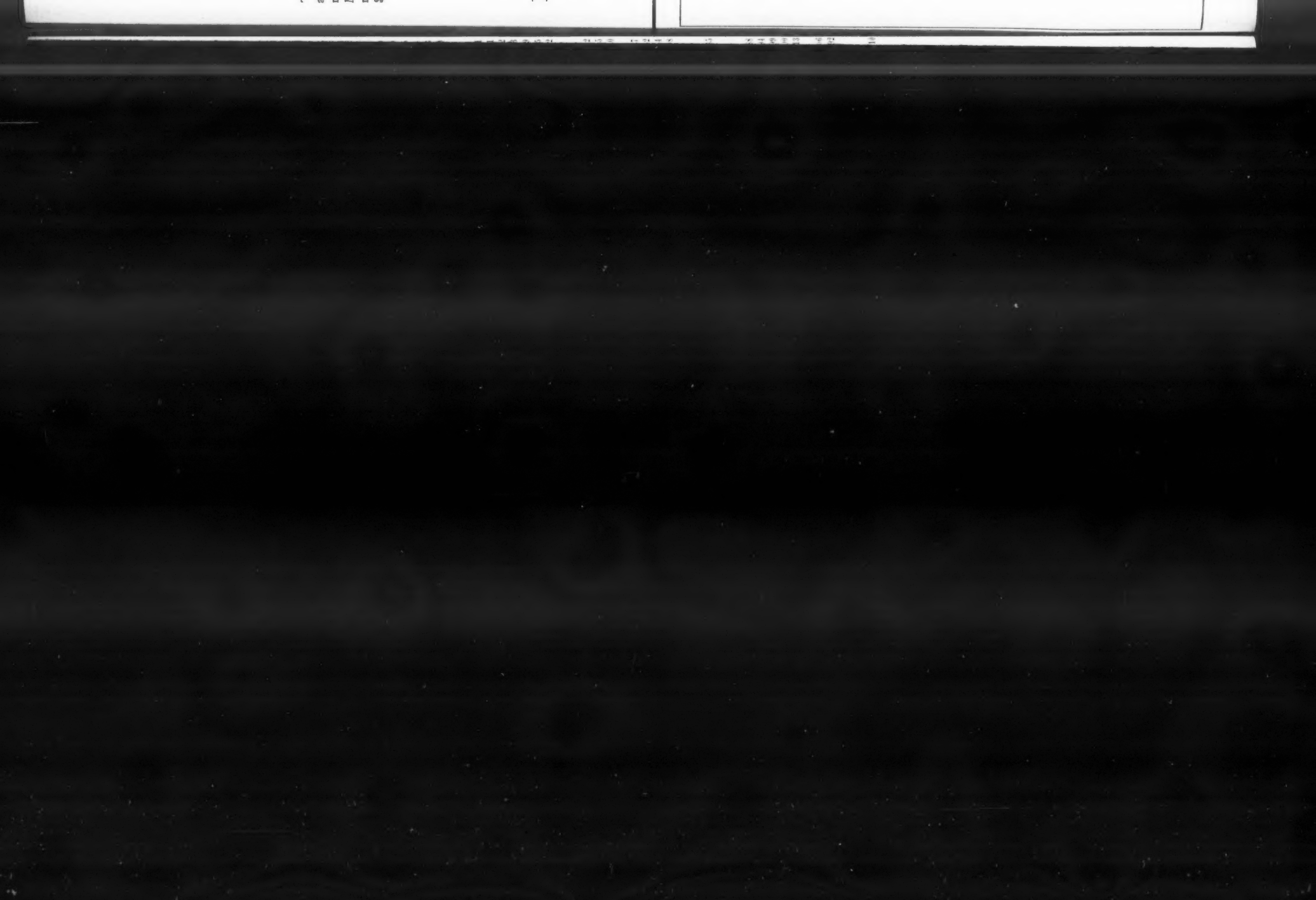

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