

The Architects' JOURNAL for November 5, 1959

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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No. 3368]

[Vol. 130

THE ARCHITECTURAL PRESS

9, 11 and 13, Queen Anne's Gate, Westminster,
S.W.1. 'Phone: Whitehall 0611

Price 1s. 0d.

Registered as a Newspaper.

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

ILA	Institute of Landscape Architects. 1, Park Crescent, Portland Place, W.1. Museum 3473
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 7197
IOS	Institute of Quantity Surveyors. 98, Gloucester Place, W.1. Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3. Avenue 6851
IRA	Institute of Registered Architects. 68, Gloucester Place, W.1. Welbeck 9966
ISE	Institution of Structural Engineers. 11, Upper Belgrave Street, S.W.1. Sloane 7128
JFRO	Joint Fire Research Organisation (DSIR & Fire Offices' Committee). Fire Research Station, Boreham Wood, Herts. Elstree 1341/1797
LDA	Lead Development Association. 18, Adam Street, W.C.2. Whitehall 4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1. Museum 3891
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1. Trafalgar 7711
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1. Hyde Park 7070
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. 14 Howick Place, Victoria Street, S.W.1. Victoria 1600 & 6477
NAS	National Association of Shopfitters. 2, Caxton St., 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 Asphalte Industry. 21, John Adam Street, Adelphi, W.C.2. Trafalgar 3927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1. Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4. Macaulay 4451
NFHS	National Federation of Housing Societies. 12, Suffolk St., S.W.1. Whitehall 1693
NHBRC	National House Builders Registration Council. 58, Portland Place, W.1. Langham 0064/5
NPL	National Physical Laboratory. Head Office, Teddington. Molesey 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3. Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street, S.W.1. Trafalgar 6838
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1. Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1. Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1. Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh. Fountainbridge 7631
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1. Langham 5533
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1. Whitehall 5322/9245
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1. Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, W.1. Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2. Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1. Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19. Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1. Victoria 2186
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1. Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, E.C.3. Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, W.C.1. Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1. Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1. Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2. Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, E.C.4. City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1. Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4. City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1. Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1. Grosvenor 6636

advance news

SELAWASHERS

For sheet laps use our

ALKATHENE SELAWASHER

(Patent Application No. 6466/59)

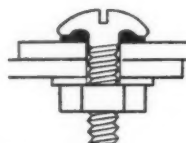
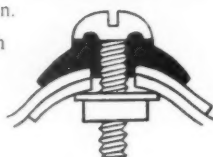
Reg. Design No. 892432

specially adapted for use with our Roofing Bolts to prevent water penetration. The same long life and adaptability as with the Selanut is attainable.

In addition the SELABOLT

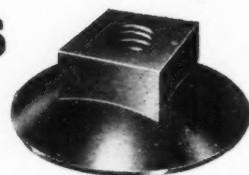
(Patent No. 673953)

is still available with its small neoprene ring to protect surfaces such as vitreous enamel, glass and paintwork. It provides a watertight joint and a small degree of flexibility.



new advances!

SELANUTS



It will no longer be necessary for your sheet fixers to carry nuts, diamond steel and bitumen washers on to the roof, all they need is the new

ALKATHENE SELANUT

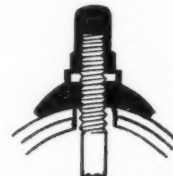
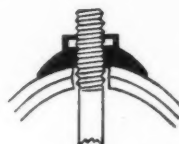
(Patent Application No. 26584/58)

Reg. Design No. 892218

incorporating a moulded in steel' nut. The Alkathene will adapt itself to any radius of curvature and provide a long lasting watertight joint and there will be no more dirty rust stains on the roof.

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merits of the system

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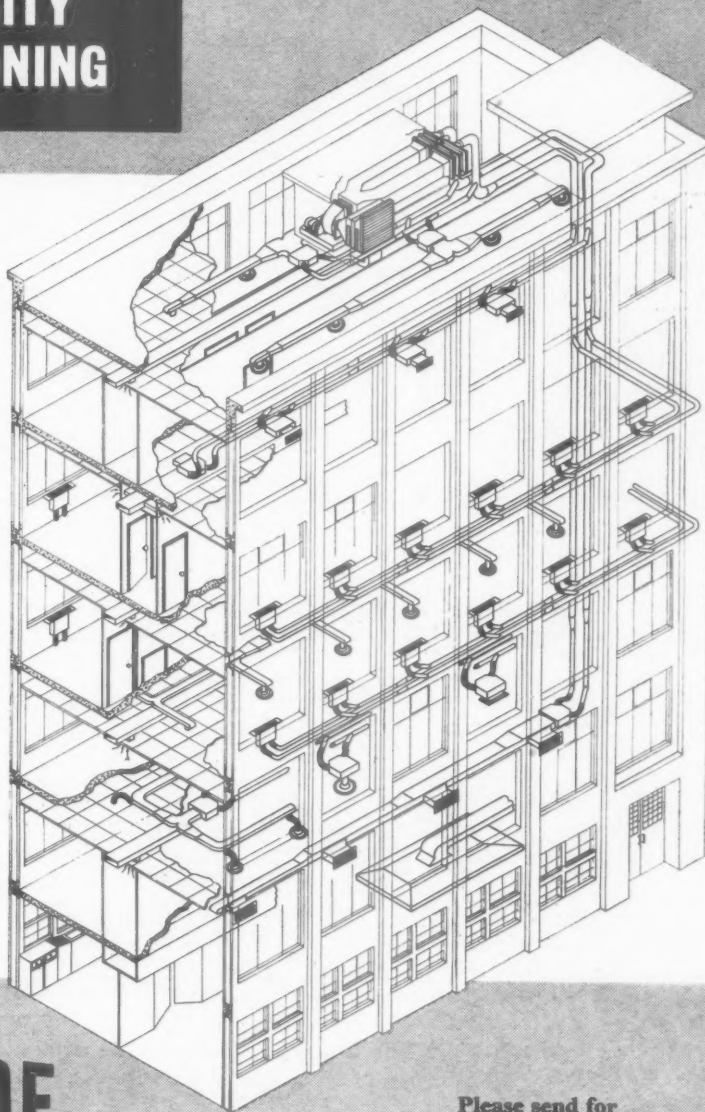
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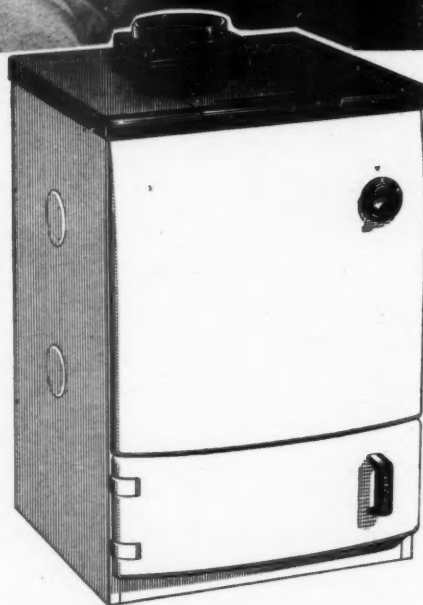


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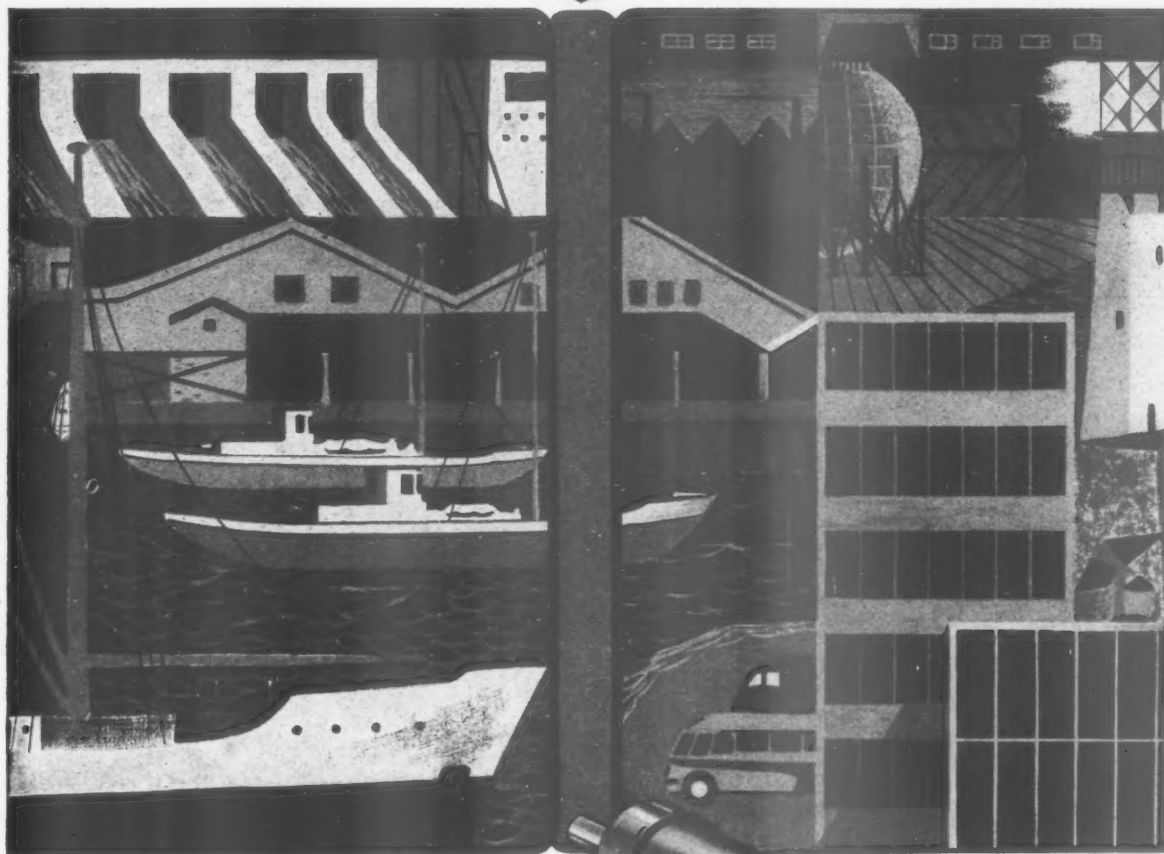
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M-W.117



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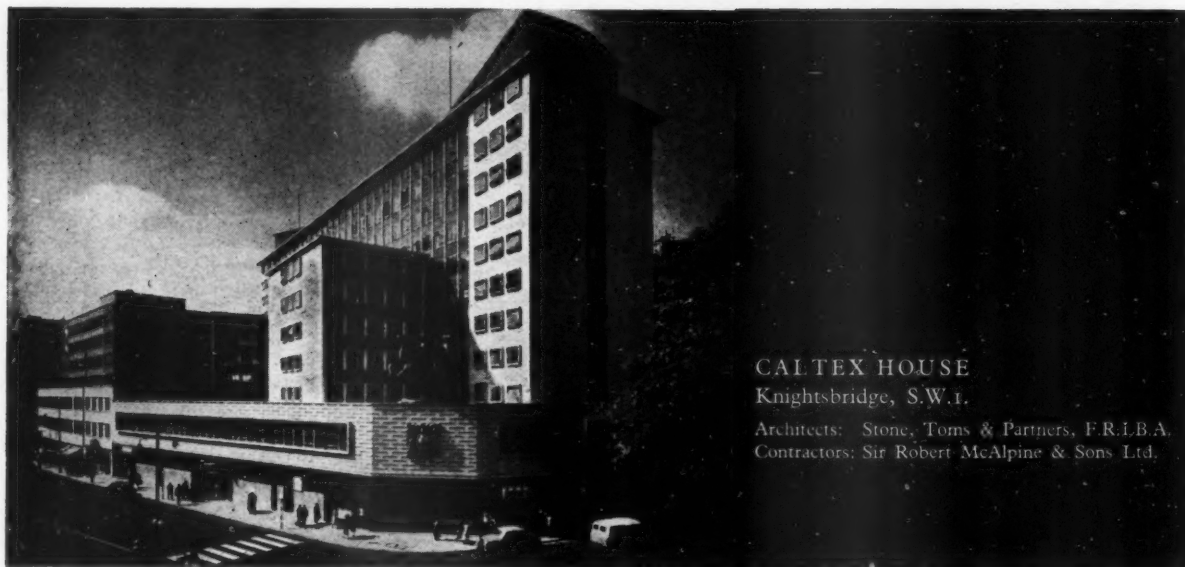
TYLEX is widely used in schools, hospitals and food factories and is particularly recommended for kitchens, ablutions and other situations where hygiene is a first requirement.

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AP.67

*Estate Manager
tells how . . .*

Sitting tenants were sitting targets

Yes, they were sitting targets for the burglar—the tenants of my company's flats. I'll tell you how we realised this. Apart from flats—and offices—we also own a hotel. Now, when we bought the place, it didn't occur to us to check the locks.

Inevitably, I suppose, there came a series of small thefts from rooms. Prodded by the police, we found that the locks were simple to pick, and that keys were going astray.

So we got rid of the lot. Chubb put in a beautiful master key system for us. Every key is different; the chamber-maid can open her own group of rooms; and only the manager's key will unlock every room in the hotel.

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Does that sound expensive? I assure you that it is not. And I happen to have discovered the cost of poor security. Believe me, it is worth anyone's while to hand their security problems over to Chubb. Here is the address . . .



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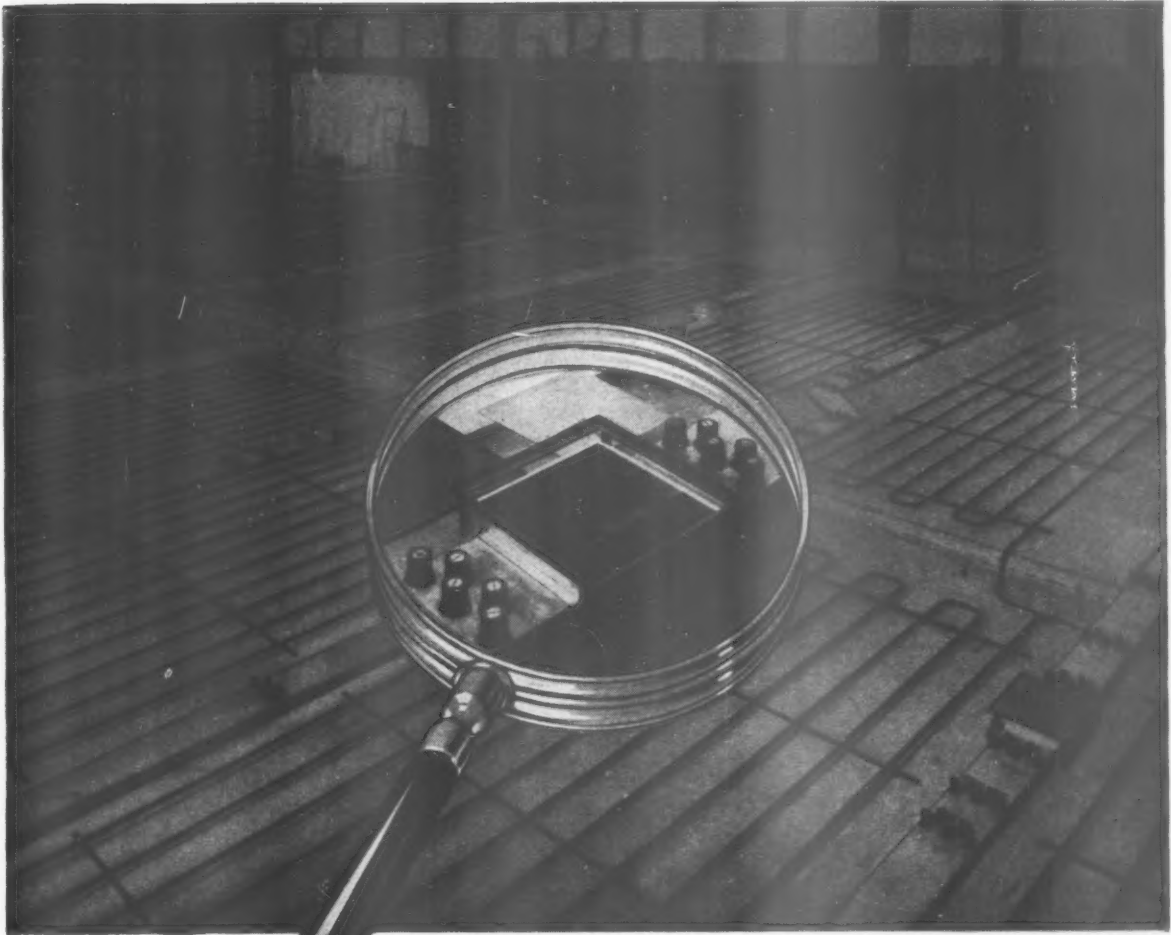
A.F.A. systems are approved by the Fire Offices' Committee and users secure appreciable fire insurance rebates.



May we send you details of this reliable system, based on over 60 years' experience, whereby any building in which you are interested can be effectively protected.



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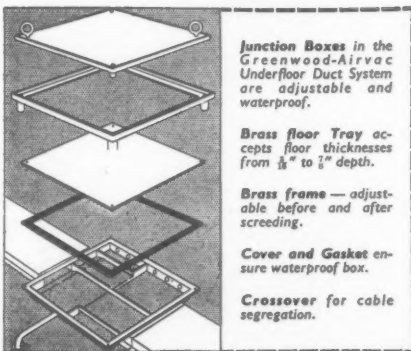
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Greenwood-Airvac Underfloor Duct System

FOR THEIR NEW UNILEVER EXPORT LTD OFFICE BLOCK AT PORT SUNLIGHT



The Greenwood-Airvac Underfloor Duct System provides for flexibility in office and factory layout. Every feature is planned to meet the requirements of the Architect and Electrical Engineer.

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- ★ Universal pedestal unit suitable for Post Office or internal telephones, power and lighting.

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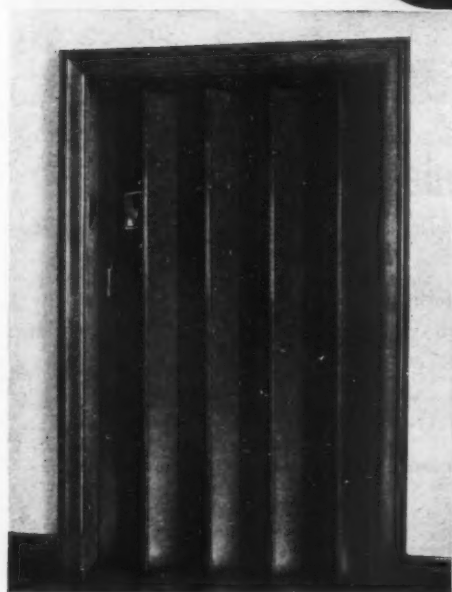


Our latest development...

... for lift cars is the Multi-Panel Sliding Door illustrated left. The door is constructed from Patent Hollow Aluminium Alloy Interlocking Panels which negotiate the 6" radius of the curved top track smoothly and quietly. Whilst the Multi-Panel Sliding Door is designed to run inside or outside the lift car, it may be adapted as a Landing Door running between the lift car and shaft wall. This new door like every other Bolton Lift Door can be arranged to receive lift makers lock beaks and vision panels.

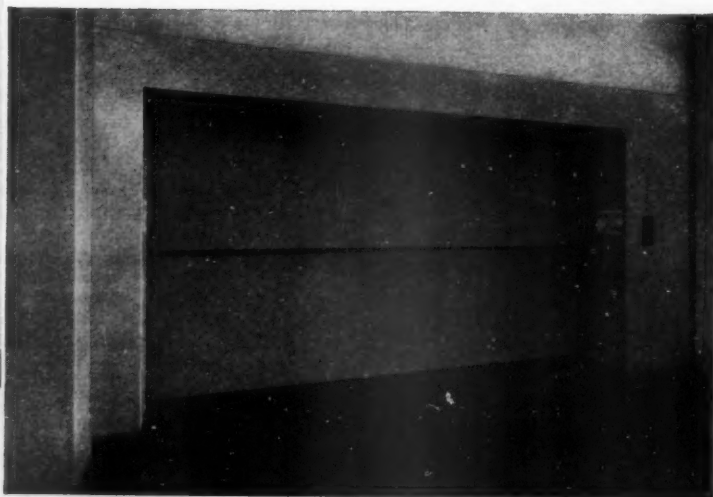


There's a **BOLTON** lift door...

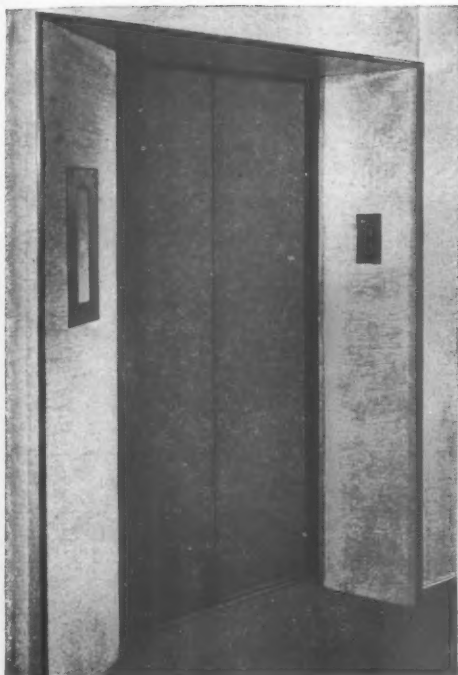


Bolton Patent Shutter Doors for lifts, illustrated above, embody all the well-known quality features of the industrial door and are available for hand or power operation.

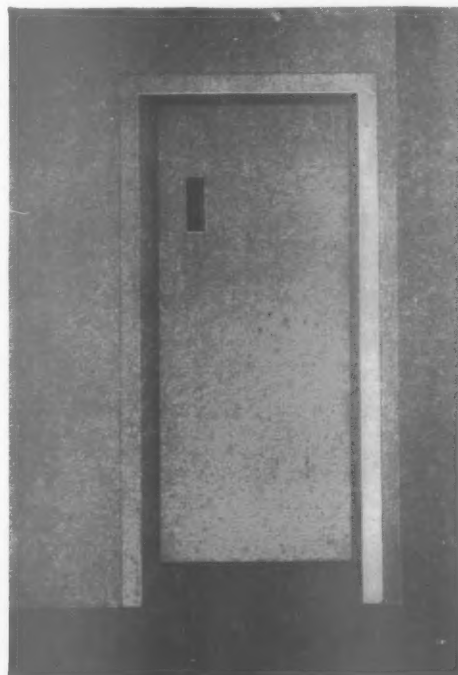
Vertical Sliding Bi-parting Doors, illustrated below, slide above and below the lift car giving an unrestricted opening ideal for goods lifts. The upper edge of the lower panel can be reinforced to form a truckable cill of equal weight capacity to the lift.



* Write now for the latest Bolton Lift Door Leaflet AJ 312



The power operated 2 Speed Sliding Door, illustrated left, is smooth and silent in operation and is arranged to give maximum clearance. Panels may be flush or of fluted aluminium alloy.



The power operated Single Panel Sliding Door, illustrated right, glides smoothly and quietly behind the wall allowing an unrestricted opening. Flush or alternatively fluted panels of aluminium alloy are available.

to suit your requirements

The comprehensive range of Bolton Lift Doors includes doors which are suitable for every situation, from factory goods lifts to the most modern hotel lift. The variety of finishes available is such that harmony with existing decorations can readily be achieved. All Bolton Lift Doors can be fitted with vision panels to your requirements and can be arranged to receive lift makers' lock beaks, handles, etc.



The Multi-leaf Door, illustrated right, is among the most popular of lift doors and is available in a variety of finishes.

The 2 Panel Centre Opening Doors, illustrated right, are supplied with a sympathetic action gear and slide smoothly and quietly behind the wall allowing maximum clearance. A variety of finishes is available.



BOLTON

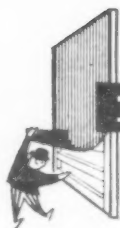
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dmBG312

know your Flush Door



Nº 2

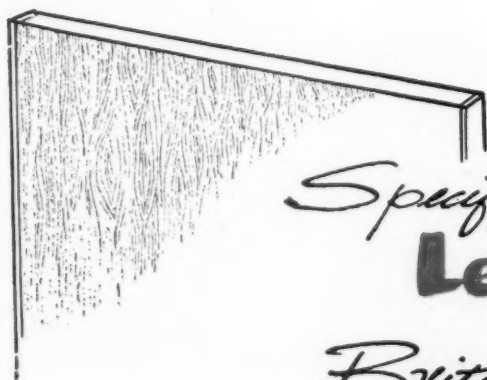
2nd of a series of six



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Nor is it necessary to edge the top and bottom of a well-designed, well-made **FLUSH DOOR** for internal use only. It is an additional and unnecessary expense.

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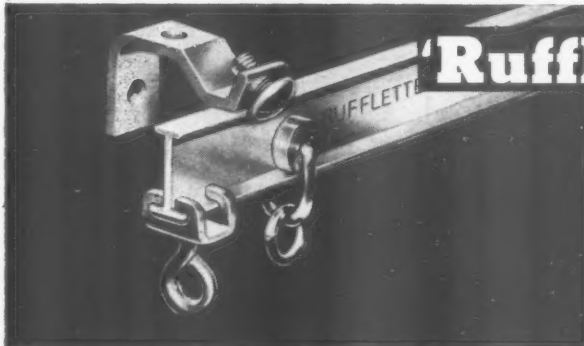
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'Rufflette' CURTAIN TRACK

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'Rufflette' DOUBLE TRACK

BRAND

The new permanent cord-controlled track system with concealed mechanism. Nylon gliders ensure smooth and silent operation and the clean lines and smooth contour of the track fitted flush to the ceiling or lintel provides the neatest ever method of curtain suspension for private homes, schools, industrial and commercial installation.



'Rufflette' CUBICLE TRACK

BRAND

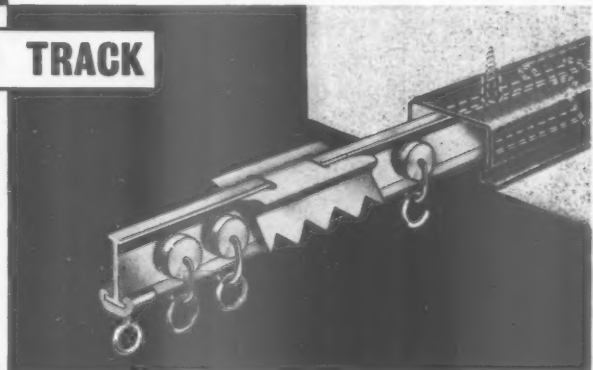
'Rufflette' Brand cubicle track is one of the simplest and best curtain systems for space division. An ingenious method of suspension from wall or ceiling leaves floor space unobstructed, allowing the free movement of staff and equipment. Many leading authorities have specified cubicle track for installation in hospitals, clinics, schools, hotels, stores, hairdressing salons and aboard ship.

'Rufflette' RECESSED TRACK

BRAND

'Rufflette' Brand Recessed Curtain Track is concealed, permanent, and an integral part of the building. A steel channel is fitted into the wood or concrete lintel above the window prior to plastering, and special spring clips fit on to the curtain track which is sprung into position in the channel. It is recommended for use in hotels, offices, hospitals, schools and flats where a permanent curtain suspension system is required.

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Subsidiary companies in Canada, Australia, New Zealand and France

A brush-on waterproofing that contains **rubber...**

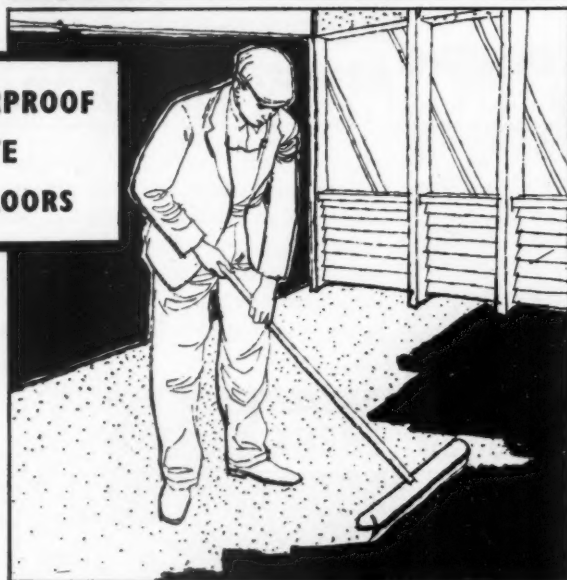
TO PREVENT OR CURE DAMP WALLS

Synthaprufe makes a highly efficient vertical damp course both inside and out, and is an excellent treatment when damp is already present.



TO WATERPROOF CONCRETE SUB-FLOORS

Synthaprufe is the ideal sandwich layer in concrete sub-floors. It is also the ideal fixative for linoleum and wood-blocks.



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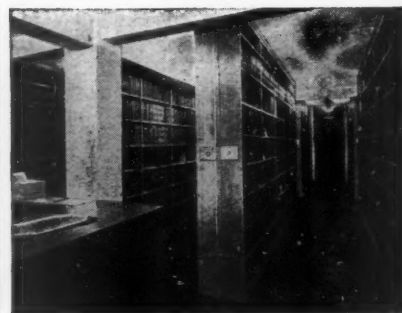


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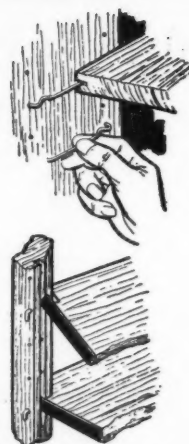
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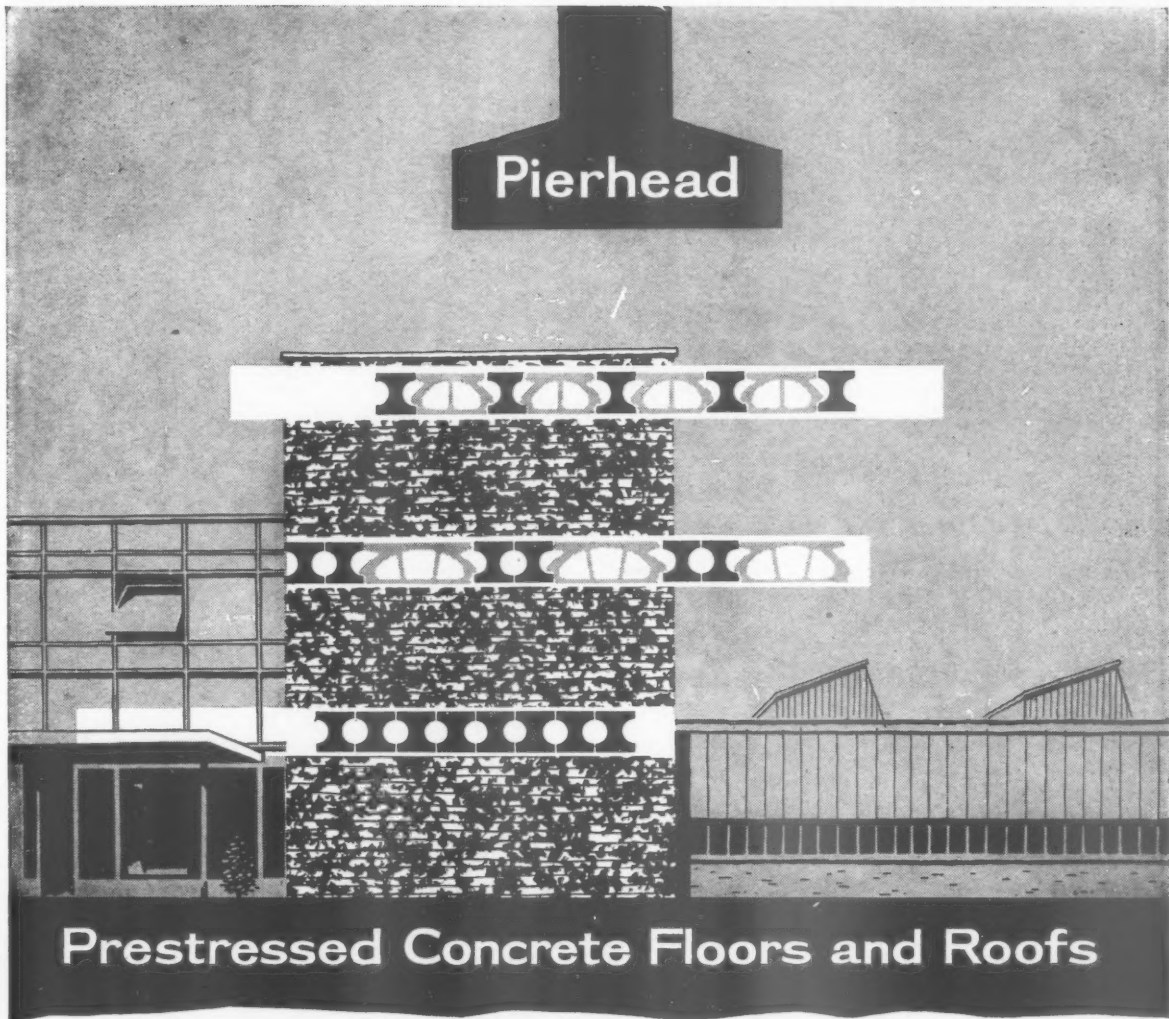
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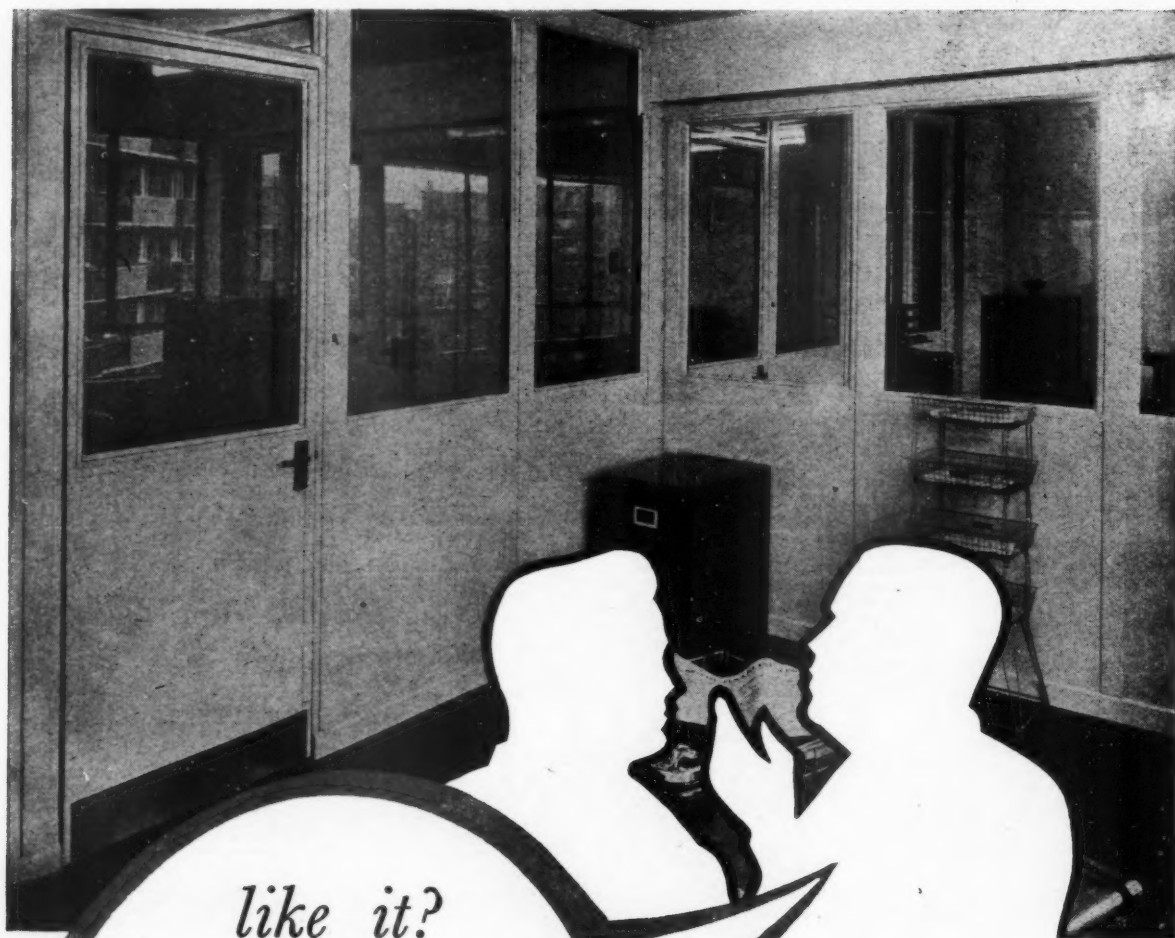
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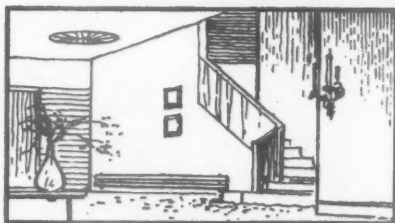
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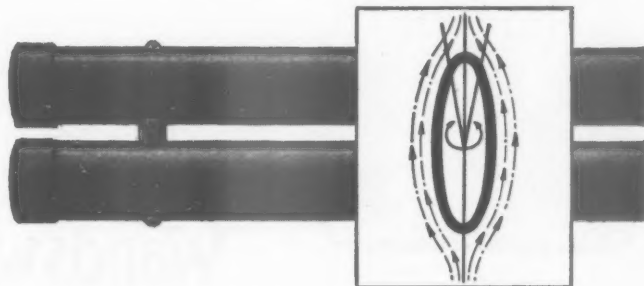
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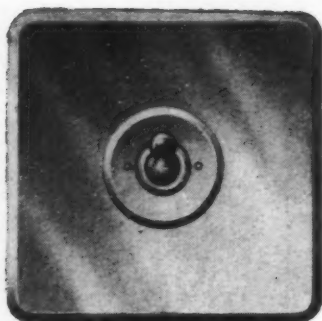
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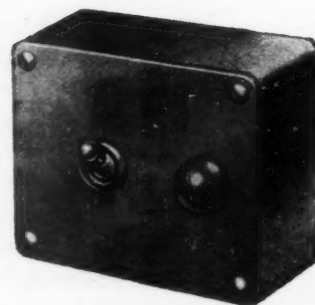
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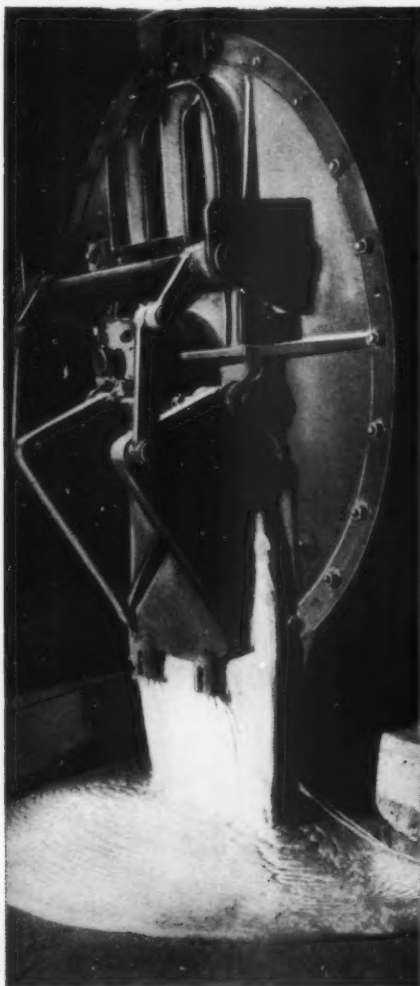
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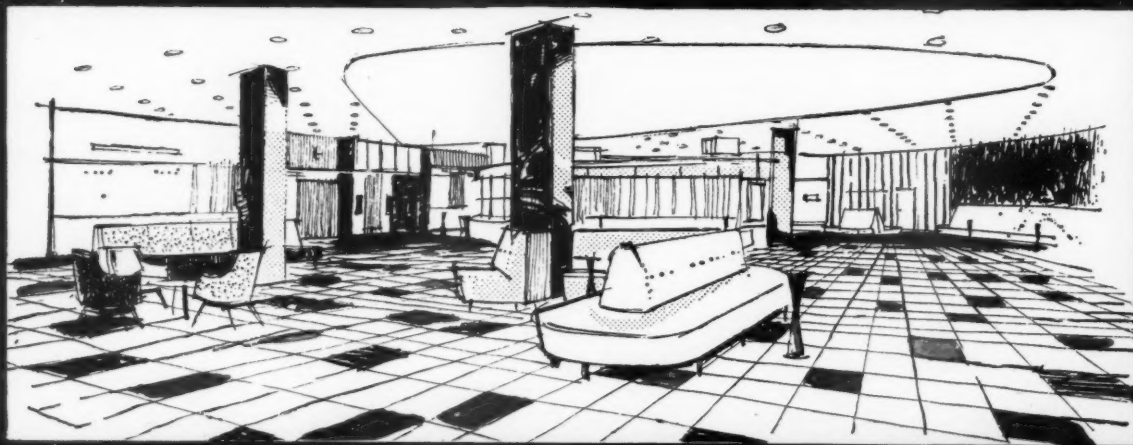


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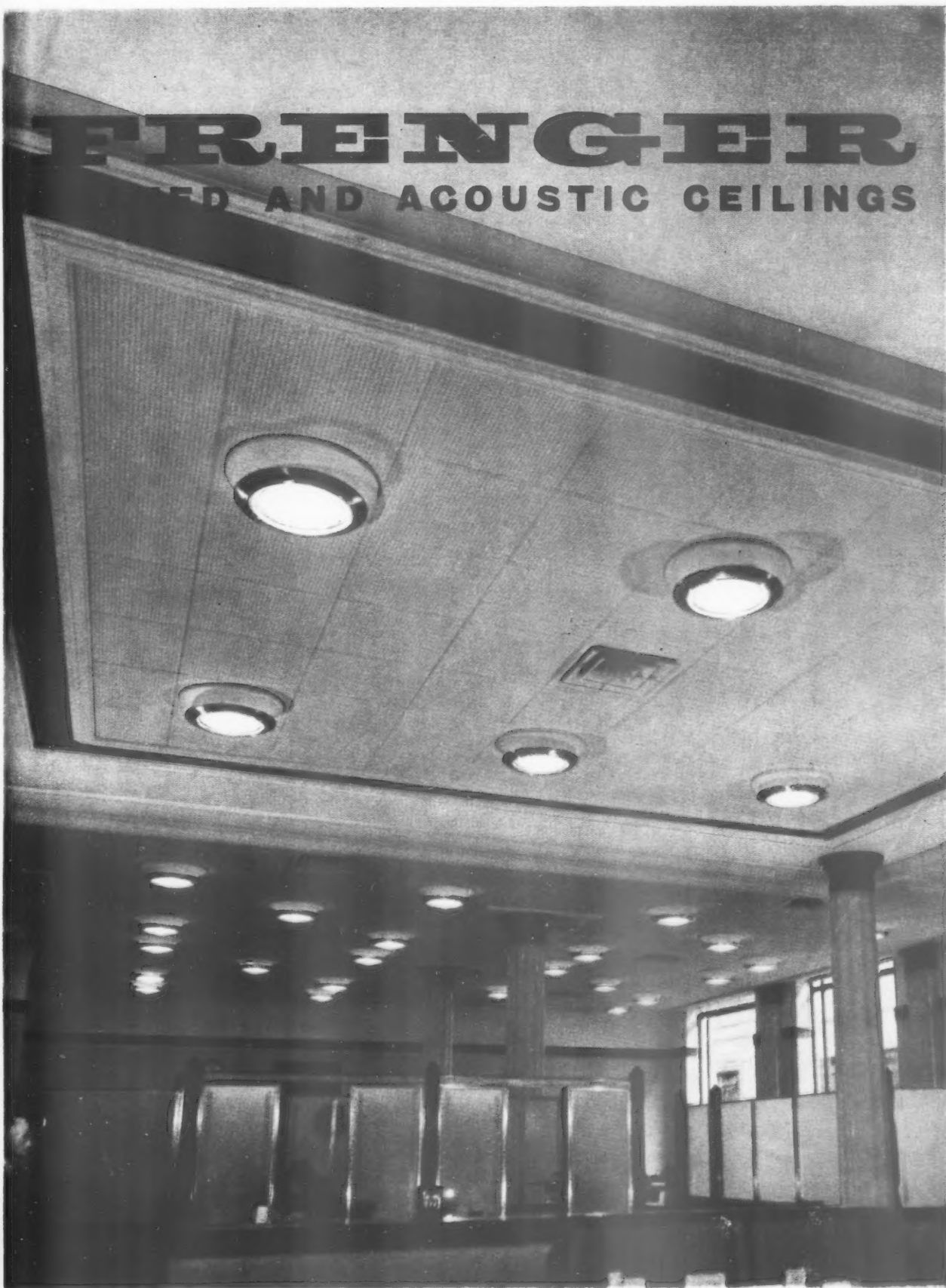
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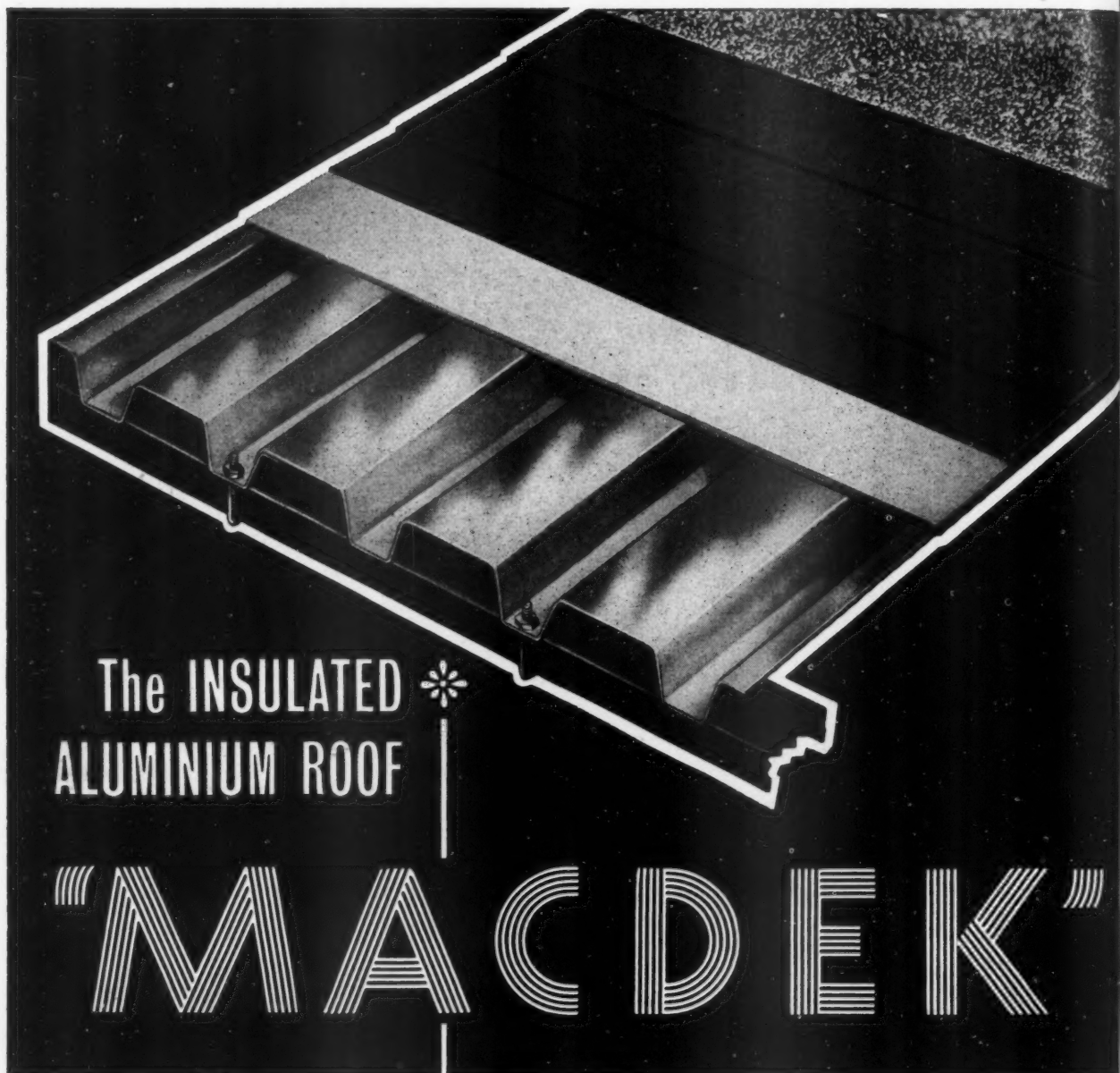
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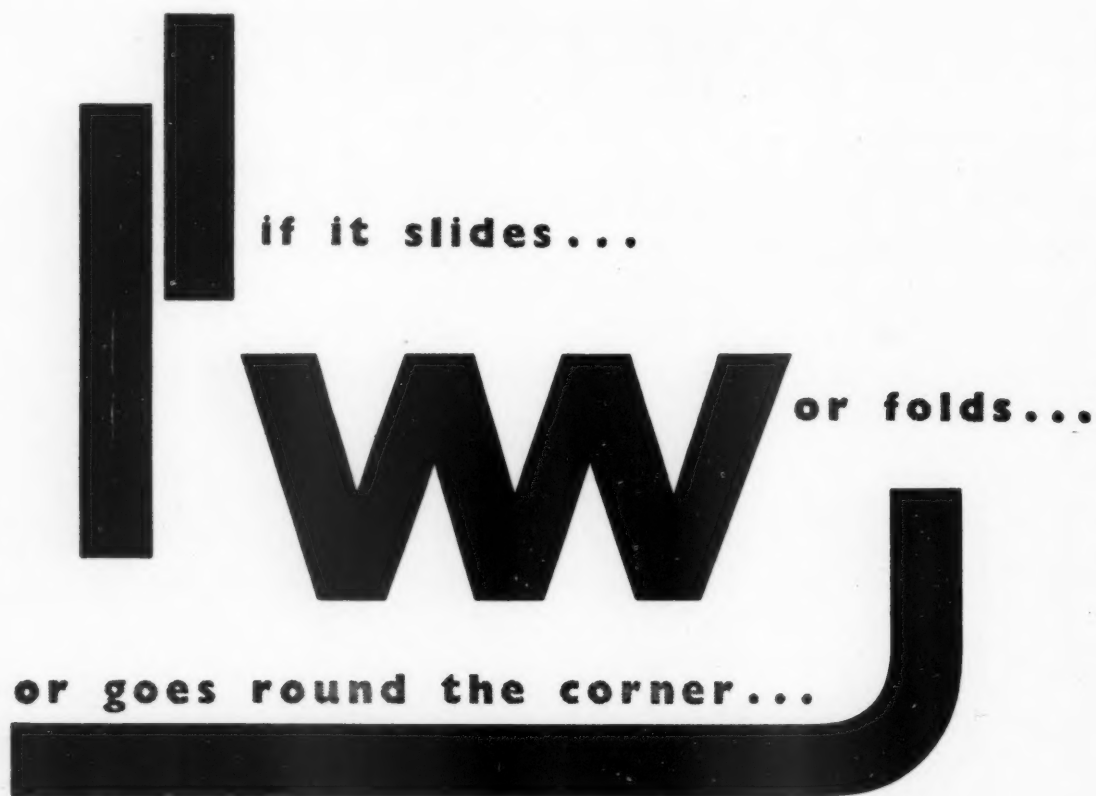


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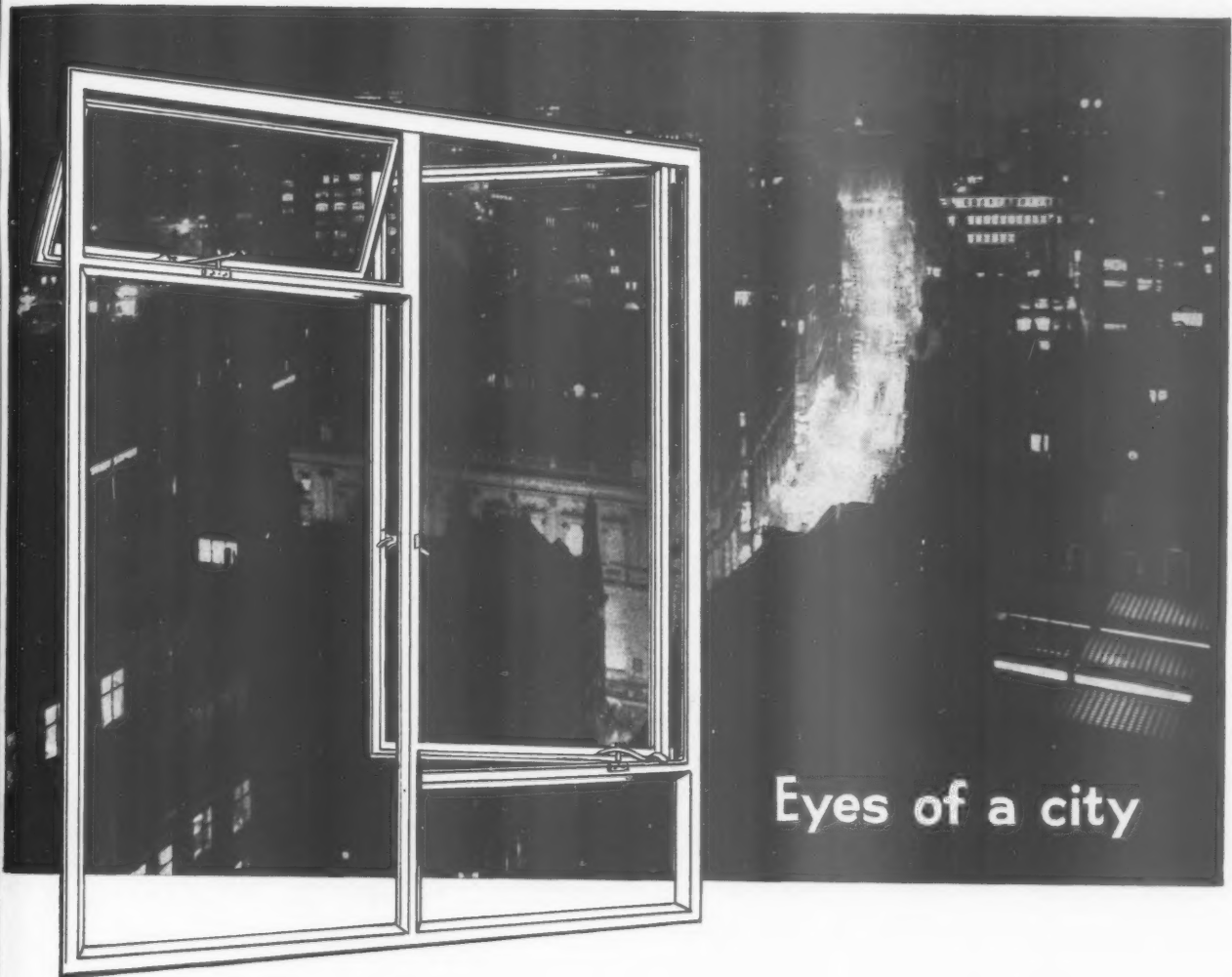


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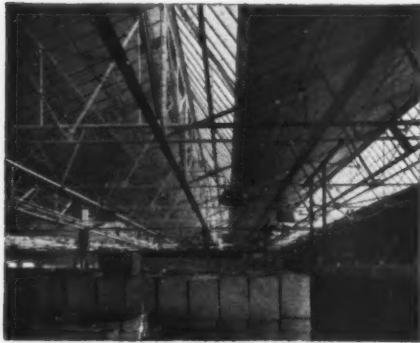
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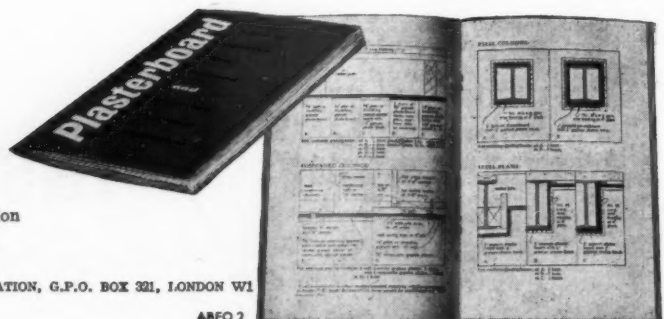
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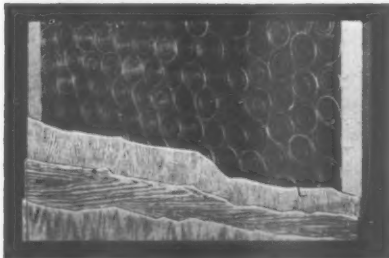
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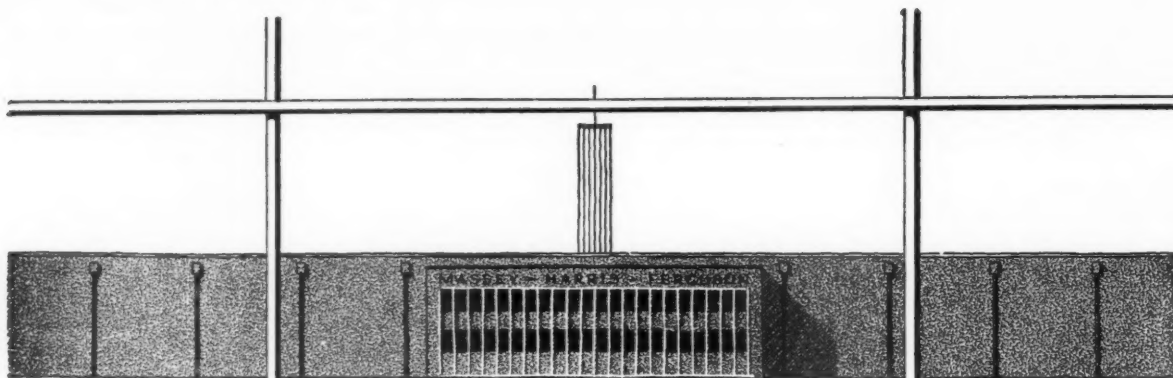
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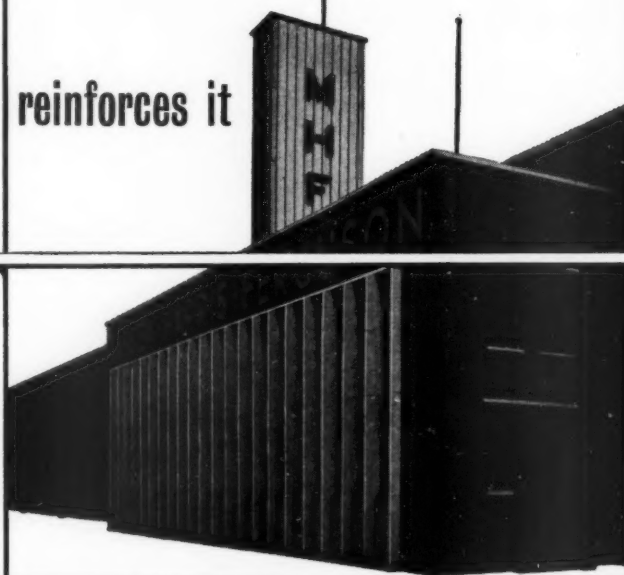
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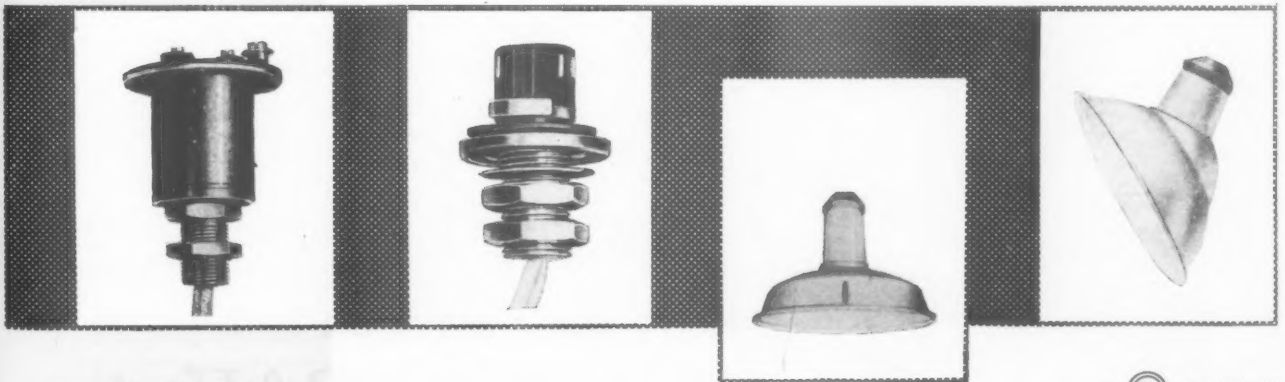


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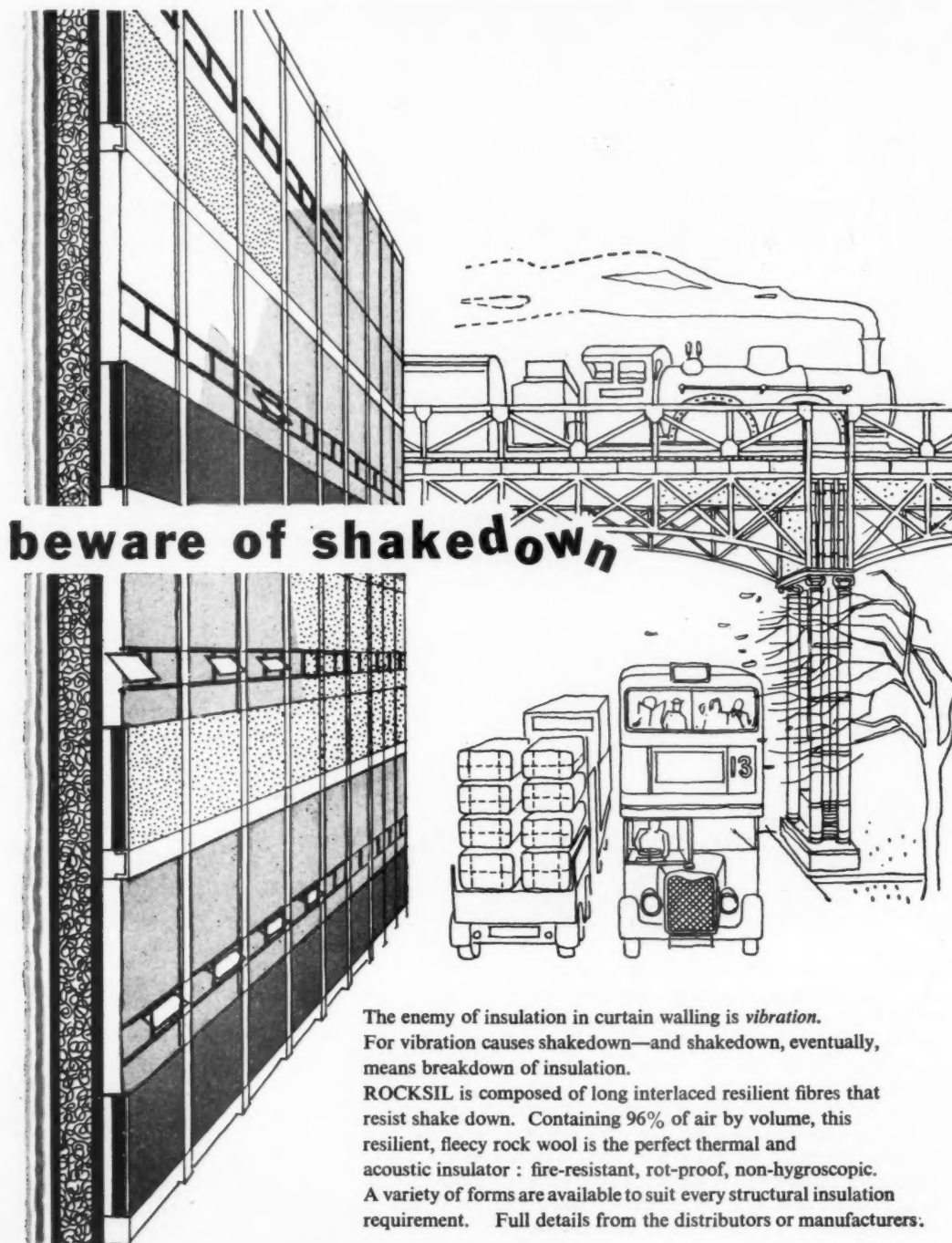
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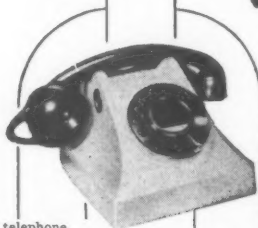


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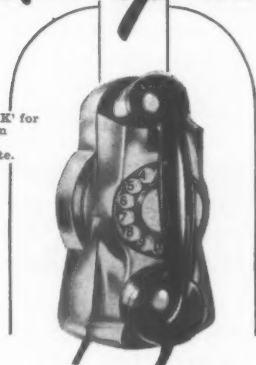
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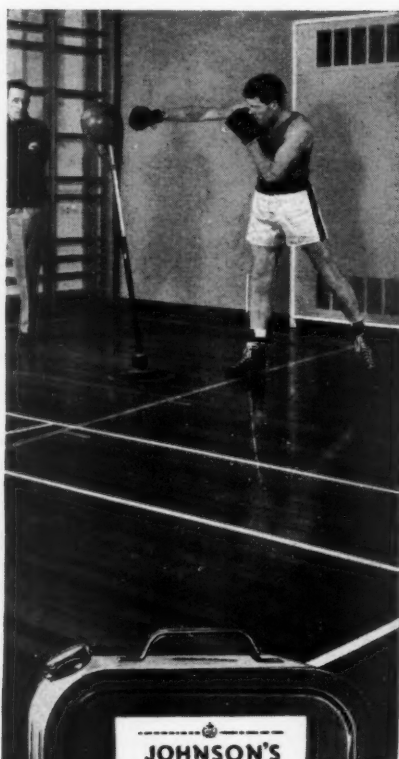
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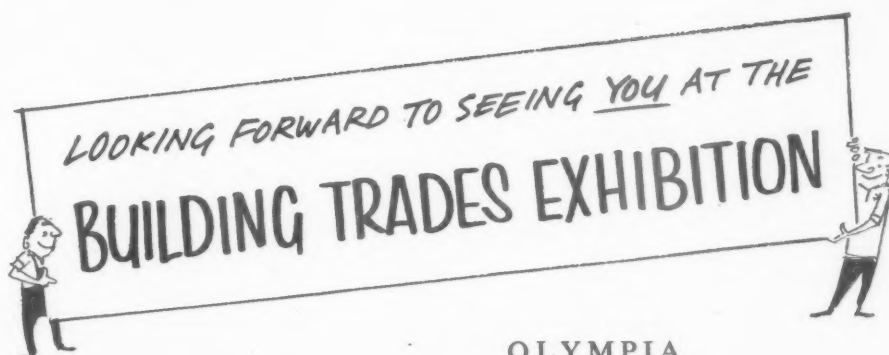
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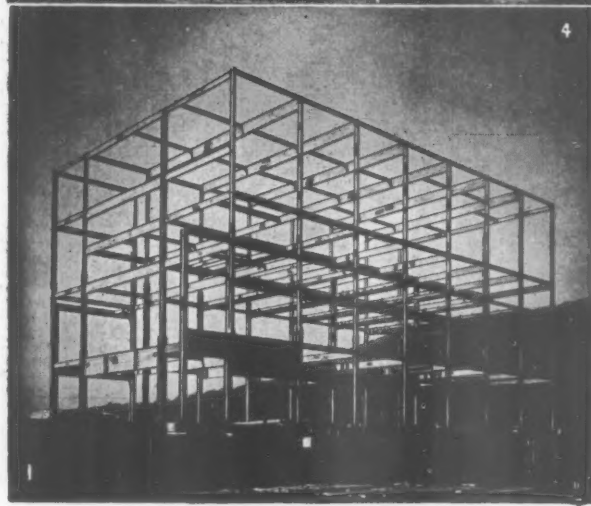
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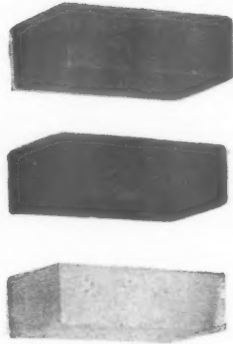
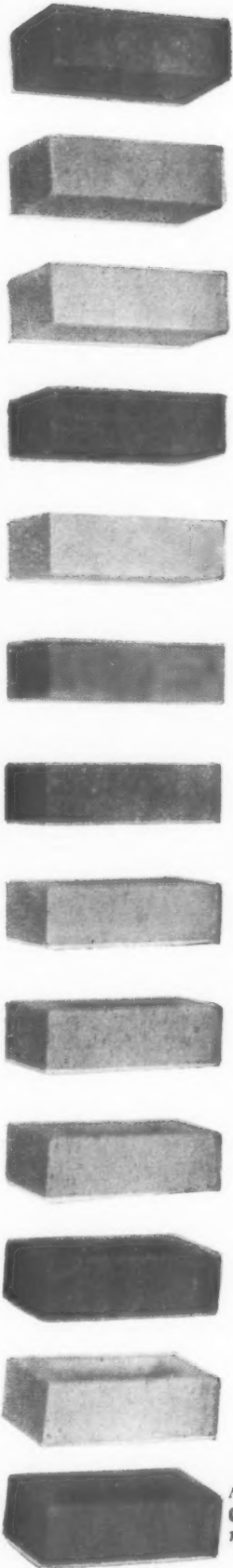
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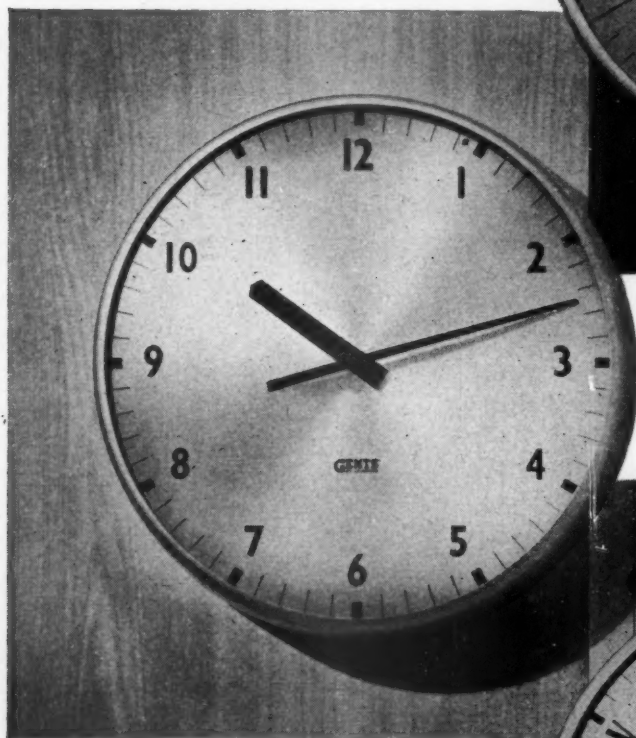


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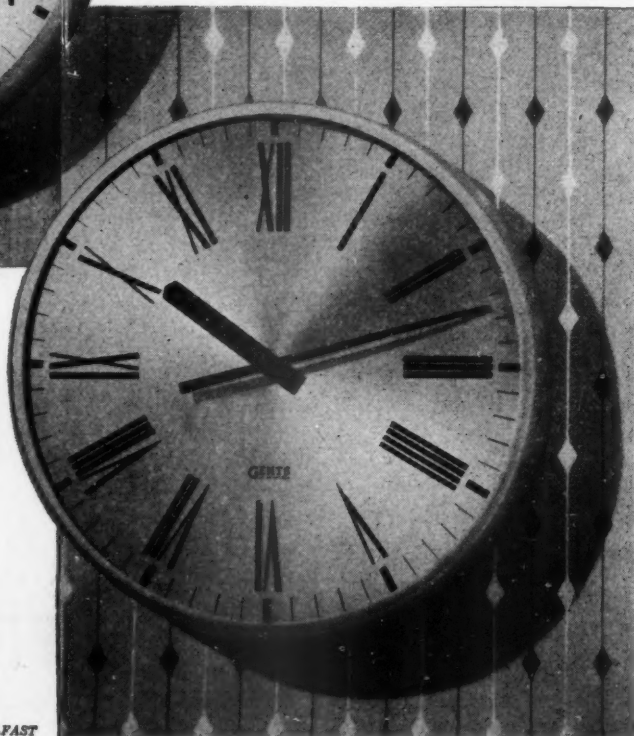
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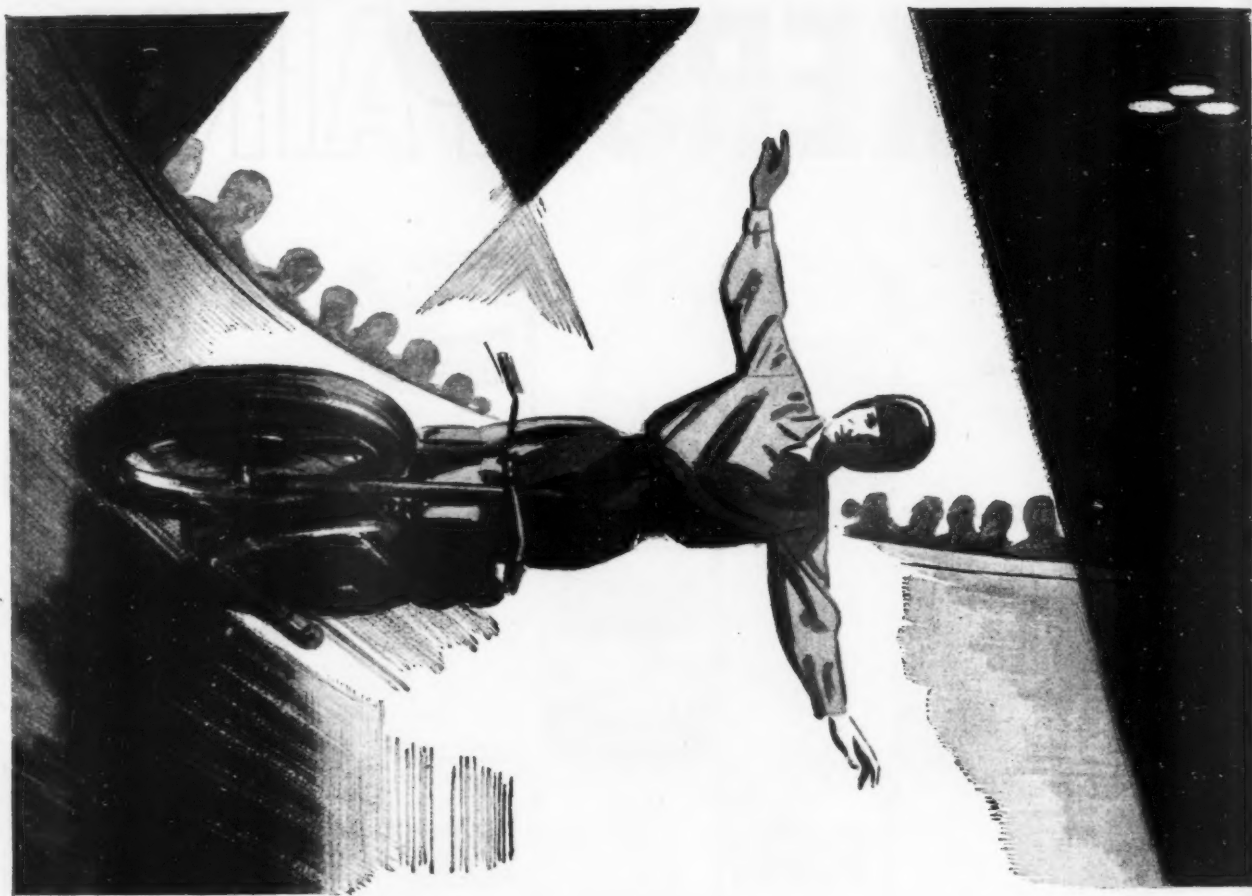
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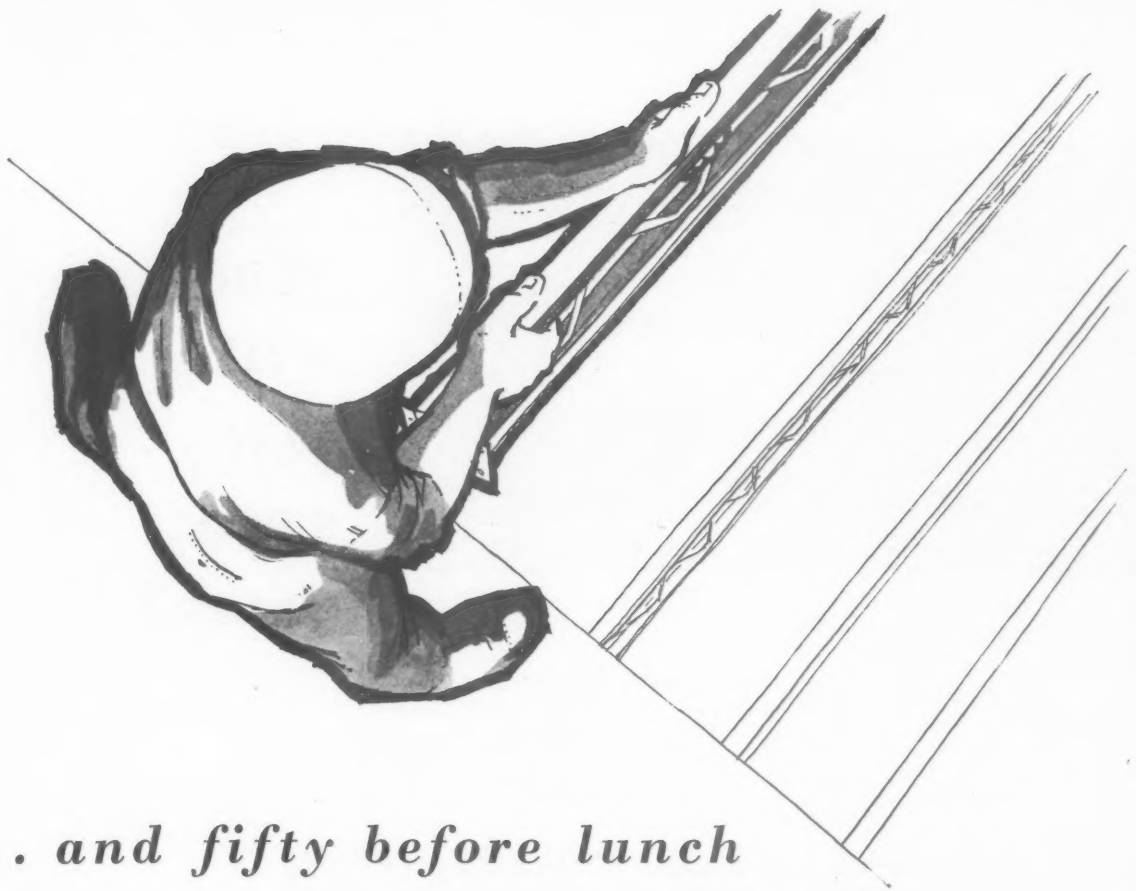
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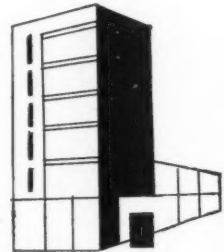
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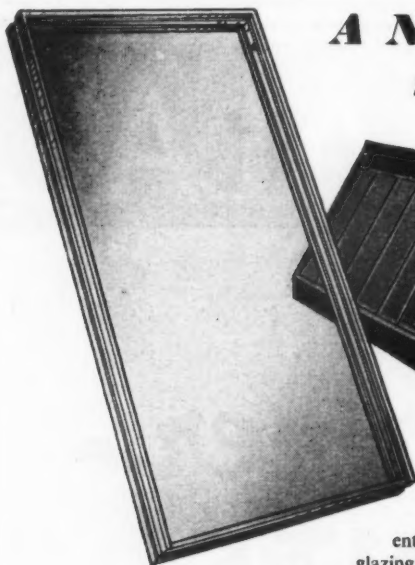
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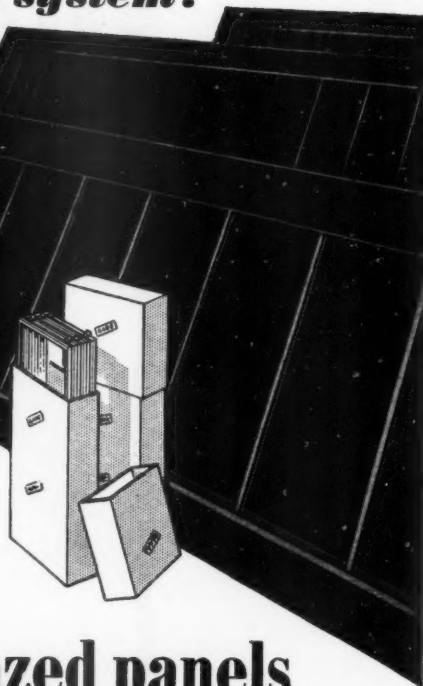
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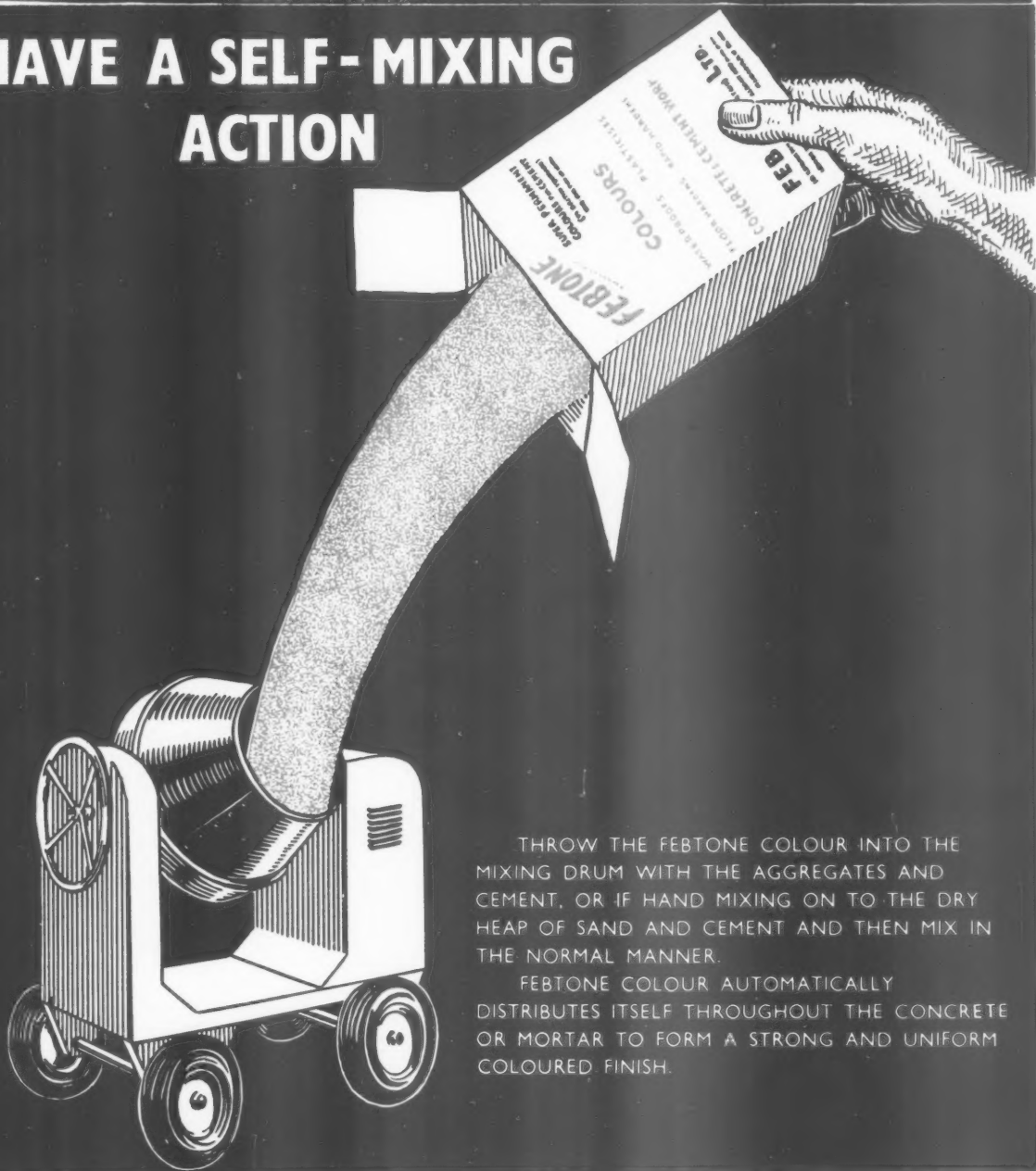
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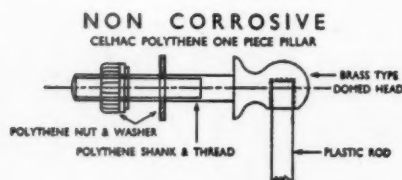
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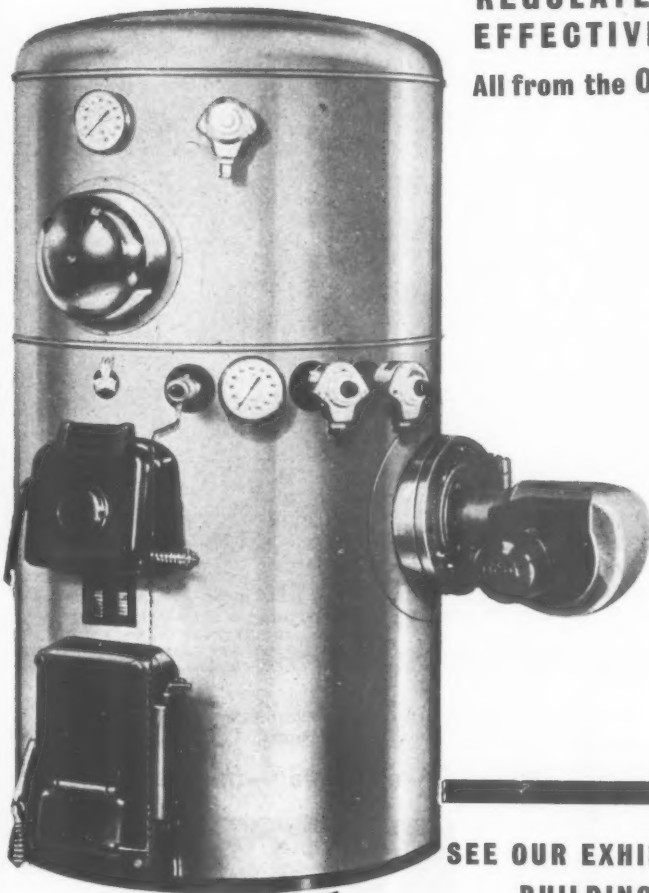
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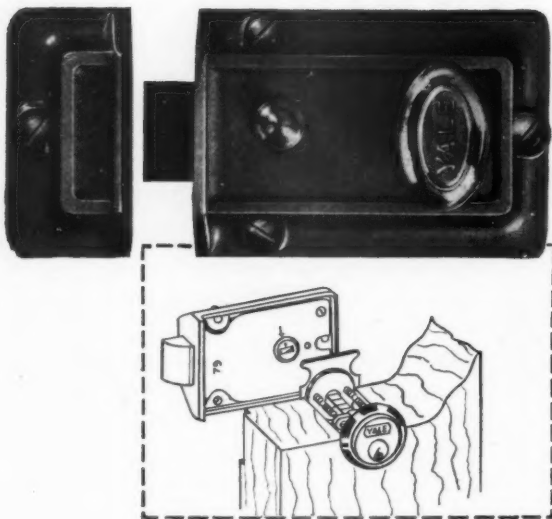
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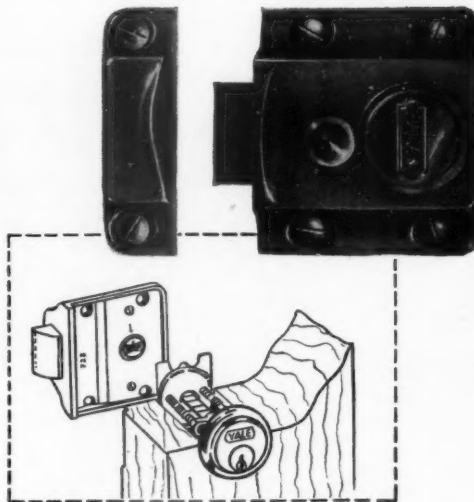
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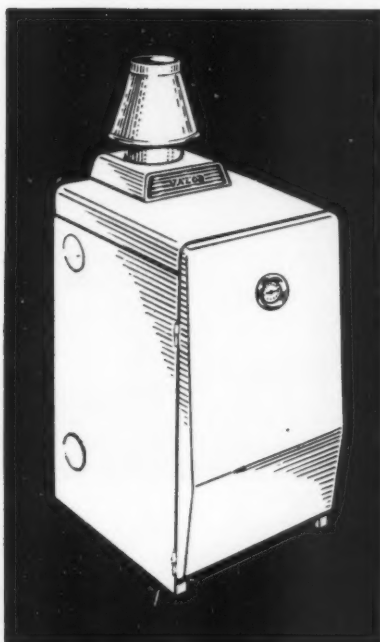
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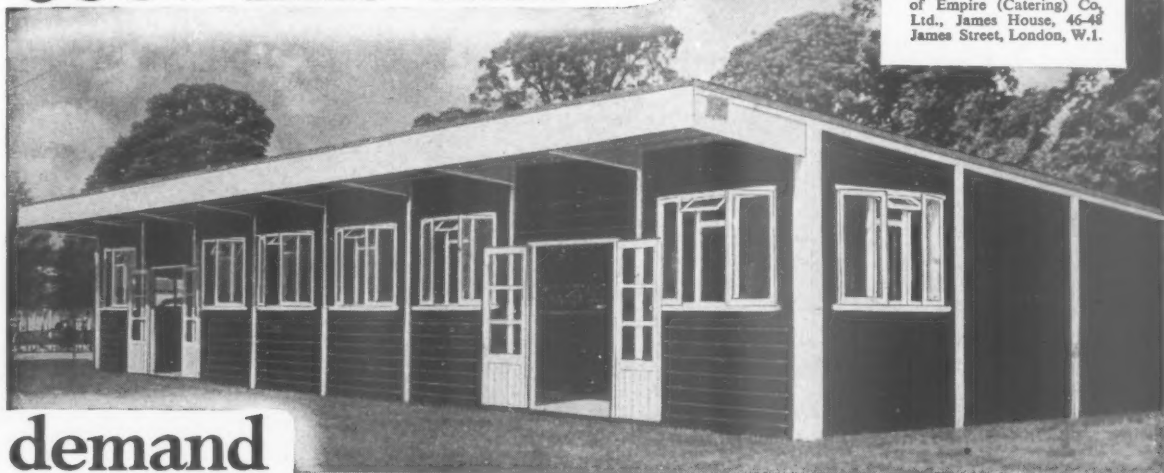
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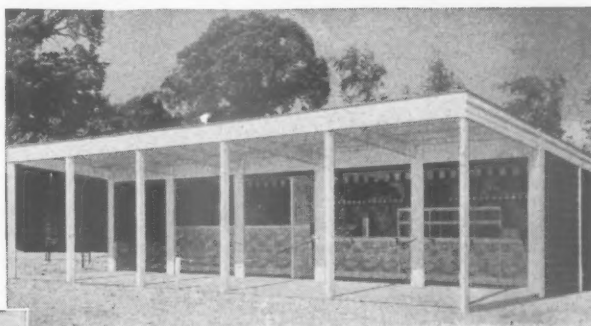
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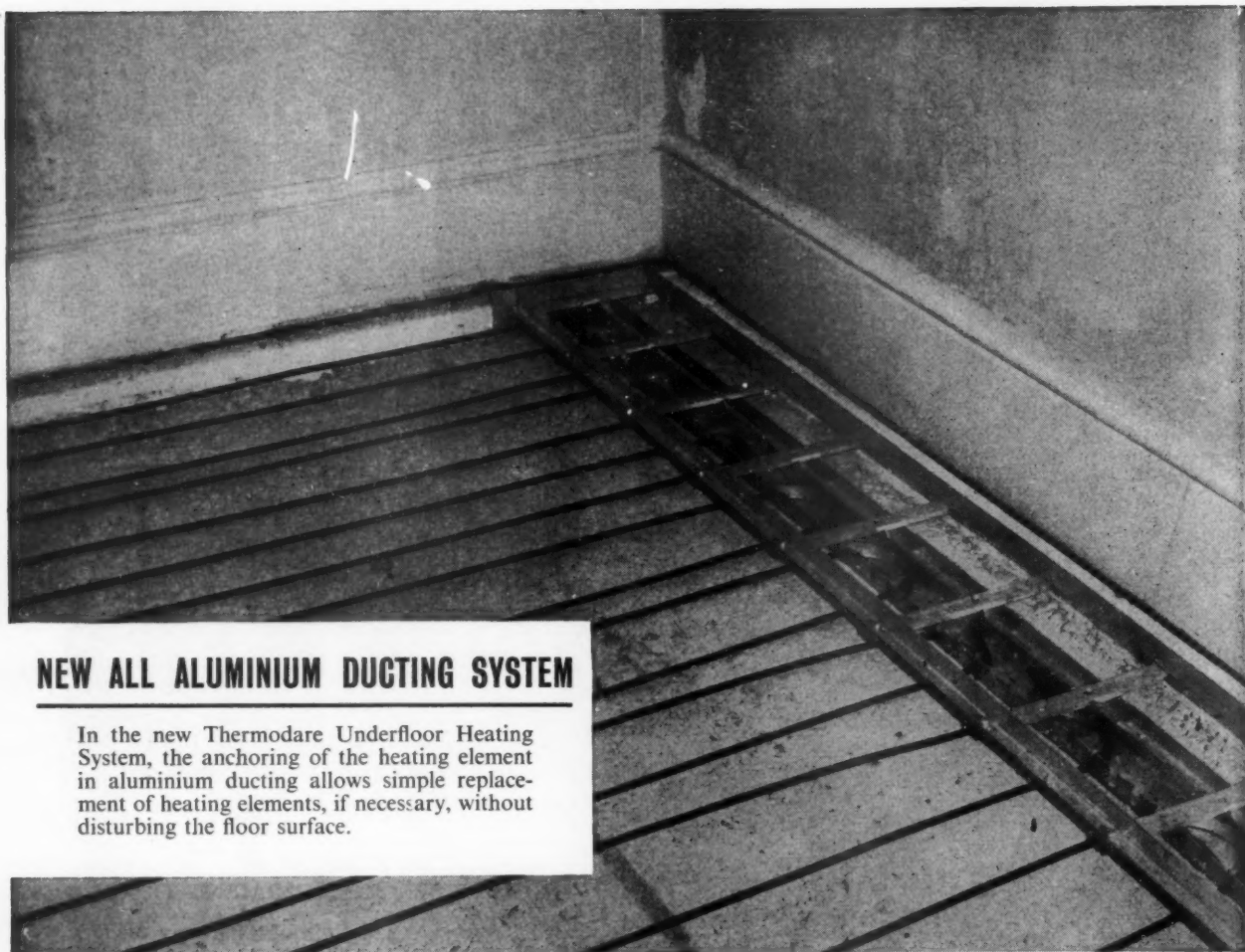
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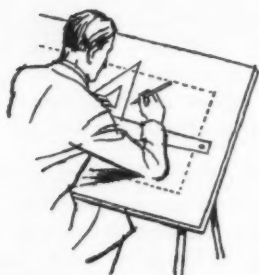
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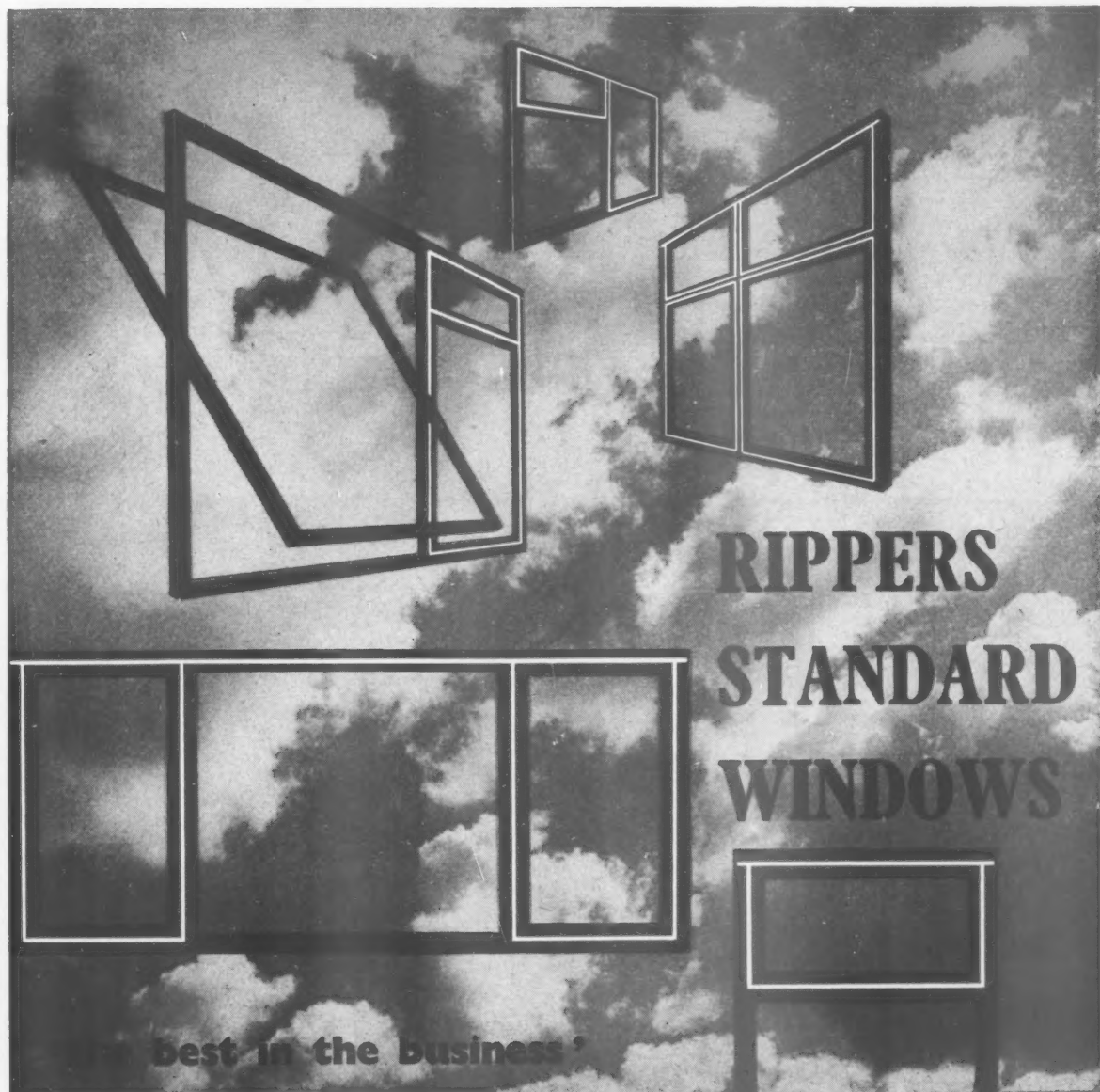
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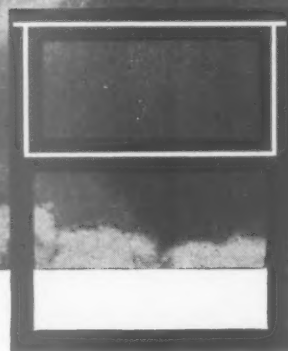
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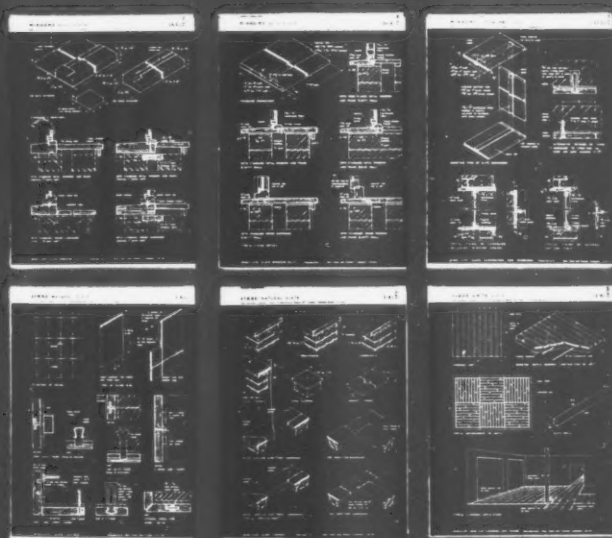
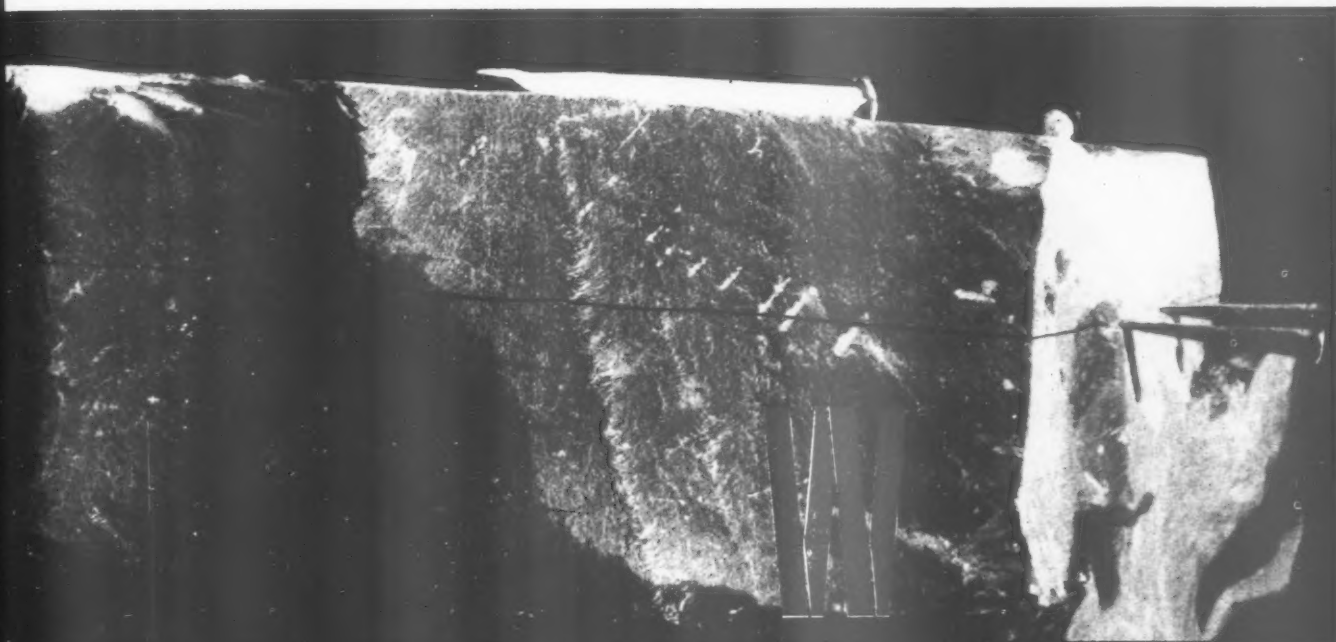
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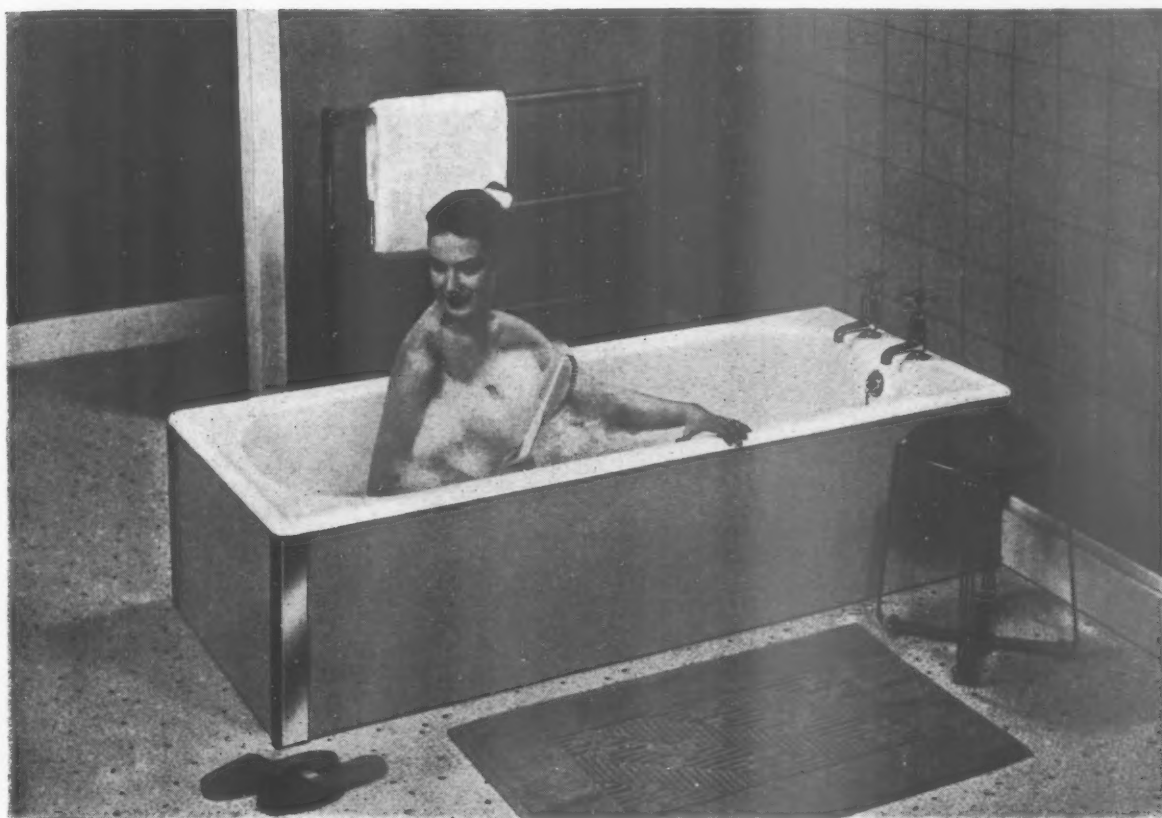
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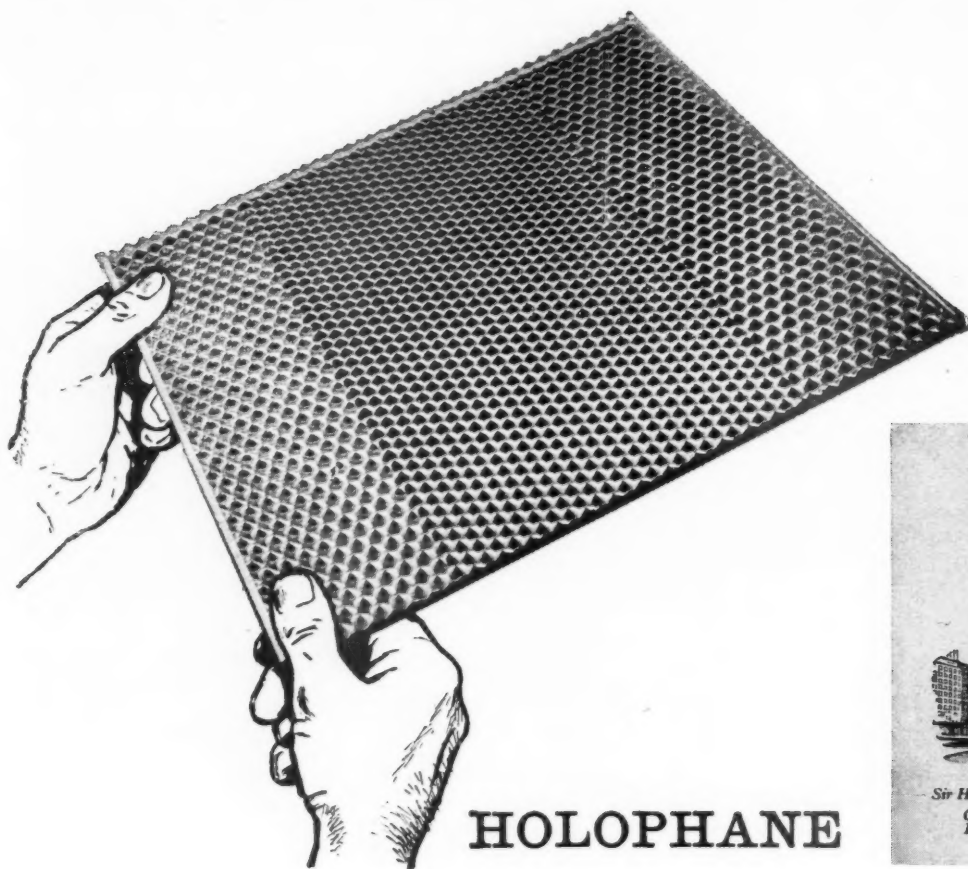
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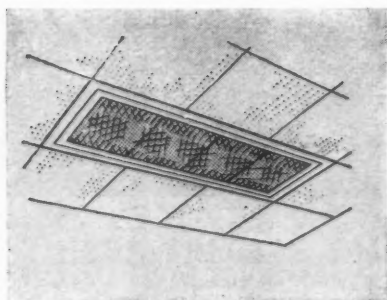
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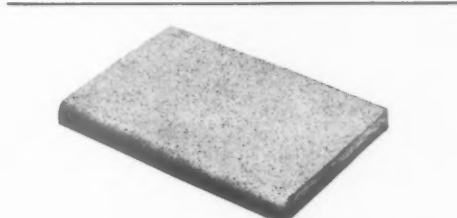
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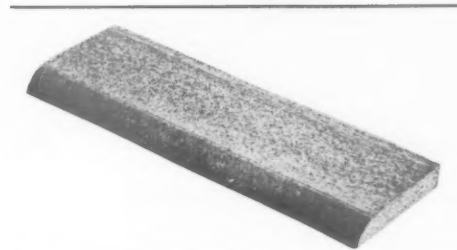
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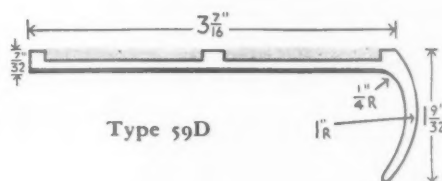
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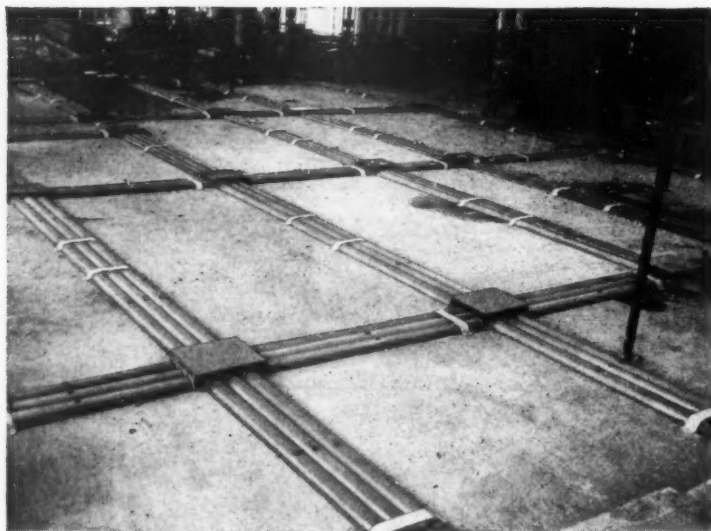
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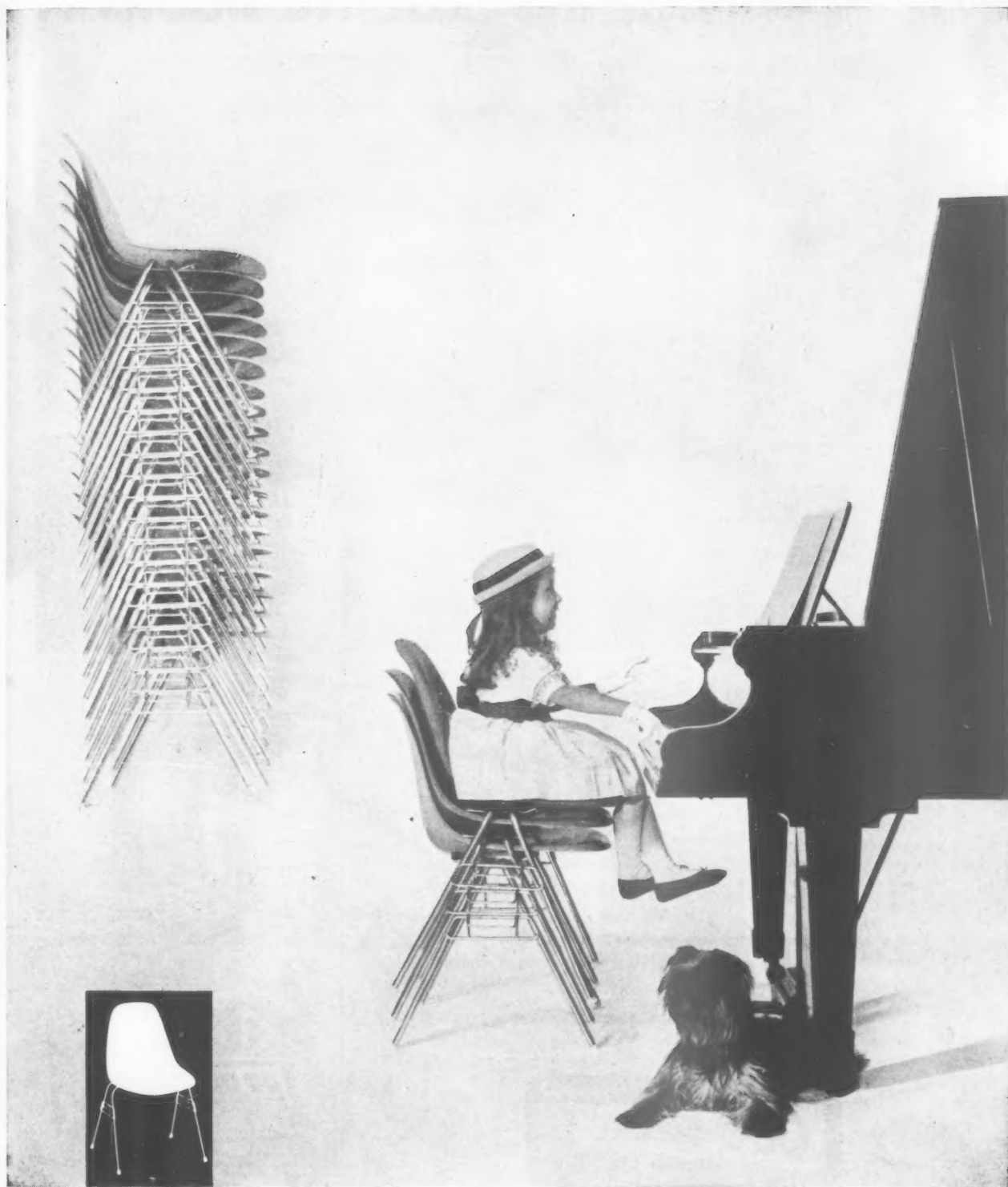


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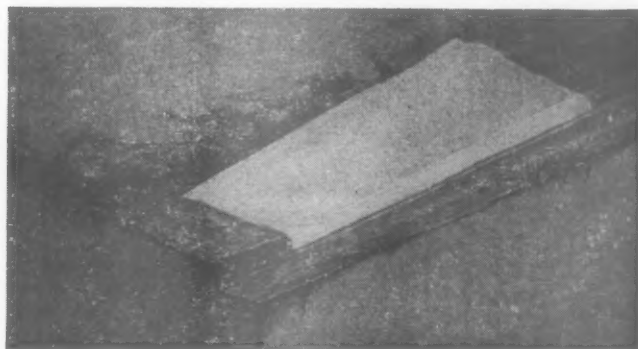
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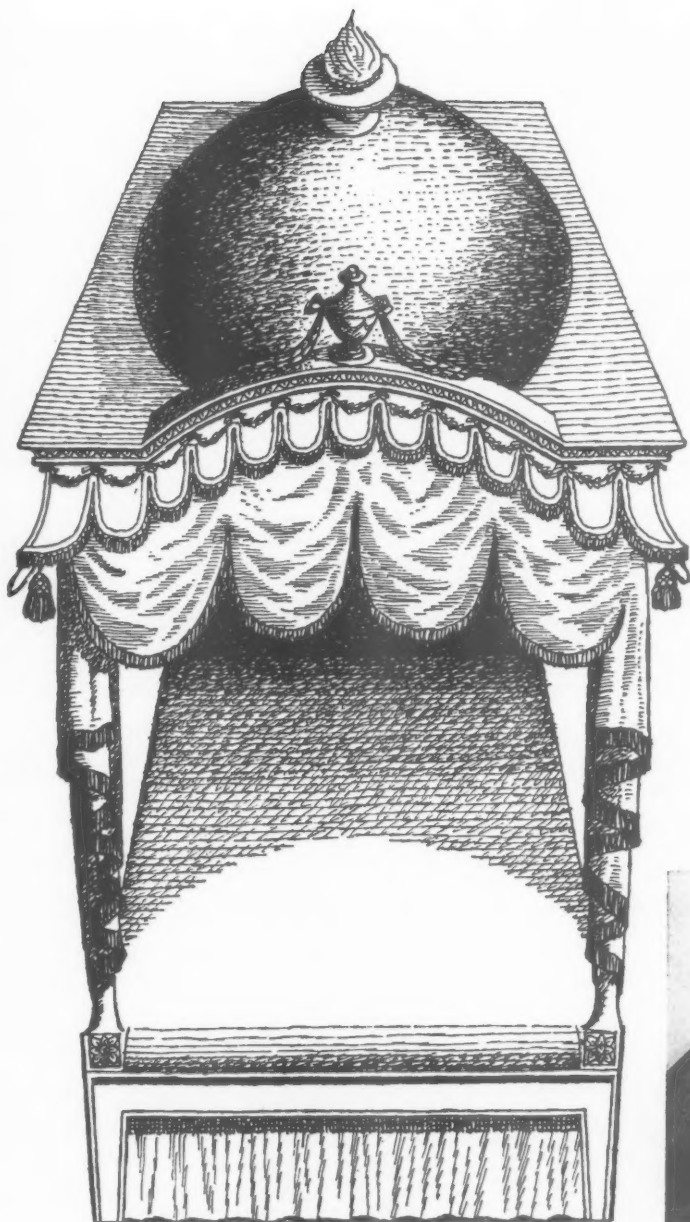
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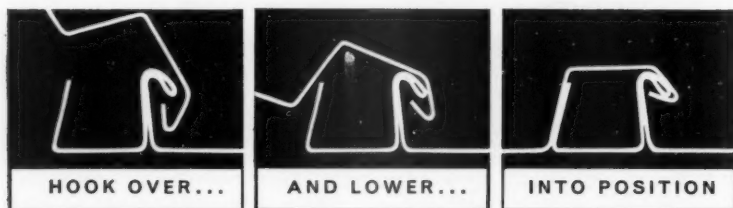


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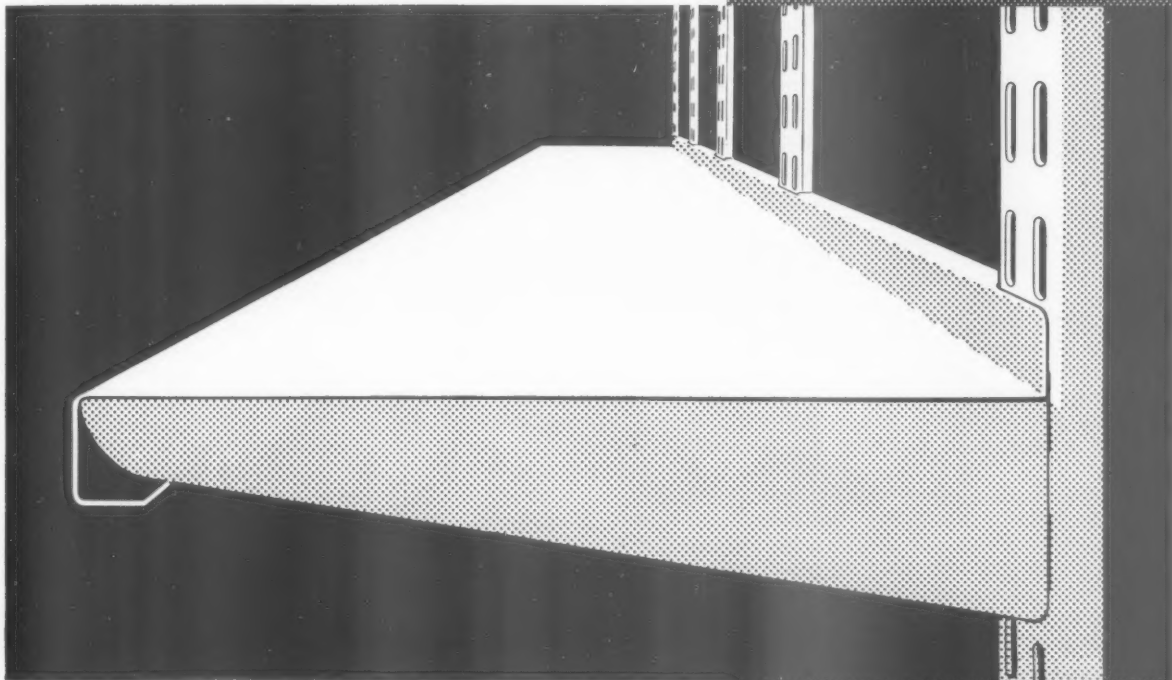
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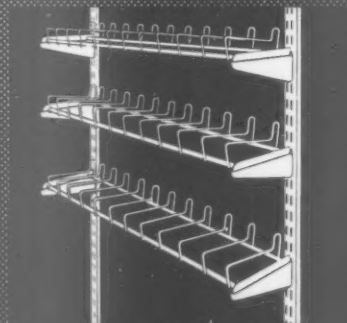
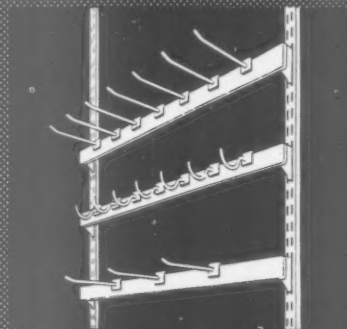
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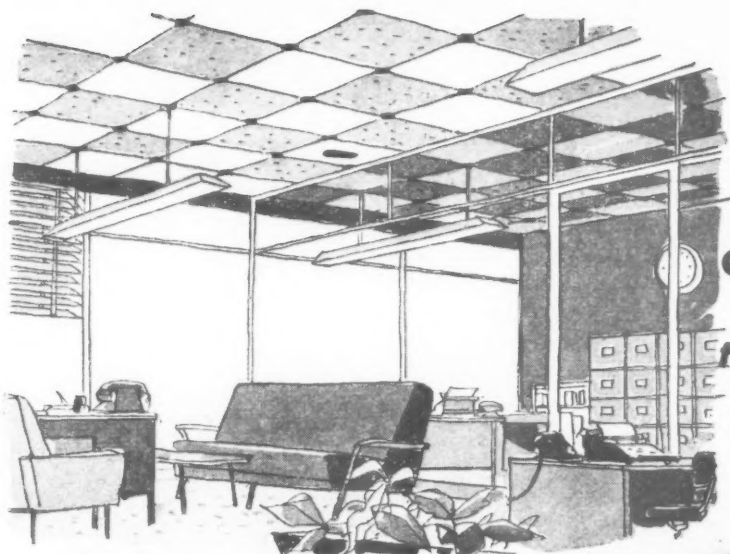
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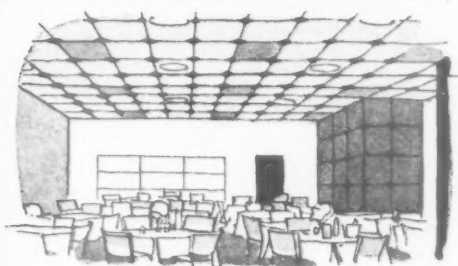
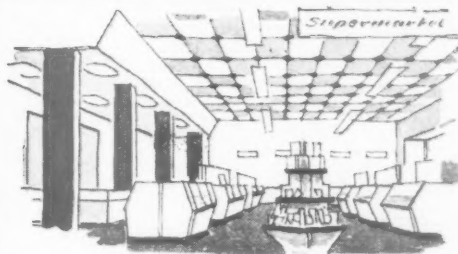
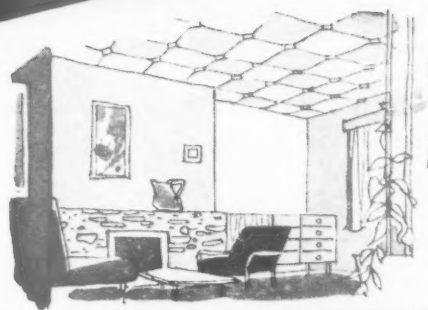
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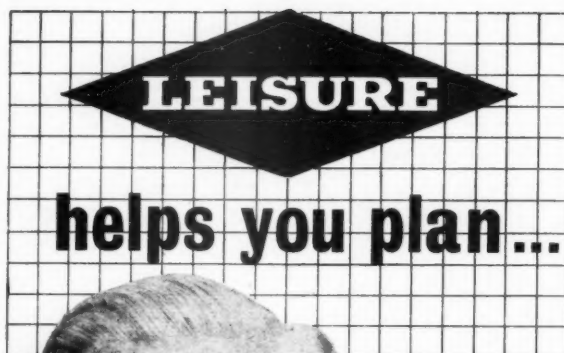
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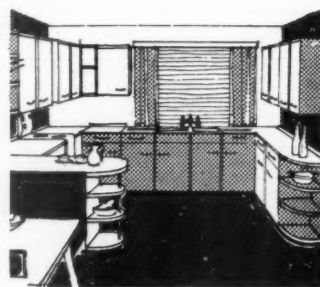
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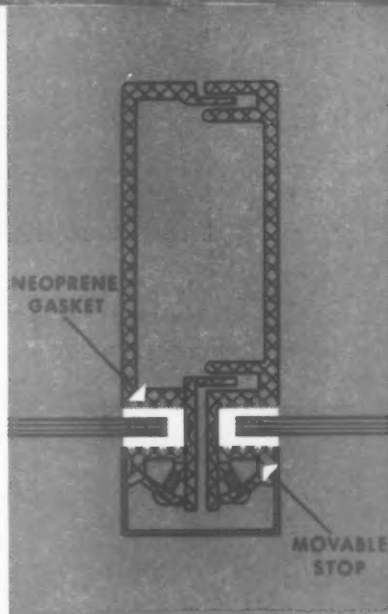
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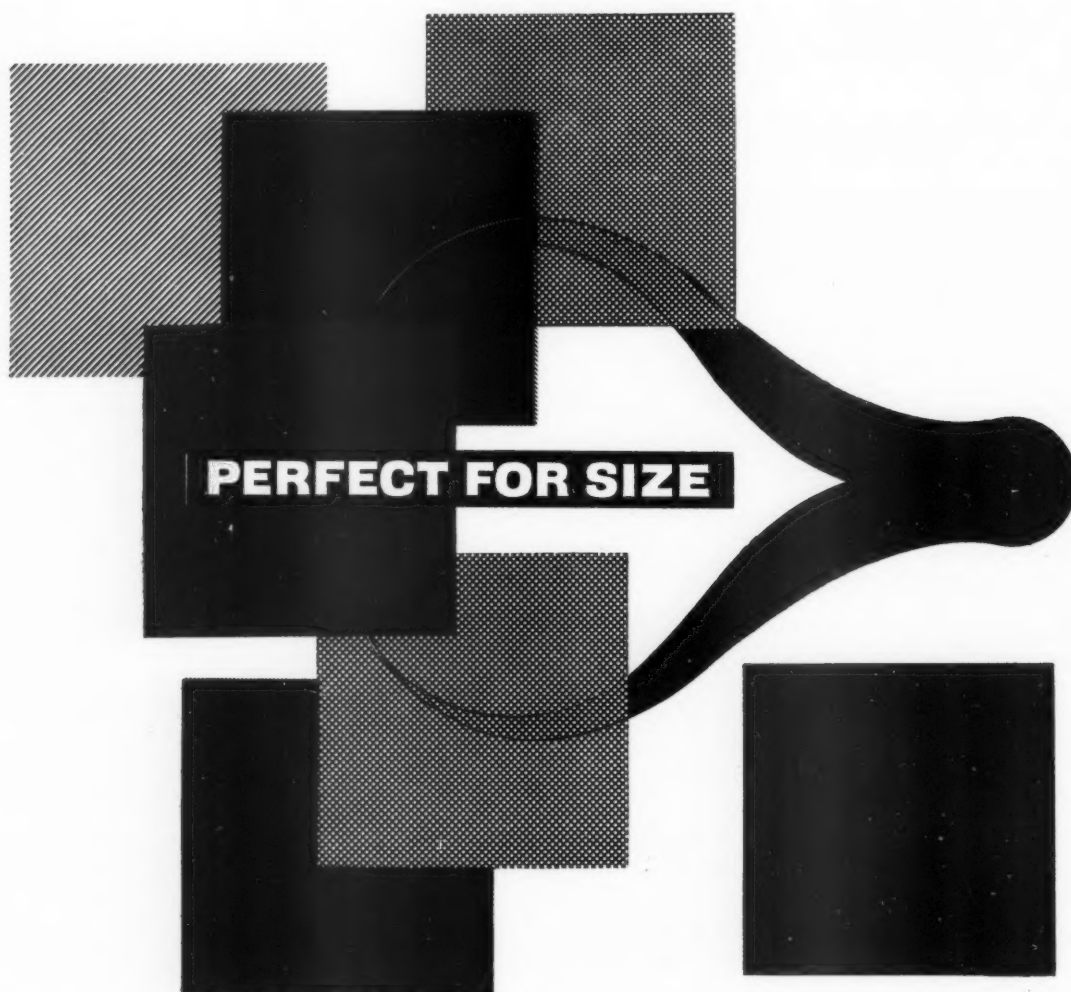
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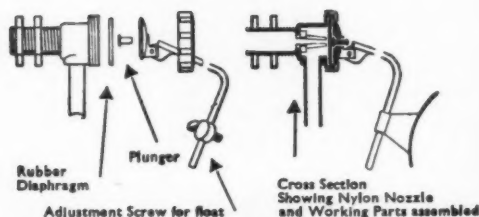
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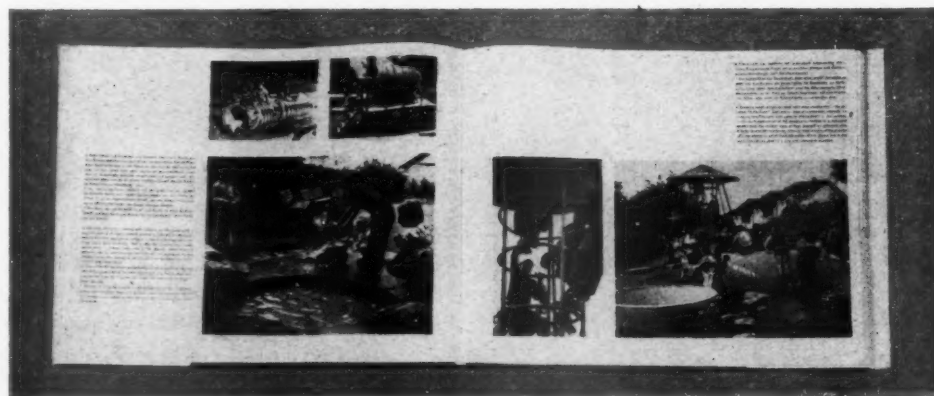
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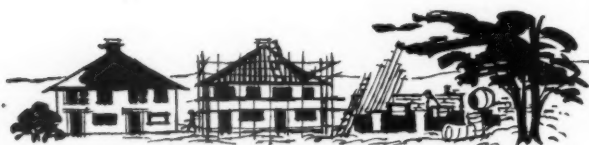
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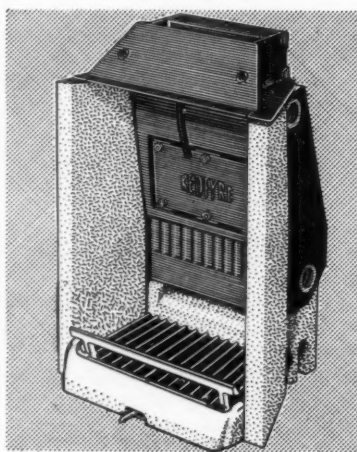
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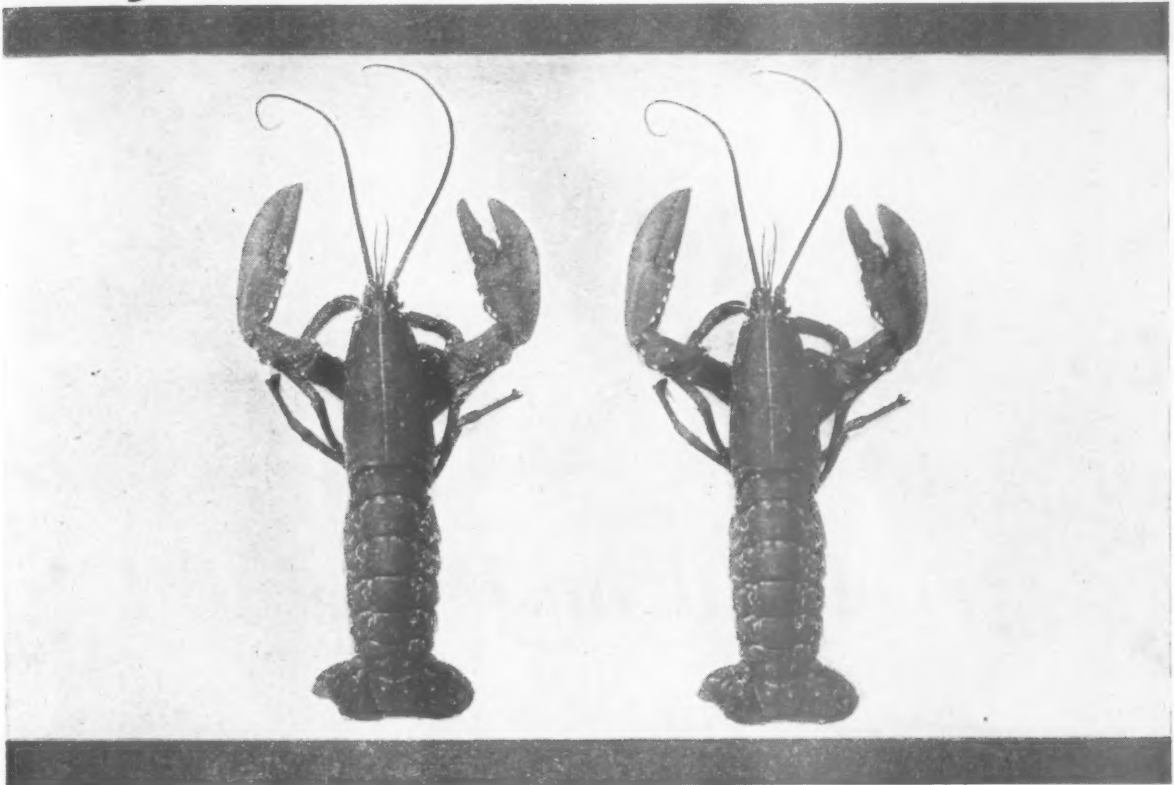
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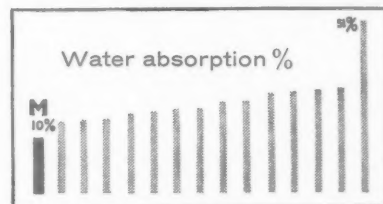
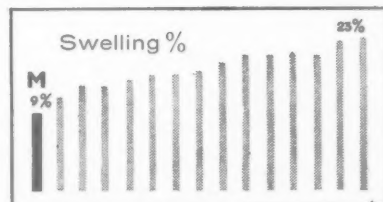


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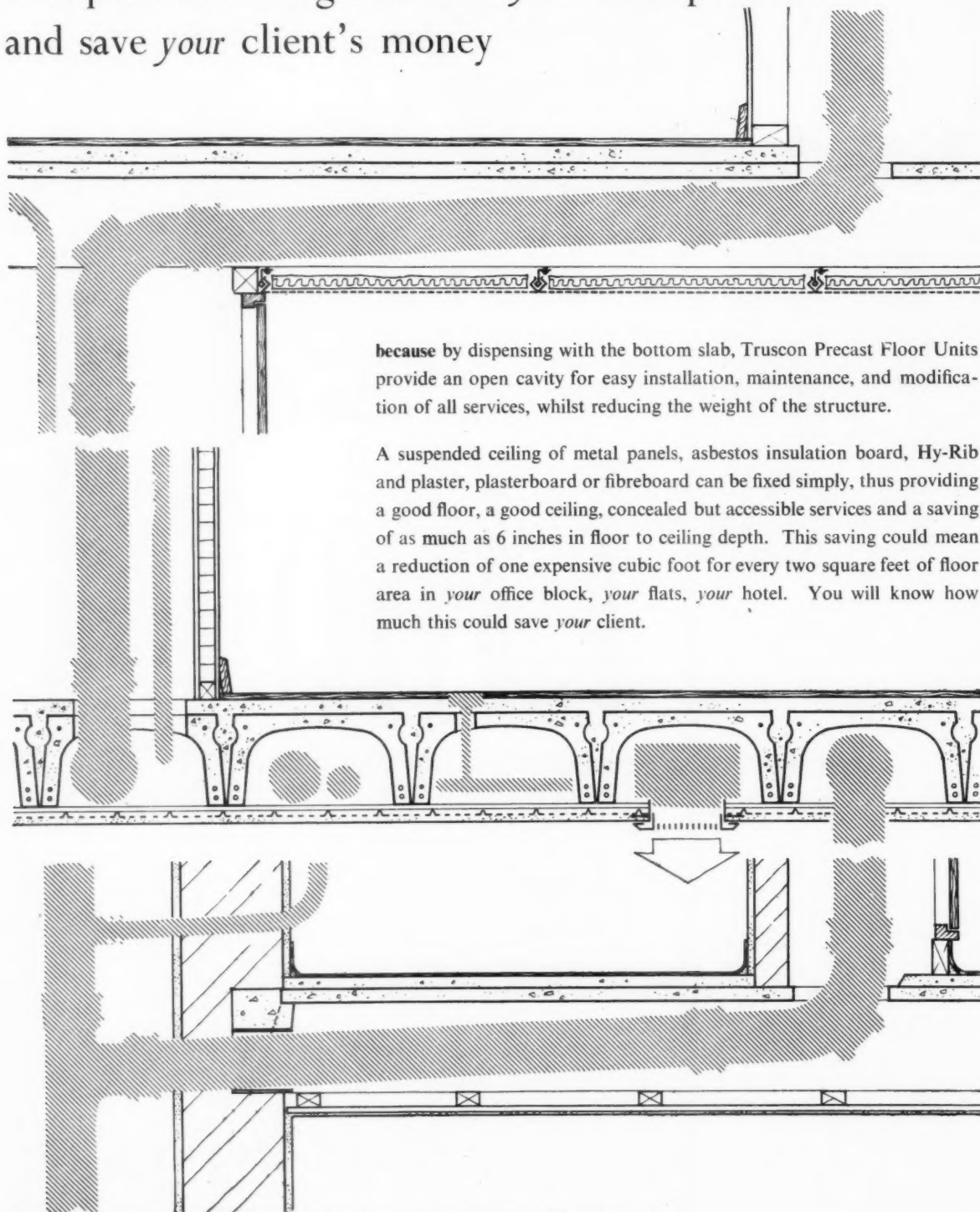
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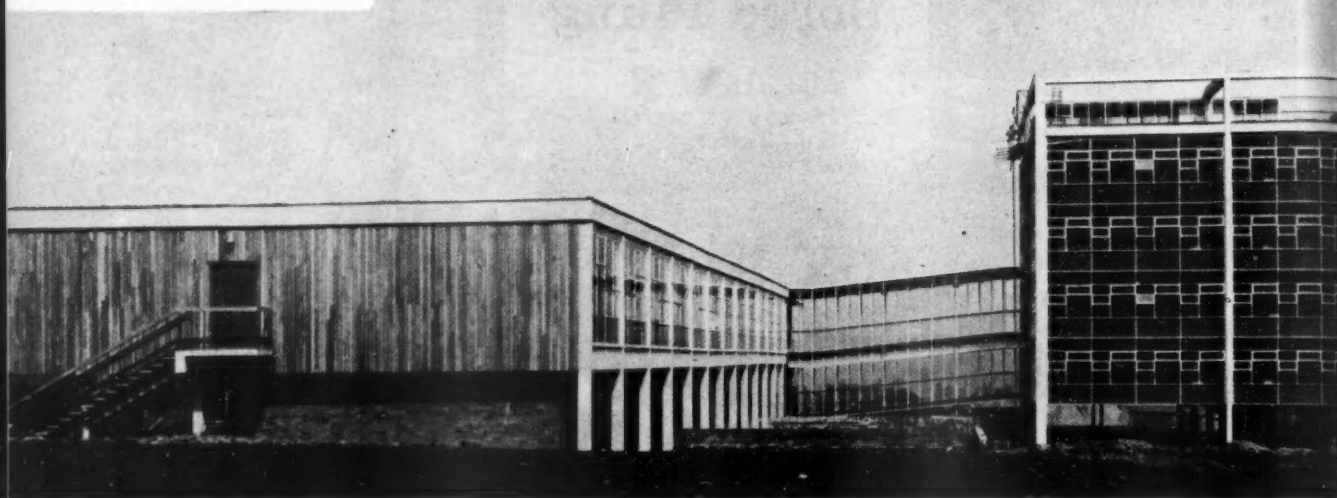
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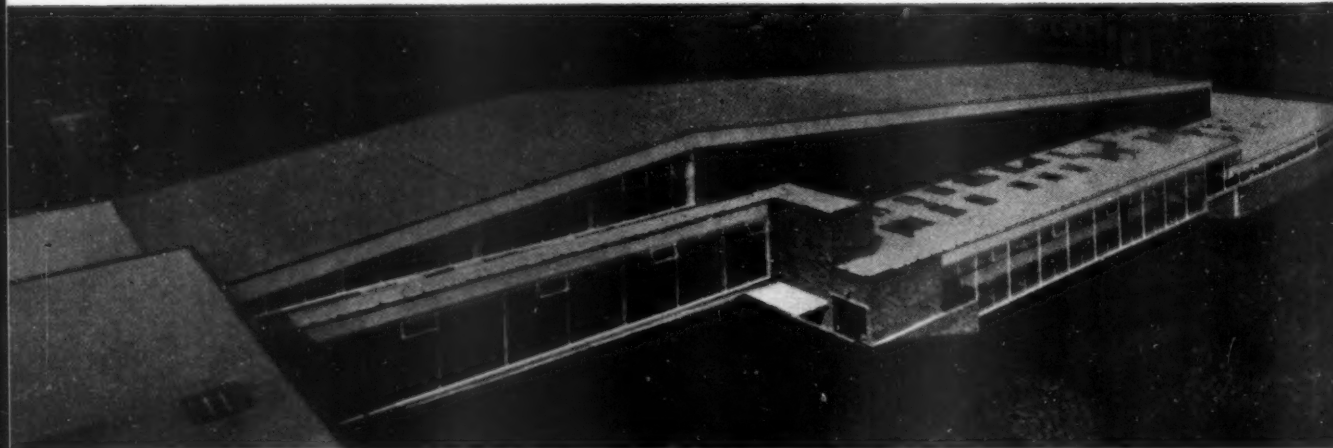
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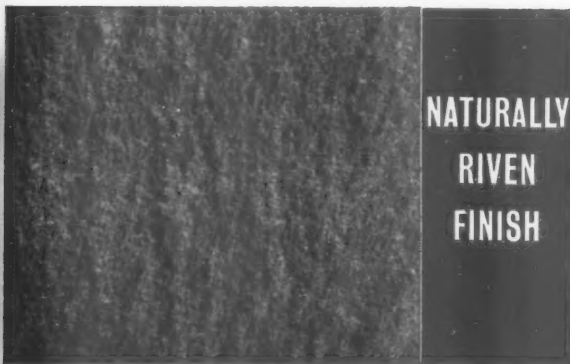
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NOT QUITE ARCHITECTURE

Push or Pull at the Motor Show

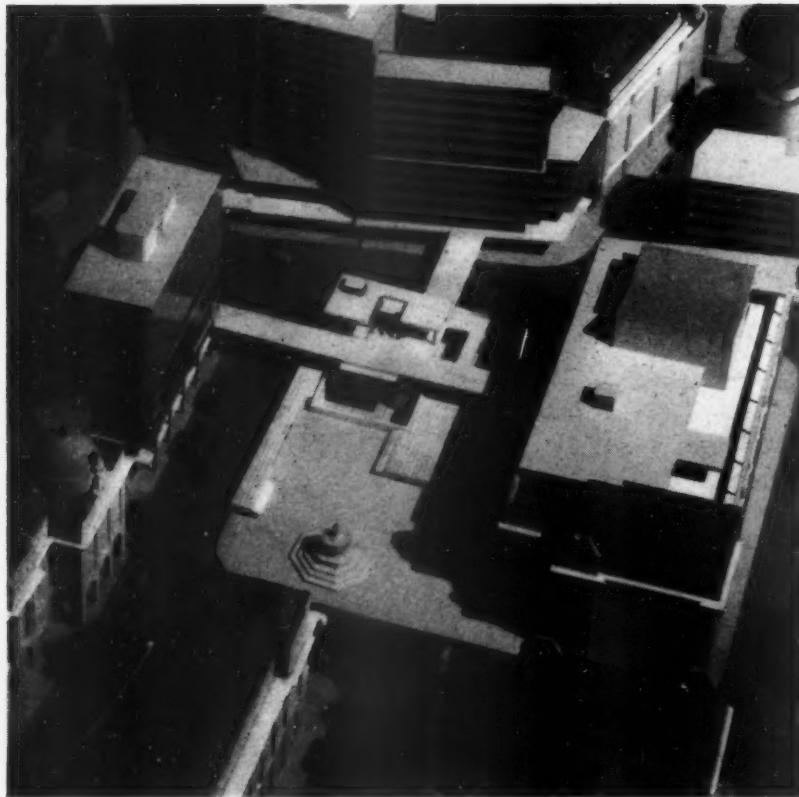
Ten years ago, car design was about as conventional as it was in 1930, with only Citroën unrepentantly sticking to front wheel drive. British cars had at least avoided the American flying meringue bodywork, but were otherwise almost standard with the engine in front, beam rear axle, integral body/chassis and independent front suspension to leave space for a forward mounted engine. "Knee-action" Buick used to call it in the '30s—remember?

*

Now, almost for the first time for years, the Motor Show is worth a visit, not only because it's the only place you can see a chassis or sectioned cars, but because there are lots of new ideas which 30 years ago would have been lunatic fringe. Air cooling—more engines in front pulling and at the back pushing, so much so that when you lift a lid, front or back, you don't know whether you'll find an engine or a spare wheel. Volkswagen, then Renault and Fiat pushing from the back, and very successfully, and now Mini-BMC in front, pulling—and very nice too, but not as accessible as you might think at first glance, though better than most of the conventional jobs. Possibly one is being unreasonable about accessibility, for if the *Economist* is right that something over 70 per cent of all new cars are bought by firms, then presumably they are serviced as a matter of routine by garages. If the *Sunday Express* is right and you really do have to remove front wheels and several square feet of panelling to check the V.8 Rolls's plugs it doesn't matter very much, but there are still suckers who buy cars with their own money and who spend Saturdays (when garages are too hoity toity to sell anything but petrol) grovelling for three hours over a job which oughtn't to take more than 20 minutes.

*

Even so there are still a few firms who make



Neon Architecture

The cantilevered structure at the top of the building for the Monico site, Piccadilly, shown below, by Cotton, Ballard and Blow, is a crane which rotates on its axis and is to be used for cleaning and for erecting within twenty-four hours a new advertising display on the blank areas of the facades. This is the only alteration to the design since it was first published last March and was criticized by ASTRAGAL. It should be compared with the LCC's sketch proposal for the area shown left. Here is a heavily proportioned but simply detailed block, 130 ft. high, with the beginnings of a high-level pedestrian way running from it to the centre of the circus and across Shaftesbury Avenue. We criticized this design for being half-hearted about pedestrian circulation, but the new design which has now been accepted by both the LCC and the MOHLG—despite widespread and strong criticism—contains no proper provision at all for segregating vehicles and pedestrians in this congested area of London. Here is a most discouraging start to the redevelopment of Piccadilly Circus: a clumsy office block on a crude podium of shops, using neon advertisements in the most obvious manner. The LCC would have had public support if it had rejected this design.



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things reasonably get-at-able, particularly among the tiddlers, where there isn't much to get at anyway. Quite a number, like some of the Goggo and NSU models, are quite handsome in spite of their small scale, and there's a small Dutch job with an automatic gearbox and belt drive which was exactly the same in a Rudge-Multi bike a cousin of mine had in 1919 or '20.

The American "compacts" aren't all that—about the same size as a Vauxhall Cresta, which I suppose is small by US standards. The Chevrolet Corvair has an air-cooled flat six at the back (the first American, I suppose, since the Franklin died in the 'twenties) and in spite of a rather tortured fan belt, which has to turn 90 degrees between each of four pulleys, it's an interesting effort and more worth looking at than the other two, whose publicity is trying to laugh it off by saying *their* engine is in front "where it ought to be." All in all it's an interesting show with quite a number of firms having fairly sensible second and third thoughts. Gear levers are tending to go back to the floor—were all those levers and cables ever worth while for the occasional third on the front seat?—and the new Triumph, which seems to be having the success it deserves, actually has a *chassis* with a body on top of it, not just sides welded to a deep pressed steel tray, on the grounds that repairs are simpler. The road and accident research boys say that the integral jobs lack lateral strength, and tend to snap carrot fashion if they're broadsided into a lamp-post. In these circumstances almost any car is presumably a write-off, but in the minor collisions which the insurance companies say are so costly, a separate chassis and body seems no bad thing.

Body shapes are much the same, though the 2 cv. Citroën, ugly enough to inspire a certain amount of affection, now also has a handsome glass fibre coupé body, much on the lines of the DS19. But there still remains the problem of luggage. Boots seem to get bigger, but at the same time fuller of spare wheels and petrol tanks. Salesmen argue that nearly everyone now has "soft" luggage, but from the quantity of towering roof racks one sees any summer this just isn't true. Only schoolchildren, I suppose, now have full-size trunks, but the small sports car has about enough room for an emaciated whippet, feet forwards round the spare.

Prices at the top end, plus purchase tax, put all the really exciting cars in the firm/expenditure account class. It would give the underprivileged quite a lot of satisfaction if all the Bentleys and Sapphires had to carry the name and address of the firm under the same regulations that used to apply to other commercial vehicles.

BRIAN GRANT

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

The Editors

EYES UP, FEET ON THE GROUND

IN publishing this week the Roehampton estate, which, with the nearby Alton estate is virtually the only British housing development of international repute, the JOURNAL is not the last in the field, but in essential respects the first. Thanks to the wisdom of the LCC in agreeing, for the first time, to publish detailed cost analyses of its tall buildings, we are able to offer our readers not only photographs, a specification and an appraisal but an answer to the vital question every designer has to ask: how much did each element cost? To obtain costs takes time, but in our view it is well worth doing. Unless the architect's feet are firmly planted on the ground he is in too shaky a position to lift his eyes to the horizon.

TURNING ON THE TAP

The idea that public works can be turned on and off with a tap, whenever the economy seems to be veering into a slump or a boom, has been applied by politicians and economists ever since the war. What they overlook is that the building industry depends upon a continuous building programme if it is to invest capital in new techniques, methods and materials, so as to reduce costs through increased productivity. We are entirely in agreement with Thomas V. Prosser, the president of the NFBTE, who criticized last week the Minister of Housing and Local Government's acceptance of the tap-turning theory, and advocated instead a declared policy of capital investment in building, particularly housing, as an essential prerequisite for greater productivity.

Mr. Prosser, who was addressing the National Housing and Town Planning Council, went on to advocate the building of 410,000 houses a year for 20 years to solve the housing problem, and estimated that with an assured programme the building industry could cut housing costs by 10 per cent in 10 years. We do not quarrel with Mr. Prosser's estimate of housing need, but we must sound a word of caution. Pressure from builders and developers for the zoning of more land in or near the green belts for housing is growing, and must so far as possible be resisted. The emphasis should be put primarily on urban renewal, and we believe that means must be found

to enable both local authorities and private enterprise to participate in this work.

There is, moreover, no guarantee that an assured building programme will reduce costs, unless the conditions are right. The tap is now being turned full on for hospitals and technical colleges, and there seems to be plenty of money for offices and industrial work. But if the tap is also turned full on for housing and urban renewal, and left full on for everything else, are we not more likely to get the familiar results of delay and higher prices from an overloaded industry? A balanced building programme is essential, and we would like to know how the NFBTE thinks it can be achieved. How, in other words, are we to strike the right balance between investment by public authorities, which are controlled, and private developers who are not?

Mr. Prosser's estimate of a 10 per cent reduction in the cost of housing over 10 years seems to us excessively modest. Increases of productivity of 2 to 3 per cent per annum are normal in other industries; why not in building? The real cost of schools was roughly halved in less than 10 years. A sustained development programme, led by the MOHLG in co-operation with the local authorities in the context of a long-term, balanced building programme, could surely achieve far greater economies than Mr. Prosser anticipates.



A GREAT ACHIEVEMENT

ASTRAGAL, having taken not a few knocks at the bridges on the London-Birmingham motor way, celebrates its opening this week by congratulating Sir Owen Williams and the contractors,

John Laing & Co., on their great achievement in building 55 miles of roadway, 17 miles of other roadworks and 134 bridges in 19 months. The cynics who point out that they were favoured with the best summer in living memory may have forgotten that 1958 was one of the worst. Laings have produced a most handsomely illustrated and well written booklet by L.T.C. Rolt which brilliantly conveys the excitement and sense of achievement in civil engineering on this scale.

*

The booklet also contains Sir Owen Williams' explanation of his decision to use six standard (he prefers the word "universal") bridge designs in reinforced concrete instead of pre- or post-stressed concrete. His explanation really boils down to the advantages of standardization, simplicity and ease of construction, and a distrust of pre-stressed concrete. On the one hand, it is said that "only a bold man would guarantee an indefinite life for some of the stressed concrete structures erected in recent years"; on the other that "a glance at any of the bridges leaves little doubt on the score of permanence."

*

Appearance was evidently left to take

care of itself, for "the massive simplicity" of the bridges is said to demonstrate the principle that "what has been designed right will look right." This simple hypothesis is disproved however by his own work: his simple mass concrete bridges, as Alan Harris pointed out are very impressive, the reinforced concrete bridges are of "surpassing ugliness."

A THORN AMONGST THE POSES

The week that produced the confirmation that Piccadilly Circus is to become one of the architectural "hells" that one of our planners (Abercrombie?) once despairingly advocated, also produced the first commercial showroom in London of international standard. At the foot of Basil Spence's elegant Thorn House offices in St. Martin's Lane is a two-storey block (not quite as well articulated in its connection with the tower block as one would wish) which contains the showrooms of the Thorn associated companies. Designed by John and Sylvia Reid, it is a highly mechanized and most elegantly detailed space subtly demarcated for the different companies. Only the kitchen equipment completely fails to come up to the standard of the showroom. Equally satisfactory is the spacious forecourt and the really excitingly lit entrance hall in the office block—a *tour de force* by Spence and his co-designers. This building will be cost-analysed in a future issue of the AJ.

THE NEW VIC

Although the Victorian Society is now established (as a branch of the SPAB, which is how the Georgian Group began) it needs more members and money if it is to do its job properly as guardian of the best Victorian buildings. If you join now you will be able to bring your friends to a glamorous-sounding reception the society is holding at Drapers' Hall in the City (By H. Williams, 1870; entrance with bearded caryatids by Sir T. G. Jackson, 1902). Your 25s. ticket (from the secretary, 55, Great Ormond Street, W.1) will buy you a champagne supper and a view of a parade of Victorian clothes, mostly borrowed from museums. Membership will also give you the chance of going on conducted tours of the city's Victorian buildings,

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arranged by the very knowledgeable Peter Clarke.

BROWN STUDY

When the new AA president gives his address the guests, who invariably include more of his contemporaries than students, have an agreeably cosy evening. Last week president Cadbury Brown had serious things to say in spite of this jolly party atmosphere. His address—"Ideas of Disorder"—was a thoughtful and penetrating study of modern architectural values.

KEEPING OUT OF KEEPING

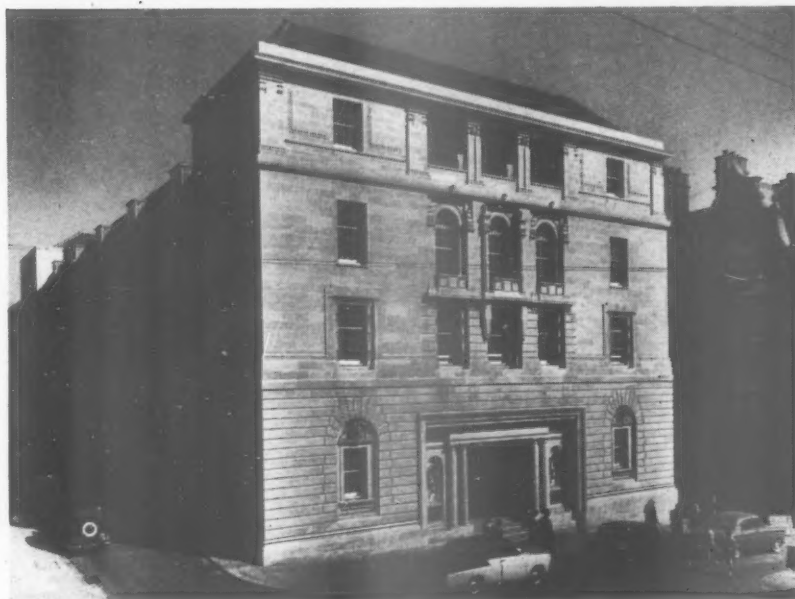
Architects who decide to go in for the Grangemouth competition for a shopping centre and adjoining housing are in for a few shocks. They will be appalled by the pictures and plans showing the post-war housing estate the new centre is to be designed for. Still, it is excellent that the Burgh, which has provided such a dreary, featureless, inhuman environment, should now get around to doing the right thing by having a competition. When would-be entrants have got over the shock of seeing what they must keep out of keeping with, they will be startled by the conditions laid down by assessor Grenfell Baines, who asks them to supply a brief cost breakdown, giving the cost per square foot for the shell, finishes and fittings, and services, separately for the shops, dwellings and garages.

*

Mr. Baines has tied himself down to a tight time-table by undertaking to make his award within 16 days. He has worked hard to bring his own experiences as a competitor into the conditions and I hope the innovations, if successful, will be used by future assessors. Too many good ideas are lost to the profession because there is—as they say—no proper feedback of experience. Is anyone listening in Portland Place?

WAKE UP AT THE BACK THERE!

I hope the BBC or one of the commercial networks will take note of a comment by Peter Black in the *Daily Mail's* "Teleview" column, which arose from Malcolm MacEwen's appearance on *Tonight's* programme (where he dubbed Jack Cotton's Piccadilly hoarding "Chewing Gum House")



Will the RIBA's proposed information officer extol the virtue of employing architects, or limit his salesmanship to merely the best architects? And if the latter, whose taste shall he accept? Would he congratulate Barclay's Bank for commissioning J. L. Denman to design their branch in Brighton, lushly marble-lined and Portland faced in front, in the banking world's phoney tradition, and comparatively skimmed in the rear elevations. Or would he preserve discreet silence, knowing the job had been competently handled. But then, confronted by an architect's proposed front elevation for Goole Town Hall, would his conscience allow him even the uncommitted sanctity of silence?



—a phrase that has evidently got under Mr. Cotton's skin). Peter Black said: "Architecture will inevitably loom larger and larger in the lives of everybody as the country becomes short of space. The time is right for a series about its problems, promises and opportunities."

*

If you're a sixth former you're already watching an ARD series. I managed to look in last week when Dr. Reyner Banham was leading the all-star cast of Sir William Holford, Sir Hugh Casson and Peter Smithson. I know the brain deteriorates rapidly after reaching a peak soon after sixth-form level, but I feel mine must be pegging out a bit too quickly. Or am I right in thinking these brains of architecture tried to say too much in a

short time? I thought Banham conducted the whole thing very smoothly.

THEY KNOW WHAT THEY LIKE

The good old theme of the integration of architecture and the arts is still with us it seems, and *Art News and Review* recently gave the front part of an issue to problems of mural painting. But do architects really care for painting, or are artists just an unruly and unreliable class of sub-contractors to them? Well, the exhibition of members' work at the AA shows that quite a lot of them do paint, although what they paint seems to be only an extension of their exercises in rendered perspective. Very few of the pictures look as if they were painted for the sheer hell of it, or for the pleasure of putting brush to canvas. On the other hand, quite a lot of the exhibits are, to

use a Cambridgism, "Jolly Modern" and fashionably gloomy.

Architects also buy paintings—some types because they like the look of them, sometimes as investments to pay for the children's education. Just what they buy you can see in the new exhibition at the ICA, *Architects' Choice*. The organizer, Theo Crosby of *Architectural Design*, asked some twenty architects to select one large or a few small works of art to represent their collections. The result is interesting, since the most-chosen artists are Ben Nicholson and Eduardo Paolozzi, with three each, and the also-rans, with two each, are Reg Butler, Henry Moore, F. E. McWilliam, Graham Sutherland, William Scott, John Piper, and Victor Pasmore. Since none of these two's come from the same collections, there seems to be a fair degree of agreement among architects as to who is an OK artist. Two architects chose to be represented by works of primitive art, but I won't tell you who they are; you can guess—or go and find out (and it wasn't the Brutalists either!).

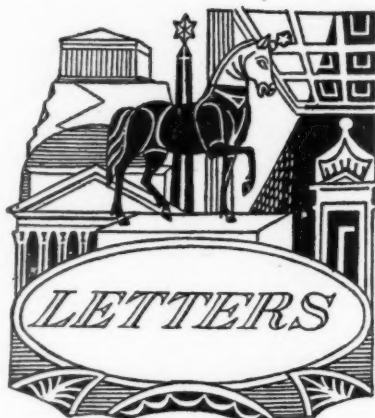
LADIES ONLY

Some years' ago ASTRAGAL accompanied a member of the JOURNAL's staff on a quick survey of public lavatories. The tour produced some fascinating, if unprintable, accounts of human frailty, and confirmed that British standards in this matter were very poor. The woman's page of *The Times*, last week printed a detailed criticism of the women's cloakroom accommodation at the London railway termini, thus complementing the work of the AJ. As one might expect, the Eastern region—conspicuous for employing good architects and giving them responsibility, came off best. Most of the remainder were condemned in terms of a frankness and strength which won ASTRAGAL's heart. From now on the *Times* women's page will have at least one admiring male reader.

PLANNED OPPOSITION

Finally a story that was told by that very serious-looking man, Henry Brooke, at the TCPA conference. A member of a planning committee asked his chairman "how long was the last planning officer with us?" "He never was with us," the chairman replied, "he was always against us."

ASTRAGAL



H. Myles Wright, F.R.I.B.A.,
A.M.T.P.I.

Professor of Civic Design, Liverpool University.

Alan Daventry

Edward D. Mills, F.R.I.B.A.

H. Reginald Hyne, F.R.I.B.A.

Top Industry: Motors

SIR: Your special issue on Motropolis appeared, no doubt intentionally, just before a Motor Show which made plain that motor vehicles are now our Top Industry. So much is coming to depend upon its continued prosperity that persons in authority do not seem ready to admit the consequential problems crowding upon us—though they have been obvious enough for 4 or 5 years. For example, you predict that there will probably be more than 1,300,000 new motor vehicle registrations this year (including cycles and scooters). At the spacing recommended in the Mersey Tunnel this would be equivalent to an extra 2½ lines of traffic on all our trunk roads—or more probably one nose to tail queue on the whole 8,000 miles plus.

Town planners are likely to agree with your eight conclusions. Three seem of special importance. The first is a regional plan for great cities and their approaches which would relate homes, workplaces, rail transport, major roads and parking points. The second is a vast extension of parking meters, especially in London. The 60,000 or 70,000 people who travel to work there by car may surely be asked to pay a stiff subscription if they wish to continue to inconvenience a million fellow travellers. Third is the completion, as fast as we can, of a proper motorway system.

H. MYLES WRIGHT

Professor of Civic Design, University of Liverpool.

Span no worse than Spec-Builders?

SIR: None of my fellow Span residents has taken up Mr. Bilsby's rejoinder (AJ October 22) to ASTRAGAL's comments on finish and detail in Span developments; and this is the more surprising since each of those to whom I have shown the correspondence agrees that ASTRAGAL's strictures

are in no way unkind nor unjustified. In particular it is distressing to see a director of Span take refuge in the plea that his organization is no worse (and by implication no better) than other spec-builders. If ASTRAGAL is disappointed to find them accepting so easily "the standards of the building industry in 1959" I, at least, am appalled. However, it goes a long way towards explaining why doors warp and do not latch, why fitted cupboards sag so that sliding doors slip out of runners, why fireplaces and radiators come loose, why water pipes burst and why outside paint peels to the bare wood after one hot summer—all this within fifteen months of completion. One would think that an organization which claims to be forward-looking would aim to mitigate the industry's lack of craft skills by superior site control; and to circumvent the industry's addiction to cheap and nasty materials by better design and planning in detail and a tighter specification.

Take the use of timber. Timber can and should be a beautiful and sophisticated material. But to be used properly it needs careful selection, competent joinery and a good finish. This you will certainly not get from a builder's "chippie" and rarely from a prefabricator unless scrupulous quality-control is exercised. In houses like Span's, where wood is extensively used both structurally and decoratively, failure to institute this control and to understand the nature of wood results in the "ill-fitting plywood panels" which ASTRAGAL noticed and which I have abandoned in despair to a wallpaper covering.

Rather than use natural timber badly, it would be better to avoid it altogether. Yet when one sees what can be done with it in Germany and Scandinavia by people who understand it, one is inclined to weep for Span's happy parochialism.

ALAN DAVENTRY

London

Church Design

SIR: You recently published a report issued by the World Council of Churches Conference held at Bossey in May, under the auspices of the World Council of Churches, and since that time a number of people have been in touch with me.

It appears that the statement by the Conference published by you has aroused considerable interest, and a number of architects feel that some useful purpose could be served if a follow-up meeting or one-day conference was held in London early in the new year. In order that such a possibility might be explored, I should be most interested to hear from any of your readers concerned with the problem of Church design and who feels that the Bossey statement meets a present-day need.

EDWARD D. MILLS

London

Staines Bridge

SIR: Mr. Churchill at Churchill College, Cambridge, last week said "We must depend for our survival on our brains, on

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skilled minds that are at least proportionately equal to those in the United States and in Russia." Are we as a country to demonstrate these sentiments by building a bridge 20 years out of date?

As an architect I know that I voice the feelings of my contemporary fellows when I say that I am shocked and utterly disillusioned to discover that our Government could go through with a scheme which must in this atomic age be the laughing stock of the whole country and of our visitors from all over the world who will pass over and beneath this bridge.

Much as we all respect and admire the work of the late Sir Edwin Lutyens we must recognize the fact that his 20-year-old design is not in harmony with the spirit or the economy of our time. It is to be hoped that even at this eleventh hour Mr. Marples—himself, I believe, an engineer—will bring reason and practical common sense to bear upon this vital and urgent problem.

The Royal Fine Art Commission is said to have approved the design of this bridge. Can it be categorically stated that this approval was given by the present Royal Fine Art Commission, or was it approved by one which sat 20 years ago? This question cannot remain unanswered.

H. REGINALD HYNE

Bucks.

DIARY

Some Aspects of the Design of Road Improvements in an Urban Area. Talk by S. E. French, organized by the Institute of Highway Engineers. At the ISE, 11, Upper Belgrave Street, S.W.1, at 5.30 p.m.

NOVEMBER 6

RICS President's Address. By J. L. Postlethwaite. At 12, Great George Street, London, S.W.1. 5.45 p.m.

NOVEMBER 9

Education for Industry and Commerce. Talk by A. A. Part; one of a series of lectures on Modern Technological and Commercial Education. At the RSA, 6, John Adam Street, Adelphi, London, W.C.2. 6 p.m.

NOVEMBER 9

Victorian Town Planning. Lecture by Dr. N. Pevsner at the Courtauld Institute of Art, 20, Portman Square, W.1. 5.30 p.m.

NOVEMBER 10

Modern Architecture and the Church. A Liturgical Brief. Illustrated lecture by H. Green, organized by the University of London, Department of Extra-Mural Studies and the New Churches Research Group. At the Lecture Theatre, Institute of Archaeology, 31/34, Gordon Square, W.C.1. 6.30 p.m.

NOVEMBER 11

The Artist Relates. Exhibition of professional work by the staff of the LCC Central School of Arts and Crafts. At the Ceylon Tea Centre, 22, Regent Street, S.W.1. Monday to Friday 10 a.m.—6.30 p.m. Saturday 10 a.m.—1 p.m. UNTIL NOVEMBER 14

Building Exhibition. At Olympia.

NOVEMBER 18—DECEMBER 2



COMPETITION

Shopping Centre and Housing at Grangemouth

George Grenfell Baines is the assessor in a competition for the design of a shopping centre and adjacent housing promoted by the Burgh of Grangemouth. The premiums to be awarded to successful competitors are £1,500, £750 and £500, though the second and third premiums may be combined and divided into a larger number of equal prizes at the assessor's discretion. The closing date for the receipt of designs is February 1, 1960, and the last date for questions is November 12, 1959. The assessor's award will be communicated to competitors on February 17, and the whole of the designs will be exhibited in Grangemouth Town Hall from February 26 to March 3.

The assessor, in a note to competitors, says that the key points to note are: (a) that this is a *district* shopping and communal activity centre in a *modest-sized* town (b) that the sub-soil cannot support heavy loads and (c) that the promoters are prepared to receive new and sound ideas on the problems of people and vehicles living together. "Traffic and pedestrian circulations, and convenient and seemly parking and garaging of private and commercial vehicles (belonging to residents and visitors) must receive your close attention" he says. A brief "cost analysis" must be supplied.

ILA

Crisis in Education

The difficulties of training landscape architects formed the main theme of H. F. Clark's Presidential Address to the Institute of Landscape Architects last week. The situation, he said, was "very serious indeed," because the only full-time University undergraduate course at Reading was to be discontinued in 1962. After 1962 the educational facilities would be a post-graduate course at Durham University, a two-year certificate course at University College, London, and evening classes at Leeds College of Art. To support the very serious efforts that must be made

to get new courses started a new survey of the profession is being prepared, to enable the ILA to consider the case for or against landscape architecture as a profession in its own right, or as a successive training to town planning or architecture, or whether there is a case for both sorts of training.

In approaching the Universities, Mr. Clark said, the essential decision the ILA had to make was whether landscape architecture was a science or an art, a technology or one of the humanities. In his view, despite the temptation to try and share in the largesse being showered on science, a course might be built upon the foundation of the humanities that would approach the subject as a discipline in its own right. Their weakness lay in the quality of the entrants to their courses. The reason for this was the low prestige value of the profession in the public estimation. Mr. Clark said it was tragic that the National Parks Commission did not recognize their usefulness. Landscape architecture had not the glamour of industrial design or architecture, and the rewards were too limited. The ILA's Public Relations Committee is attempting to arrange television and sound broadcasting to include features on landscape.

A serious situation is going to arise in the next three or five years when the landscape architects employed by the New Towns—which have given landscape architects their greatest opportunities—will become redundant. Mr. Clark suggested that the obvious outlet for these well qualified people is for local authorities to appoint chief officers to control all their open spaces, for which responsibility is now divided among various departments.

CDA

Heating Symposium

On October 29, the Copper Development Association held a heating symposium at the Dorchester Hotel. Dr. Maurice Cooke, Chairman of the Metals Division of ICI, was in the chair and there were four main speakers. The first of these, K. Allerton of the Architect's Department, Nottingham, spoke, very sensibly, on "Heating Problems from the Architect's Point of View." Concerned, in the main, with the poor relationship which exists between the professions, he called for some measure of co-education for architects and heating engineers. He insisted that all consultants should be nominated at the time of briefing and that they should be present at all stages of the design and the construction process. He criticized the present practice in the Heating Engineers' profession whereby the principals of firms will not delegate responsibility, even for small jobs, to junior members of the firm; with the result that all engineers, when they reach the top of their profession, have insufficient experience in designing with other members of the building team.

He was followed by Donald Rudd, a heating engineer, who spoke on "Panel Heating." After pointing out the importance of designing a panel heating installation to cause the least possible interruption to the building

process, he made two suggestions. The first was that designers of such systems should regard them in much the same way as those who design electric underfloor systems and size the panels to provide for no more than the structural losses, leaving it to some quick response system such as warm air to do the "topping up." His second suggestion was that the suppliers of hot water heating might well follow the example of the electrical industry in supplying "off-peak" heat. Most industrial steam heating plant, he calculated, suffers from the same lack of balance in its use as does electrical generating plant, having a relatively short peak period of use during the day followed by a longer period at night when it was running uneconomically. He suggested that if factory heating plants were linked to nearby housing estates (i.e., on district heating schemes) the fuel saving would more than offset the capital expenditure in installation.

The third speaker, E. M. Ackery of BEDA spoke on "Electric Floor Warming" and discussed the criticisms which had been voiced of this heating method. His main point was that the practical results of electrical underfloor heating were in the main considerably better than heating theory led people to expect. As an example of this, he quoted the case of buildings with light claddings. Everyone had predicted that these would lose their heat quickly during the night, but experience has shown (and subsequent testing has proved) that the thermal capacity of the internal structure is a far more significant factor in retaining heat than was expected and that buildings with well insulated, low thermal capacity skins give a good performance with thermal storage.

The last speaker, Dr. E. Carr, the technical director of CDA, gave a fairly full technical description of the method of installing small bore central heating. This, though lucid, added little to the two authoritative articles on this subject published in the JOURNAL on October 17 and 24, 1957. Two new points of details emerged, however: the need to flush every system at least three times before fixing the pump, in order to prevent damage to the pump from swarf (i.e., bits of copper) or bits of jointing compound circulating in the system. The second was the useful practice of inserting "zone controls" in the system which switch the bedrooms off during the day and the living rooms off during the night. The summing up was made, with his customary aplomb, by William Allen of BRS. Commenting on Mr. Allerton's paper, Mr. Allen drew attention to the special problem of how to find to design an installation for the small job. He took Mr. Rudd up on his statement that panel systems were more expensive to install than radiator systems, adding that, in his experience, this was not so if the panel system was designed in the first place and put out to tender. Quoting his own experience (he has a house with underfloor panel heating) he testified to the saving in re-decoration which panel heating permits. The papers were followed by an entertaining, but not very illuminating, discussion in which a number of manufacturers delivered sweeping part truths about their own and other people's products.

The first seminar on cost control for teachers of architecture was held at the Royal West of England Academy, Bristol, from October 21 to 23. About 30 teachers were present and general agreement on the need to teach cost planning was expressed, with reservations about method.

RIBA COST CONTROL SEMINAR

Architectural Teachers at Bristol

A short time ago about 30 of the biggest companies in the country got together to exchange confidential information on various architects who had been employed by them, to recommend a good one. The result was that not one of the companies felt justified in recommending an architect as having given complete satisfaction. A group of smaller companies was invited to do the same, with the same result. This information was given by Professor J. V. Connolly to a group of teachers from architectural schools throughout the country at a Seminar on cost control held at Bristol from October 21 to 23. Professor Connolly, who is the director of the Sundridge Park Management Centre, read a paper on "The Architectural Profession in Relation to the National Economy and World Conditions." Apart from the most disturbing statement above, the paper went on to stress the importance of the building industry in the national economy and the need for architects to play their part in it better. In discussion after the paper, Professor Connolly, as a layman to architecture, but an expert in management, expressed amazement that such confusion and lack of co-ordination should exist in one of the nation's biggest industries. The constant bickering between architects, quantity surveyors and builders, he said, always surprised anyone used to more modern industries such as aircraft production and the like. The problem was not as simple as might be imagined, but that did not mean it was not there. Such amazement shown by an intelligent layman seems to the writer sufficient reason for the architectural profession to look at itself more closely.

Professor Connolly's paper was followed by one by V. H. Johnson, a Birmingham speculative builder who was trained as an architect. He claims to build dwellings to let fantastically cheaply in comparison to what they would fetch on the market (so fantastically that he begged us not to publish the figures). This he is able to do by very close co-operation of his team. He has, of course, the advantage of being his own designer, estimator and contractor, and seemed to have little use for quantity surveyors. Mr. Johnson was distressed by the lack of practical knowledge of building shown by newly qualified architects, and commended the Birmingham live architecture scheme in which students build houses themselves. His enthusiasm was not shared by some of those who took part in the discussion: they considered that such practical training was a waste of time, and that an architect did not have to be able to lay bricks in order to be competent to use them in design.

Further papers were read, notably on cost planning, by the War Office Principal Quan-

tity Surveyor, James Nisbet, who to all appearances convinced even Mr. Johnson that quantity surveyors could be of vital importance to architects and the industry as a whole, especially if they were prepared to adapt themselves to new techniques.

It seemed, at Bristol, that at long last the campaign by the advocates of cost planning might be making some ground. The truth is that the various conferences on cost control have been becoming a bit of a circus, mainly because they usually attract the wrong people (the already converted), and partly because as often as not the discussions get bogged down in detailed arguments on relatively trivial subjects. At least, at Bristol, the RIBA were getting to the people who in the end matter. Teachers command the future of the profession and it was good to realize that one's pessimistic fears of die-hard conservative opposition were groundless. These men were soon agreed that cost planning was a subject that ought to be taught in schools.

Their real worry was "how"? This is a pertinent question, but the objection that the introduction of cost planning into schools could not be done before the profession had given them a universally acceptable method is not valid. The schools themselves are the ideal place for the technique to be worked out in detail. So long as the schools realize that cost planning is an absolute necessity in the instruction of design there is hope that the future of architects will be secure. It seems as if this is now accepted. There are still some who try to resist a new idea by saying "this isn't new, we've been doing it for years." They have been challenged by an invitation from the RIBA to the schools to submit a report on what they are in fact doing, and a threat to chivvy them if they do not do so.

IN BRIEF

Two Appointments

J. P. Ellicott, A.R.I.B.A., Deputy Chief Technical Planner of the Ministry of Housing and Local Government, has been appointed Chief Technical Planner, in succession to E. G. S. Elliot. Mr. Elliot, who is retiring from this post on health grounds, will continue to serve the Department in a part-time capacity.

W. W. M. Rhys-Davies has been appointed Senior Architect (Housing) in the City Architect's Department, Birmingham. Mr. Rhys-Davies moves to Birmingham from the Cwmbran Development Corporation and has previously held an appointment with the Harlow New Town.

THE INDUSTRY

Brian Grant describes a concrete additive, small circuit breakers, windows for air-conditioned buildings and a water circulator.

Concrete additives

Freemans have recently announced a new concrete additive called Conflo, which is intended to give improved workability. It is not an air entraining agent, but is designed to bring about better wetting and dispersion of the various ingredients in the mix thus to allow less water to be used without decreasing workability. The main effects of Conflo are that a lower water/cement ratio can be used, giving increased strength, or the cement content of the mix can be reduced from 10 to 15 per cent. If neither increased strength nor cement savings are required then the mix can be more easily worked, and will be easier to pump, while there should also be less segregation of the mix. Conflo is added to the mix in the proportion of $\frac{1}{4}$ pint to 1 cwt. of cement, and is preferably mixed with the gauging water. Normal mixing times are used, and over-mixing has no adverse effects as with air entraining compounds. (Joseph Freeman Sons & Co. Ltd., Cementone Works, London, S.W.18.)

Circuit breakers

Small circuit breakers for use instead of cartridge or rewirable fuses are now available from a number of manufacturers, and a recent range in moulded cases seem very suitable for domestic and other work. The breakers themselves are quite small, and can be supplied with ratings from 5 amps. to 60 amps. They are arranged for simple mounting in Stab-lok distribution boards and are fixed by a hook on and press in movement. The boards are arranged for flush mounting and are pleasantly simple in appearance, while the overall dimensions have been kept small, an 8-way board, for instance, measuring only about 12 in. by 10 in. with a depth of 4 in. Prices seem very reasonable, the 10-way size costing £12. and the breakers can be any of the standard ratings of 5, 15, 30 or 60 amps. The

makers also produce 3-phase breakers and control gear for the larger types of factory motor and generator. (ECC (Moulded Breakers) Ltd., Fordhouse Road Works, Wolverhampton.)

Windows for air conditioning

The sectional drawing on the right shows Williams & Williams's new Spinner window which has been designed for the permanent sealing of air conditioned buildings and also to prevent the escape of conditioned air when the windows are being cleaned. The moving frame has a double strip of neoprene for weather sealing and provision is made for the window to be double glazed to reduce heat loss and noise. Cleaning can be carried out from inside the building. When the inner face of glass has been cleaned the window is unlocked with a key, reversed and re-locked in an inside out position. The other side of the glass is then cleaned, and as both sides of the moving frame are identical, the window remains in the same position until it is next due for cleaning. The window frame spins round a central vertical pivot, and the fixed outer frame has a moving bar mechanism operated by a key. When the key is turned a bar mechanism thrusts four aluminium channels on all sides of the frame against the neoprene seal of the window, all four channels moving simultaneously with one turn of the key. (Williams & Williams Ltd., Reliance Works, Chester.)

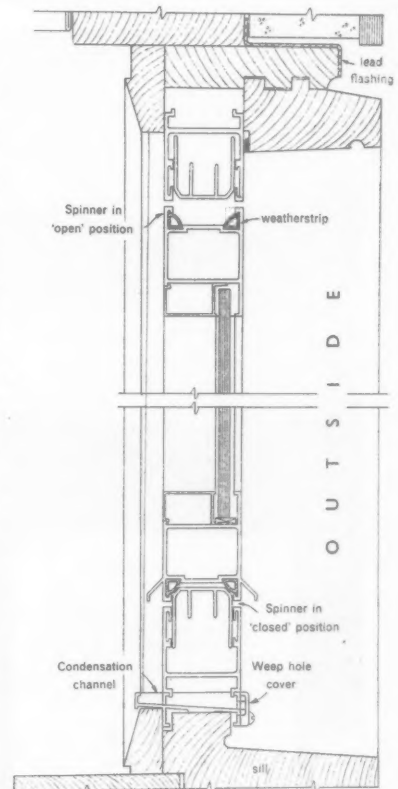


The Santon OX water circulator.

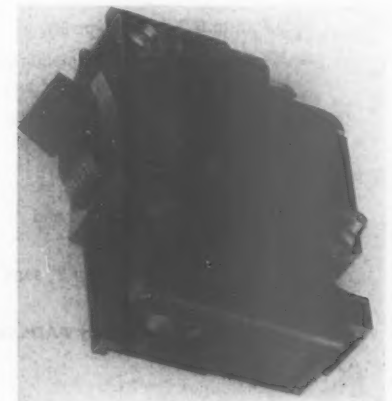
Central heating with electricity

Those who find even an oil-fired boiler too much effort may be interested in the Santon OX water circulator, which is made in sizes from 3 to 12 kilowatts and can be used either as the sole means of supplying heat and hot water or in conjunction with an ordinary boiler. Installation is simple enough, and the circulator is entirely automatic. Apart from domestic use, this might well be a useful fitting in church halls or other intermittently used buildings, as it

would prove an excellent safety measure against frost damage even if it was too small to take the whole heating load. (Santon Ltd., Newport, Mon.)



Above, section through the Spinner window. Below, the ECC circuit breaker.



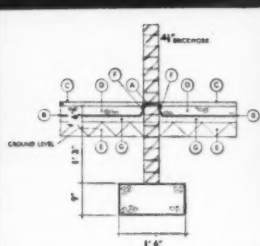
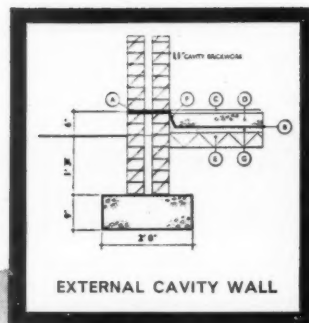
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17 CONSTRUCTION: GENERAL

foundations for tall buildings

Every year we see more "tall" buildings and every year our standard of what we mean by a "tall building" becomes higher. These buildings pose a problem below ground which is generally unfamiliar to architects, the solution of which greatly affects the total cost of the structure. In this article Geoffrey Williams, a structural engineer with an unusually wide experience of foundations in tall buildings, describes this problem in general terms and, by taking the example of a typical tall block with podium beneath, explains how the architect can so order his design to give an economical foundation.

It seems certain that within the next few years a number of buildings exceeding 250 ft. high will be built in various large towns in Great Britain. At least three such buildings are now under construction in London, and a number of schemes involving others are in preparation. It has frequently been said that in London the subsoil makes it impossible to provide foundations for "skyscrapers," but this is not so. Particularly careful consideration must always be given to the foundations for high buildings because of the great loads involved, but there is no fundamental reason why buildings as high as any in the world should not be built in London, or in the other principal cities of Great Britain, although the cost of the foundations will obviously be greater if the subsoil consists of soft clays rather than of rock.

The approach to the design of the foundations of a high building is not different in essentials from that of

any other building. The designer must assure himself that the foundation is safe both against shear failure of the underlying strata, and also against excessive settlement due to the underlying strata being over-compressed. The ease and speed of construction must also be considered, as well as any possible effects that the new building may have on neighbouring buildings and underground services. It must always be the designer's object to achieve the most economical scheme meeting all these requirements.

Causes of foundation failure

Foundations usually fail either because of excessive settlement arising from compression of the underlying soil, or from complete shear failure of the underlying strata as shown in Fig. 1. In this second case the load on the foundation creates shear stresses in the soil which exceed its ultimate shear strength, so that the soil in a wedge-shaped zone on either side of the foundation (marked 2 in the figure) moves outwards and upwards permitting the foundation to go down. This type of failure happens more frequently in the case of isolated pad and strip foundations than in the case of large raft foundations. It normally occurs with catastrophic suddenness when the maximum carrying capacity of the foundation is first exceeded—usually before the building is completed, and there is a large, rapid settlement of the foundation, frequently accompanied by heaving-up of the surrounding ground. There are well established analytical methods available for calculating the factor of safety against shear failure of foundations on any type of ground with sufficient accuracy for all practical purposes, provided that the nature and strength of the subsoil is reliably known.

Excessive settlement, on the other hand, occurs much more frequently. Indeed, all high buildings must settle to a very slight extent, and it is a matter of opinion when the settlement becomes excessive. Settlement occurs because the weight of the building compresses the soil beneath, and it is much greater on clay soils than on sands or gravels, because clays are more compressible. Usually a clay soil is saturated with water which must be squeezed out as the soil compresses, and as clay soils have a very low permeability, this

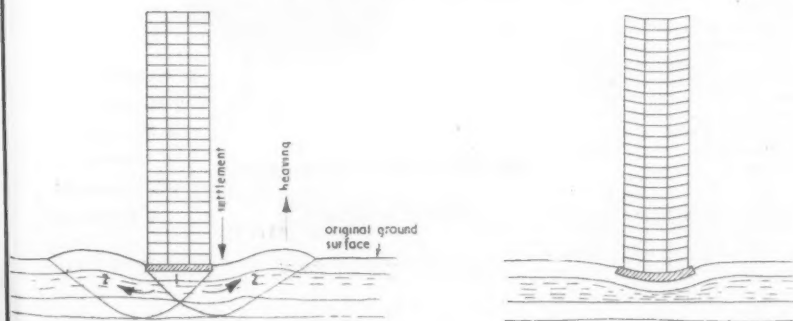


Fig. 1 (far left). Foundation failure by shear failure of the underlying strata. Fig. 2 (left). Foundation failure by excessive differential settlement arising from consolidation of a compressible stratum.

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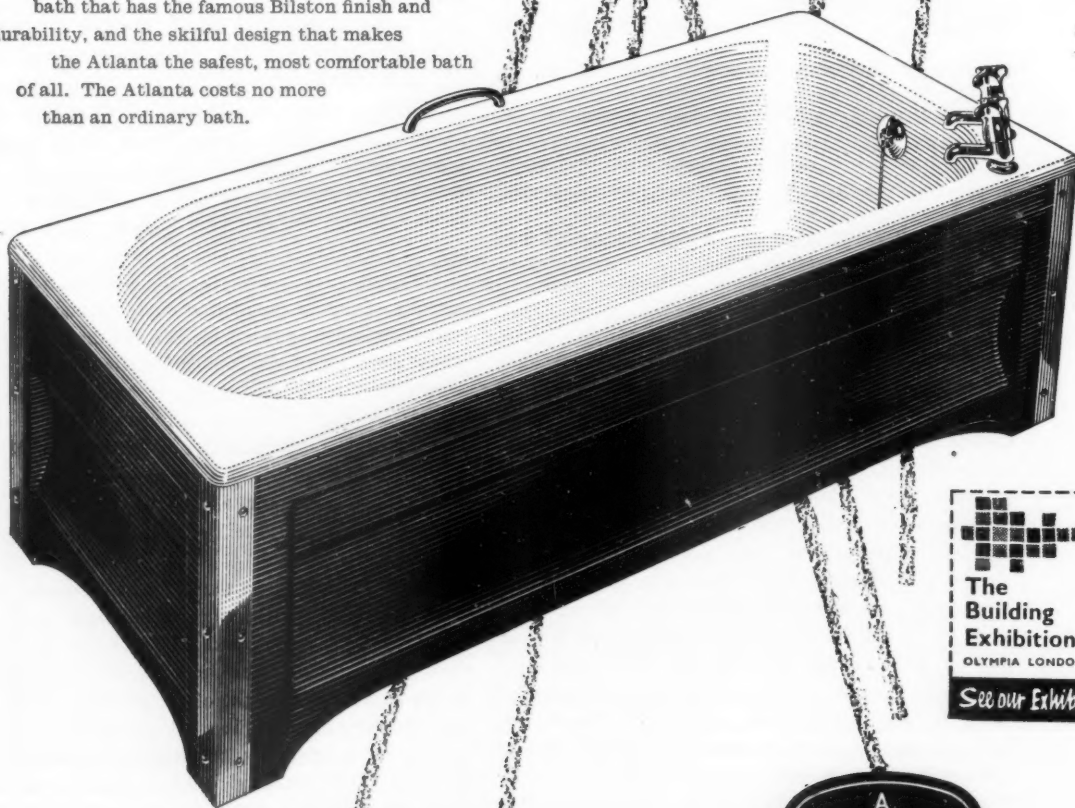
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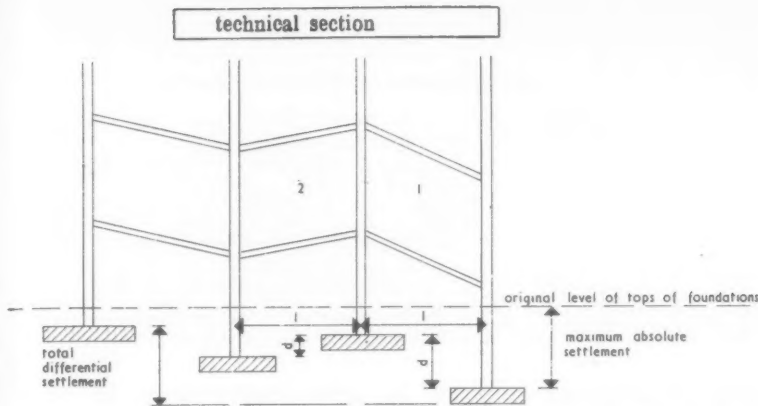


Fig. 3. Definition of terms relating to settlement. The severity of differential settlement is given by d/l where d is the differential settlement between adjacent columns, and l is the distance between those columns. Thus the distortion of panel 1 is greater than that of panel 2 because d/l in panel 1 exceeds d/l in panel 2.

squeezing-out process can take a long time—in some cases over a hundred years may elapse before the settlement is substantially complete. Once again, provided the properties of the subsoil are known, analytical methods exist for calculating the settlement of a given building, and if used by an experienced engineer they will enable the magnitude of the settlement to be estimated sufficiently well for most purposes. It is more difficult, however, to estimate the period of time required for the settlement, because the permeability of a soil is more difficult to measure accurately than its compressibility. The accepted methods of calculating settlement tend to over-estimate the time required, because most compressible soils are more permeable in a horizontal direction than in a vertical direction, whilst the usual testing methods measure the vertical permeability. An experienced engineer will usually allow for this by applying to the calculated settlement an arbitrary correction, based on his past experience.

Analogy with failure in a beam

Complete shear failure of the ground under a foundation and excessive settlement are analogous respectively to failure and to excessive deflection of a beam. There is little room for variation of opinion when failure occurs, but whether or not a deflection is "excessive" depends on circumstances. A deflection which might be acceptable in a beam supporting the sheeted roof of an industrial building could be objectionable if the beam supported a terrazzo floor or a plaster ceiling, which would not accommodate it without cracking; or if the movement was apparent to persons on the structure supported by the beam. Similarly the amount of settlement that can be accepted depends on its effect on the appearance and performance of the building. There is frequently a temptation to seek to eliminate settlement entirely when designing any foundation, but this often involves large unnecessary expense, and in the author's opinion it is a fundamentally wrong approach.

Differential settlement

Very often the most objectionable aspect of settlement is that different parts of the building settle by different amounts. It is this differential settlement that causes most damage to the cladding and finishes. Usually the building assumes a dish-shaped profile—the centre

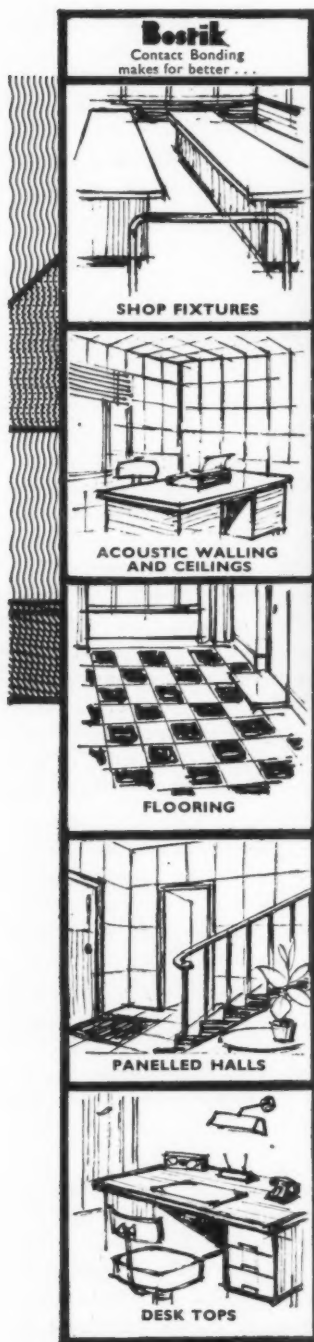
settling most and the corners settling least. The amount of differential settlement depends very much on the stiffness of the structure, but in the extreme case of a thin raft foundation without stiffening beams or columns, the settlement at the centre may be twice that at the centre of the sides and four times that at the corners. A very stiff combined raft foundation and basement structure on the other hand will resist this type of distortion by transferring the loads so as to relieve the pressure on the ground towards the centre of the building and to increase it at the edges and the corners, thus reducing the differential settlement. However, to achieve much redistribution of load in a high building the basement and foundation structure must be much stiffer and heavier than is often thought necessary.

Most damage from differential settlement arises from the racking of the rectangular panels between the beams and columns into trapeziums, with the result that the infilling panel walls crack as indicated in Figure 3. Thus the differential settlement between adjacent columns divided by the distance between them, d/l , is a good criterion of the seriousness of the settlement. If d/l exceeds $1/300$ there is great risk of damage to the panel walls and finishings of a typical framed building, and when calculating the probable differential settlement during design, d/l should never exceed $1/500$.

The foundation engineer must always decide how accurate his estimates of the magnitude and the rate of the settlement are likely to be on a particular site. This is frequently the most difficult problem of all, because soil mechanics is not a very exact science, and the difficulty is increased by the knowledge that a decision to employ an expensive foundation unnecessarily will waste many thousands of pounds, and may possibly lead to the abandonment of the project; whilst the results of a foundation failure can be even more expensive, particularly if underpinning is required. This can only be a matter for the personal judgment of the engineer concerned.

The type of "stiffening" beams frequently provided in raft foundations is inadequate to prevent much differential settlement, and it is usually necessary for the depth of the stiffening structure to extend over at least one storey height in the basement. The best form of stiffening structure is undoubtedly an "egg-box" construction of reinforced concrete walls, dividing the

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basement into small compartments, but as this makes the basement space useless except possibly for fuel tanks or the storage of papers, it is more usual to provide the stiffening in the form of heavy reinforced concrete frames made up of beams and columns of substantial section well reinforced, and usually with large haunches at their intersections. This construction also limits the use of the basement space, and in the case of most buildings it will be found preferable to free the basement from all such obstruction by incurring the additional cost of providing a foundation that will have very small settlement as a whole. This means, in practice, providing some form of piled foundation. However, as the extra cost may be large, the comparison should always be made and the results laid before the architect and, if appropriate, before the clients, so that the cost of obtaining an unobstructed basement is realised.

Tilting

A rarer form of differential settlement arises when the structure shows little differential movement within itself, but tilts as a whole—as in the case of the leaning Tower of Pisa. This may arise from varying strata, so that there is softer ground under one side of the building than the other, in which case the condition should be detected during the site investigation and the appropriate provisions made in the design of the foundation. It is less generally realized that tilting can also occur when the building is not symmetrical in plan—particularly when a tall narrow tower is flanked on one side by a wing of appreciable size, with nothing to counterbalance it on the other side. Wherever settlement is possible, it is desirable to distribute any podia, side wings or other ancillary buildings symmetrically about a tall, narrow tower. If other considerations preclude this, the foundations of the tower must be capable of resisting the tilting effect—and in some cases their cost may be greatly increased. An existing tall narrow building may also tilt if a new building is placed close to it on one side.

Differential settlement is difficult to avoid at junctions between parts of the building with different loading, for instance where a tall tower abuts a low wing, and frequently it is much cheaper to make a complete joint through the structure at such points, to permit the differential settlement to occur, rather than to provide foundations capable of preventing it. At such joints special provision must be made to accommodate the differential settlement in the finishes, particularly the flooring. Sometimes it is much cheaper to allow for modifying the finishes as movement occurs in the early life of the building, than to provide very expensive foundations.

Site investigation

The importance of a reliable site investigation before any serious design work is undertaken on the foundations has already been mentioned. The amount of site investigation work necessary will vary very much from one site to another according, among other

things, to whether the subsoil conditions are favourable or otherwise, and to how much information is available about surrounding sites. As a further article is to be written on site investigation in general, the subject will not be discussed in detail here. But one point must be made. All engineering work underground involves unpredictable risks of an altogether different nature to those encountered in structural engineering or building work above ground. For one thing, the ground conditions can never be entirely explored beyond the possibility of encountering something unexpected later, no matter how thorough the site investigation. Again, the ground is far more variable and complex than any other material entering into the structural design of a building, and consequently its behaviour cannot be predicted by calculation with the same certainty. In the case of a large building the additional cost and the delay in overcoming unexpected underground difficulties can be very great, whilst the results of excessive settlement or other foundation trouble after completion can be even more serious. The cost of the most thorough investigation of the site for a high building will not amount to a very large sum compared with the cost of the foundation itself; and as a reliable site investigation will go far towards reducing the risk of trouble arising during the construction of the foundation or afterwards, its cost should never be begrudged.

Detailed recommendations for site investigations are contained in British Standard Code of Practice, CP2001, which lists the data that are normally required, and the usual methods of obtaining it.

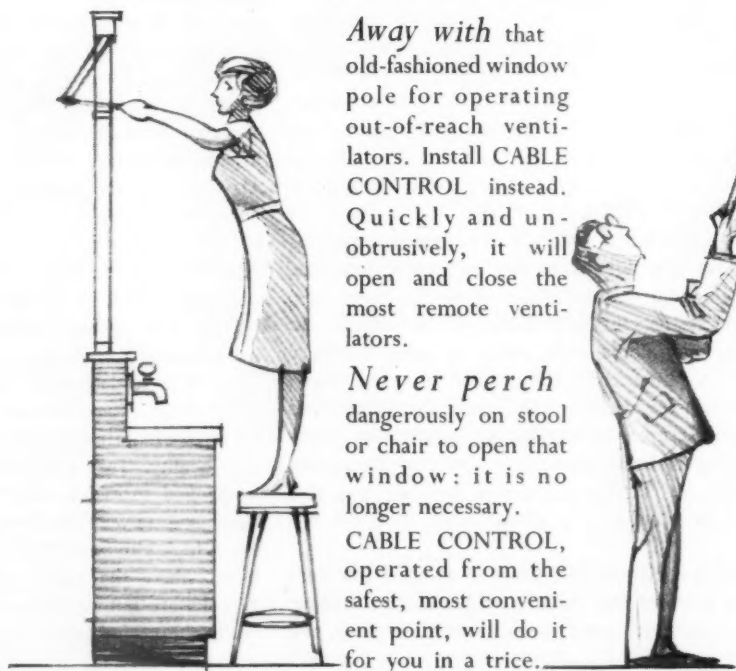
Normally it will be necessary to make several borings on the site, taking undisturbed samples of all the soils encountered and carrying out laboratory tests upon them to determine their strength and compressibility. Before commencing any borings, a study should be made of all the data that are already available about the locality. This will include the geological survey maps and memoirs, and the records of any excavations or deep wells that have been made in the vicinity. Most high buildings will be built in the centre of large cities where the general properties of all the types of soils are known and recorded. It is also useful to study the performance of any existing heavily loaded foundations in the vicinity.

Such a preliminary investigation will frequently enable the designer to preconceive the most probable type of foundation before carrying out the site investigation. By doing so he will be able to decide which questions must be answered by the site investigation, and which matters require close attention. He will also know which aspects are not of great importance to his design and will be able to economize on the cost of the investigation accordingly. Frequently the work of making the borings, taking soil samples and testing them is undertaken by specialist firms, but it is essential for this work to be closely followed by the engineer who is to design the foundation. There have been many cases where money has been wasted measuring soil properties which are not required, and cases also frequently arise where it is found after the

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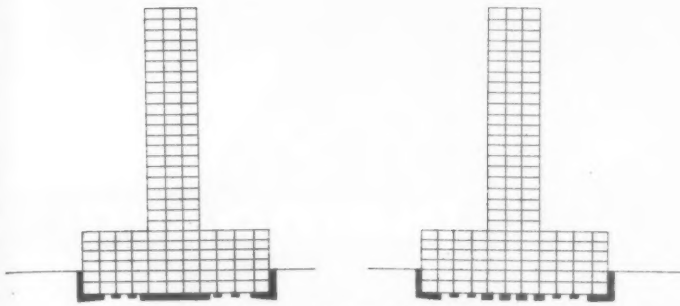


Fig. 4 (left). Isolated pad foundations, used in very strong subsoils—rock or dense gravels. Fig. 5 (right). Simple raft foundation, used in strong subsoils, most gravels, compact sand or very hard clay. These two are the cheapest foundations, but they can only be used in safety on a very few sites where the ground is particularly good. Where the ground-water level is high, a thin raft will be required between the pile caps to resist uplift, or under-drainage must be provided.

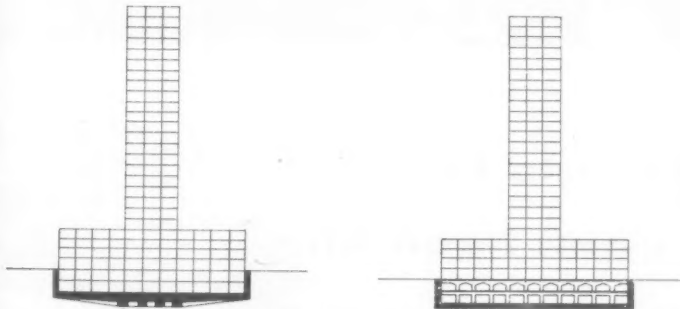


Fig. 6a (left). Stiff raft. Fig. 6b (right). Raft with stiff basement. Used in most clays of medium strength—particularly where not underlain by stronger soil within reach of piles. These are both fairly expensive foundations and the types in Figs. 7 and 9 should always be considered as alternatives. They are both suited to resisting uplift pressure from ground water.

completion of the site investigation that no information has been obtained about an aspect which is vital to the designer.

When planning a site investigation, it is not only necessary to consider the information required for the design of the foundation itself, but information should also be obtained on matters that affect the method of construction—for instance the existence of previous foundations or other obstructions, or the presence of soft strata at the surface which would affect the operation of heavy plant.

Reliable information must also be obtained about the groundwater conditions. Great care is necessary to obtain a reliable value of the groundwater level, and it should be remembered that the groundwater level can vary from one season to another, and that it can also be temporarily lowered if any pumping operations are taking place in the vicinity. In the vicinity of the sea or tidal rivers, measurements of the groundwater level should extend over a whole day to ensure that there are no tidal effects.

Shallow or deep foundations

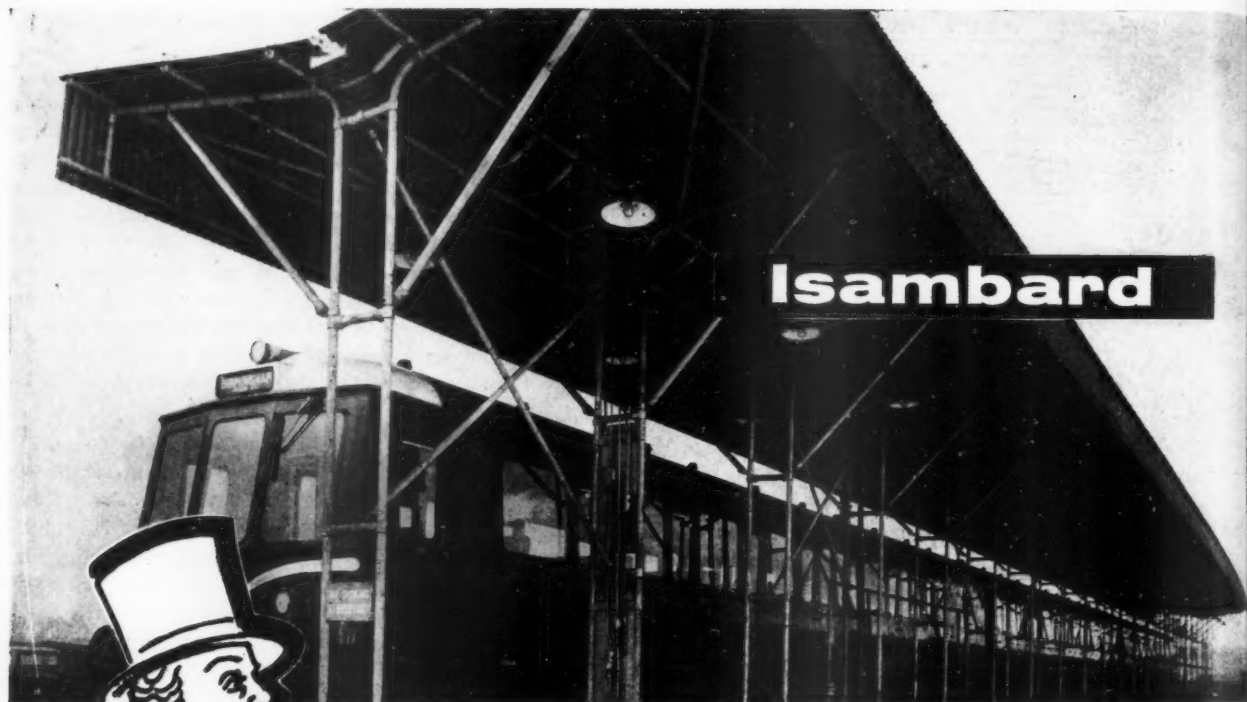
In most cases the most important decision in designing the foundation of a high building is to decide whether it is to be a "shallow" foundation, or a "deep" foundation. Shallow foundations transfer the load to the ground as close as possible below the lowest floor level, and include such types of foundations as raft foundations and isolated pad foundations. Deep foundations include the various types of piles and cylinders. A shallow type foundation is usually the more economical, and in most cases deep foundations are only resorted to when the conditions make shallow foundations impossible.

Figs. 4 to 9 show diagrammatically the frame of a typical building having a tower of 25 storeys surrounded by a podium of four storeys. There is a basement of depth equal to the height of two floors under the entire building which might contain the boiler room and other plant rooms under the tower, and underground garages and storage spaces under the rest of the building. The building is assumed to have been designed on a square grid of 20 ft. by 20 ft. In such a building the individual column loads at the level of the bottom of the basement would be about 1,200 tons under the tower and about 250 tons under the podium.

In Fig. 4 this typical building is shown having isolated-pad foundations, and in Fig. 5 it is shown with a raft foundation. The raft foundation is an extension of the isolated-pad foundation which arises when the individual pads become so large that they tend to run into each other. Usually it is preferable to employ a raft foundation if isolated pads would occupy more than 50 per cent of the area of the building. Thus in this particular case, isolated-pad foundations would only be considered if the ground were able to support a safe load of at least 6 tons per sq. ft. under the tower or at least 1.3 tons per sq. ft. under the podium. If a raft foundation were to be employed under the tower, as in Fig. 5, the pressure beneath it would be reduced to 3 tons per sq. ft.

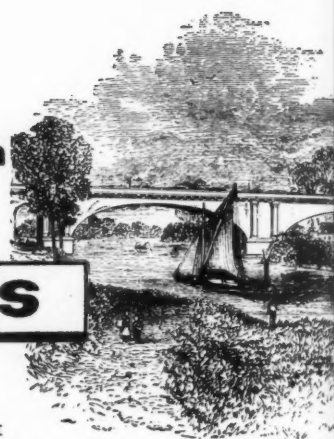
A safe bearing capacity of 6 tons per sq. ft. would only be obtainable in a few localities where the subsoil comprised rock, hard chalk, very compact dry gravel or the hardest of shaly clays. Three tons per sq. ft. would be obtainable on most dry sands or gravels, wet dense gravel and on many stiff clays, including the stiffer parts of the London clay. In Fig. 5 the foundations under the podium are still shown as isolated-pads, because even at 3 tons per sq. ft., they would only be about 9 ft. square, and would only occupy about 25 per cent. of the area of the building.

No attempt has been made in Fig. 5 to reduce the pressure on the ground under the tower by spreading its load sideways into a raft extending under the podium, because it is unlikely ever to be practicable or economical to do so. As a principle of general application in structural engineering, loads should rarely be transferred horizontally when they can be carried downwards. The difficulty is to ensure that the foundation is both strong enough, and stiff enough to canti-



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technical section

lever beyond the sides of the tower without excessive deflection, and this can only be achieved by making the raft excessively thick or stiffening it with deep ribs as in Fig. 6A, or by providing a stiffened basement in the form of an "egg crate" of reinforced concrete walls or Vierendeel frames in the basement, 6B. The former expedient is very expensive and the latter restricts the basement space to an unacceptable degree. So far only the bearing capacity of the foundation has been considered, but before a raft or an isolated pad foundation can be finally decided upon, the question of settlement, and particularly differential settlement, must be considered. Settlement is rarely a deciding consideration if the subsoil is rock or dense sand or gravel, but on stiff clays it is frequently found that excessive settlement precludes a "shallow" foundation, even though it would be acceptable from the bearing capacity aspect.

The settlement of a building is decided by the net increase in pressure on the subsoil, that is on the total weight of the building less the weight of the soil removed during the excavation of the basement. Thus in the building shown in Figs. 4 and 5, approximately 1.3 tons per sq. ft. of soil will have been excavated for the basement. The tower, including the underlying basement structure, weighs about 3 tons per sq. ft., so that the net increase in pressure under the tower, which determines its settlement is 1.7 tons per sq. ft. The podium will weigh about 0.6 tons per sq. ft., so that the net increase in pressure under the podium is negative, being -0.7 tons per sq. ft. Consequently, there will be a slight tendency for the podium to rise rather than settle. It follows that there is always an advantage in placing deep basements under the tallest parts of the structure.

In this particular case, the greatest danger from settlement arises in the differential settlement between the tower and the podium. If the building shown in Fig. 5 were to be founded on London clay, the differential settlement across this junction would be about 1 in. within a few years of construction, with up to a further inch of differential settlement between the centre of the tower and its outside columns. These differential settlements would continue to increase slowly until at a century after construction they might be three times these values and, still increasing, albeit very slowly. Obviously differential settlements of this order would cause serious difficulties in the finishings and the services, and would be unacceptable in most buildings, so that although the foundation shown in Fig. 5 would be acceptable on London clay from the viewpoint of being safe against shear failure, it would not be acceptable on the grounds of excessive differential settlement, unless joints could be provided to accommodate the differential settlement between the podium and the tower.

If a "shallow" foundation proves to be unacceptable, consideration must be given to the various types of deep foundation—that is the various types of piles and cylinders.

Deep foundations

It would be out of place to discuss the various pro-

prietary types of piles in this article. All pile types can be divided into two broad groups—bearing piles and friction piles.

A foundation composed of bearing piles is shown in Fig. 7. These piles function by transferring the load down through the soft strata to an underlying hard stratum that is capable of supporting it, so that they transfer the load to the ground by bearing on the bases. Practical difficulties usually limit the length of any type of piling to about 100 ft., so that bearing piles are only feasible if there is a stratum within this depth capable of supporting the load.

Friction piles are used in places where there is a very great depth of soft material which offers no stratum strong enough to support bearing piles. Their effect is to reduce, but not to eliminate settlement, by spreading the load of the building over a greater volume of soil, as indicated—Fig. 8. Friction piles will only be effective if their length is proportionate to the width of the building that they support, and as a general rule their length should be at least equal to the width of the high part of the building. As friction piles will not entirely eliminate settlement, there should always be a strong raft or basement structure above them to resist differential settlement. It is very difficult to predict the behaviour of friction piles reliably, and they should only be used as a last resort. Fortunately they are rarely needed in Great Britain. All forms of piling suffer from the disadvantage that the work is carried out underground by remote control from the surface, and the finished product cannot be inspected. In the rare cases when portions of piles are exposed by subsequent excavation, enough defects are found to show that it is essential to provide a group of at least three piles under any important load. A defective pile is then assisted by the other piles in the group. Usually the column loads in this type of building will be so large that a large number of piles will be required under each column, and a pile cap will be necessary to spread the load from the column to the group of piles beneath. These pile caps become very large and may run into each other, virtually forming a raft between building and piles.

In the design of bridges, and other structures where very large loads arise, it has been common for over a century to employ various types of cylinder foundations. These overcome the disadvantages of piles by reason of their greater diameter, which is great enough to enable inspectors or closed circuit television equipment to be lowered to their bottom to examine the conditions, and also to ensure that they can be reliably filled with dense concrete. It then becomes safe to employ a single cylinder under each column, thus dispensing with the pile cap.

Recently several machines have been developed which will bore the holes for cylinder foundations up to about 7-ft. diameter, and they will probably be used more frequently for building foundations. The ideal conditions for these machines are when the subsoil is dry, and is soft enough to be removed by the machine, and yet not so soft that a temporary lining must be



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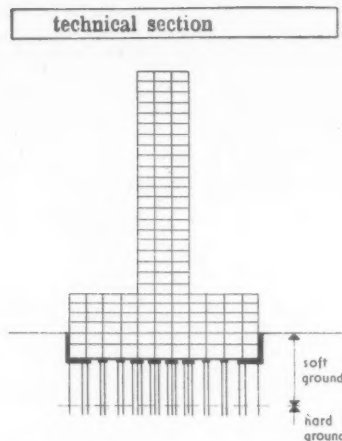


Fig. 7. End-bearing piles. Used in soft or medium clays upon thick strata of sand or gravel, hard clay or rock. Suitable only if hard soil exists within economical reach of piles. The most suitable type of pile depends very much on individual site conditions. Where the ground-water level is high, a thin raft is necessary between pile caps, or under-drainage must be provided.

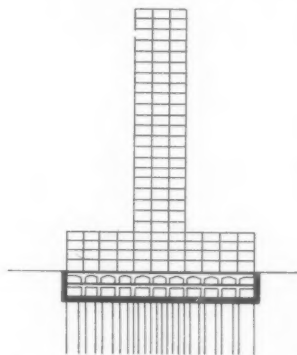


Fig. 8. Friction piles supporting a stiff basement. N.B. Alternatively a stiff raft as in Fig. 6a may be used on friction piles. Suitable for soft clay extending to a great depth. Very expensive and difficult to ensure satisfactory performance. Only to be used where ground conditions cannot be overcome in any other way.

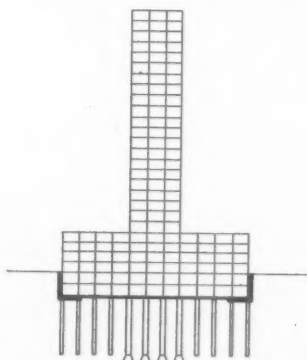


Fig. 9. Cylinder foundations with or without enlarged base according to loading. Used in clays of medium strength—particularly where the strength increases with depth and there are no water-bearing strata. Economical when ground is soft enough for boring machines, but firm enough for the shafts not to require lining. End-bearing piles (Fig. 7) should always be considered as alternatives.

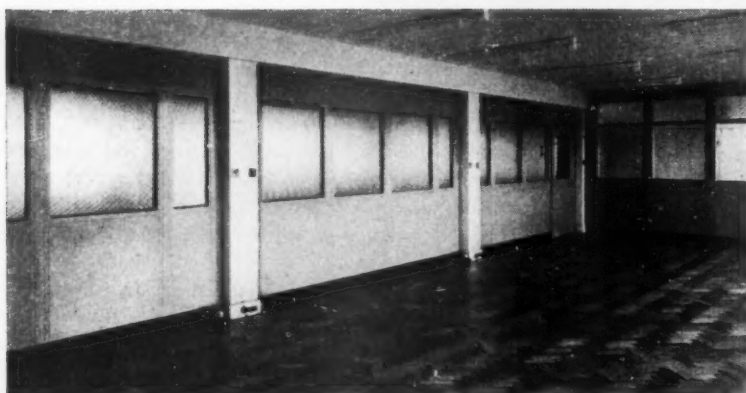
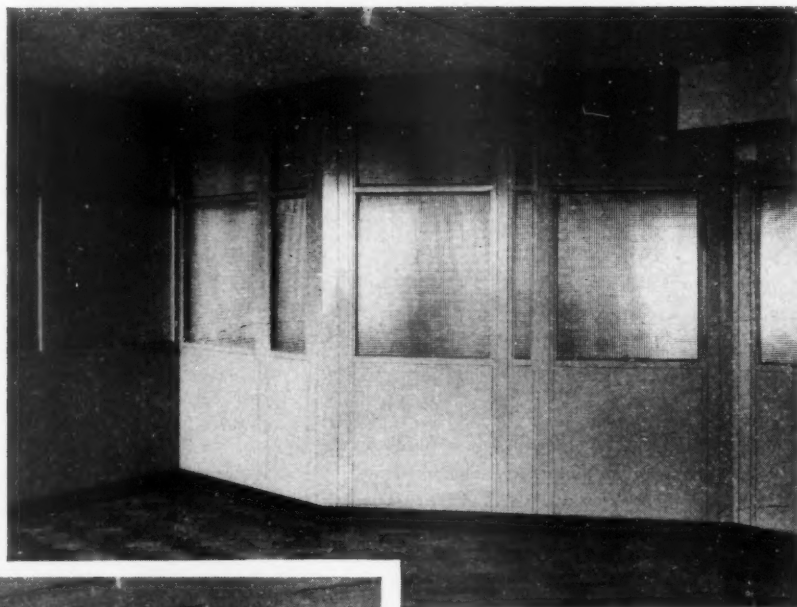
used to support the sides of the hole until it is filled with concrete. Such conditions only arise very rarely; and if they are not met, the use of cylinder boring machines should be considered very critically before it is undertaken.

In many cases the carrying capacity of a cylinder can be increased greatly by providing it with an enlarged base, and machines are available which will excavate such bases in favourable circumstances. If, however, the bases have to be enlarged by hand, which would necessitate lining the cylinder shaft, their extra carrying capacity would rarely justify their cost. Cylinder foundations should never be embarked upon without a careful appraisal of the conditions of each particular project; because whilst a very low estimate of their cost may be obtained, based on the assumptions that all excavations will be mechanical and that no lining will be required, either of these assumptions may be vitiated by quite small variations in the ground conditions. If temporary linings or hand excavations become necessary, the cost will be greatly increased. For instance, London Clay, where it is not overlain by water-bearing gravel, is, in general, a highly suitable soil for mechanical cylinder borers, but it frequently contains thin bands of rock which seriously impede their operation, and if it becomes necessary to break up these bands of rock by hand, temporary linings must be inserted in the shafts at considerable extra cost. Similarly a very small amount of water entering the shafts will make their sides unstable. When comparing the cost of the alternative types of foundation for a high building, the time required for their construction must be considered, because the sites of such buildings are so valuable, and so much capital is sunk into their erection, that it is frequently worth adopting a more expensive form of construction to save time. Once the foundations of a high building have been laid it is always desirable to maintain settlement records. These should be commenced before any load comes onto the foundation and continued after the completion of the building until settlement is too slow to detect. Such records will give advanced warning of any troubles arising in the foundations.

Conclusion

For the architect there are three main points to be borne in mind. The first two are general points concerning soil mechanics and are simple. They are that when a tall building has lower parts round its base, there is a strong case for keeping the silhouette reasonably symmetrical and for locating the deepest basements below the tallest parts. The third point is more complex. It is that the all-important issues of whether differential settlement is to be permitted (and, therefore, allowed for), whether the basement is to be compartmented and, therefore, of restricted use or whether it is to be open, with a deep foundation beneath; are all questions which can only be settled economically in consultation with the foundation engineer and after the full site investigation has been made.

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 deputy architect F. G. WEST
 principal housing architect H. J. WHITFIELD LEWIS
 assistant housing architect K. J. CAMPBELL
 in succession to MICHAEL POWELL
 architect-in-charge COLIN LUCAS
 assistant architects J. A. PARTRIDGE, W. G. HOWELL,
 H. A. W. KILLICK, S. F. AMIS,
 J. R. GALLEY, R. STOUT
 quantity surveyors PRINCIPAL QUANTITY
 SURVEYOR, LCC
 in conjunction with WAKEMAN, TROWER &
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 structural consultants W. V. ZINN & ASSOCIATES
 CHIEF ENGINEER, LCC

building illustrated

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UDC No. 728.2

The housing scheme at Roehampton Lane forms part of the extensive development of park-like sites being carried out by the LCC in the Putney/Wimbledon area, and includes a variety of dwelling types, of which three are cost analysed this week; the 12-storey point blocks of flats, the 11-storey slab blocks of maisonettes, and the 4-storey maisonettes. The costs given are those relating to the initial contracts for 456 dwellings, the remainder of the 1,411 dwellings on the site being carried out as continuation contracts of the first stage.

12-storey point blocks in the foreground: 11-storey slab blocks in the background.



building illustrated

APPRAISAL: This layout follows the pattern of open, mixed development set by the LCC housing architects in their Portsmouth Road housing scheme nearby. The site is magnificent, lying between Richmond Park and the open space of the Roehampton Club. The plan makes full use of the landscape and has been designed to retain the many mature trees on the site, as well as several fine old houses.

The form of the layout is fundamentally simple, with tall blocks in three clusters as the main feature and the lower buildings between these dominating groups. Apart from architectural considerations the tall blocks were grouped in this way to facilitate the economical design and operation of the district heating scheme which provides them with central heating and hot water.

A central open area of grass runs down the site from the high level of Downshire House and sweeps round to Mount Clare. Both these Georgian houses have been retained to be used for communal or educational purposes. Provision has been made for adequate community facilities to serve the people who live there and land is reserved for schools to cater for this and adjoining areas, two of which have been built. The road pattern here has quite clearly been designed after the buildings were sited, which is as it should be. The tall blocks are linked to the principal roads by small spurs of service roads and there is a pedestrian system independent of the vehicular circulation which wanders between and around the tall blocks and other building groups in a curiously Victorian pattern.

The scheme makes a great impact and without doubt will become a classic example of comprehensive domestic design. With the adjoining Portsmouth Road scheme it indicates the opportunities lost in the New Towns for developing a virile contemporary residential environment. Yet it has its oddities, such as its combination of the rigid geometry of each group of buildings (apart from the bungalows) with



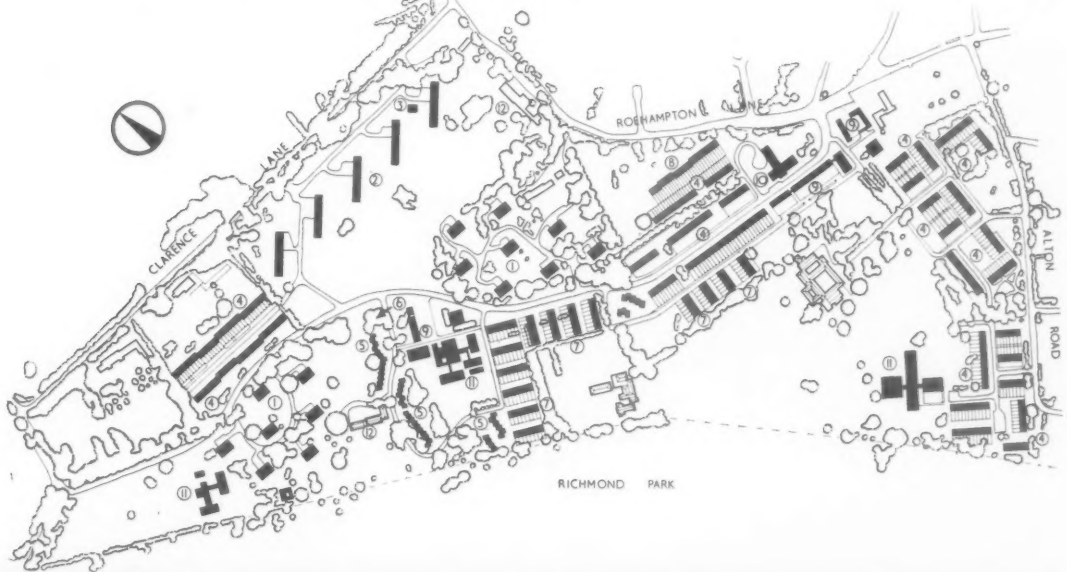
Below: aerial view of the scheme from the south showing clearly the grouping of the tall blocks and the care taken in the design to retain the park-like features of the site. The two open spaces to the north and south of the development seem to merge almost without interruption. Above, view from Richmond Park.



the free manner in which the groups are placed together. Unexpected also is the contrast of architectural expression between the tall buildings and the four-storey maisonnettes. The former show an uncompromising acceptance, and indeed underline the influence of modern building techniques upon design, while the lower maisonnettes with their private gardens and brick treatment belong in essence to the English

domestic tradition. The detailing of the tall blocks, particularly of the 11-storey maisonnettes, is bold almost to the point of crudeness, and it is perhaps this full-blooded acceptance of the limitations which cost restrictions on housing impose upon the finish of exposed concrete which makes this architecture successful, though unacceptable to some.

1. 12-storey point blocks; 2. 11-storey slab blocks; 3. boiler house; 4. 4-storey maisonnettes; 5. Old people's bungalows; 6. Old people's club and warden's house; 7. 2-storey houses; 8. 3-storey houses; 9. Shops with maisonette and flat above; 10. Projected 10-storey block of flats and maisonnettes incorporating a library; 11. Schools; 12. Existing mansions being converted to Further Education College.



Site plan





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analysis

Cost considerations may also account for what must be agreed is inadequate treatment of the ground around the tall blocks. These large buildings are approached by paths and open areas which, in the immediate vicinity of the building, should recognize and emphasize the entrance, but here we find only concrete, tarmac and gravel instead of any more imaginative but admittedly more expensive floorscape.

This scheme was designed some years ago, before the ownership of a car became so general. It originally included garages and parking spaces to a standard which is now obsolete. This has since been increased to a ratio of one garage or parking space to every four dwellings, the majority of parking being provided for in two open parking areas. Provision was previously made for parking at the foot of each tall block and for 77 garages sited in groups throughout the scheme. This cannot be considered a satisfactory solution to the problem of car storage and it is interesting to speculate how the design would have developed if the present needs for garaging had been more accurately assessed at the time. This failing of the original scheme is a reminder of the speed with which circumstances can change and how planning demands can alter between the initial design and a large-scale scheme and its completion.

Comment on Roehampton cannot omit a reference to the sad absence of well-designed street furniture: as usual, lamp posts are the chief offenders. Is the battle to obtain a well-designed lamp post, acceptable to the engineering profession, never to be won?



Above: the main spine road where one enters the scheme from Roehampton Village. The block of shops is on the extreme left and opposite will be erected a public library and 10-storey block of flats and maisonettes. This is not a particularly successful part of the scheme and gives no indication of the quality of the layout which comes into view as the road bends to the right.

Opposite page, top: looking west towards the lower group of 12-storey blocks, with the 11-storey slab blocks on the right.

Opposite, bottom: this group of four-storey maisonettes shows how imaginatively the site levels have been used and how, in this part of the scheme, a note of urbanity creeps into the design. It also shows the treatment of the access balconies. Further illustrations on page 474.

CLIENT'S REQUIREMENTS

The Housing Committee of the LCC wished to develop the site at a net density of 100 persons per acre and to provide a wide variety of dwelling types within the scheme. At the same time they wished to pay proper regard to the special characteristics of the site. The scheme was also to include a shopping centre, two primary schools, a nursery school, a district office, and provision for community facilities. Some buildings of architectural merit which existed on the site were to be retained and rehabilitated.

SITE

66 acres of the site, which has an area of almost 100 acres, were available for housing. Triangular in shape, it is a fine sweep of country bounded on the south-west by Richmond Park and on the north by Roehampton Lane and Clarence Lane, with wooded areas and many magnificent trees. The ground falls quite steeply from both the northern and southern boundaries into a valley with some fine views over Richmond Park, which spreads out into a fairly flat area at the north-west end of the site, off Priory Lane.

ACCOMMODATION STANDARD

Area of site: 98.64 acres.
Area available for housing: 65.89 acres.
Total number of dwellings built: 1,867.
Total number of rooms: 5,974.
Number of persons per room: 1.1 occupation ratio.
Total number of persons housed: 6,571.
Number of dwellings per acre: 28.27.
Number of tenant's stores: internal, 236 to two- and three-storey houses (28 store rooms); external, 813 to maisonettes and flats (580 under blocks).
Number of garages: 77 (final provision of car parking spaces not yet decided).

SCHEDULE OF ACCOMMODATION

11-storey slab block: MA, 75, all three-room. Total of rooms, 225.

Room areas: LR, 225 sq. ft.	BR1, 122 sq. ft.
K, 70 sq. ft.	BR2, 111 sq. ft.

Total area per dwelling, 705 sq. ft. excluding private balcony: 42 sq. ft. and store.

4-storey maisonettes: 24, all four-room. Total of rooms, 96.

Room areas: LR, 186 sq. ft.	DK, 93 sq. ft.	BR2, 115 sq. ft.
	BR1, 121 sq. ft.	BR3, 70 sq. ft.

Total area per dwelling, 816 sq. ft. excluding private balcony: 24 sq. ft. and store.

12-storey point block: 22 two-room and 22 three-room flats. Total of rooms, 110.

Room areas: LR	169 sq. ft.	175 sq. ft.
DK	84 sq. ft.	104 sq. ft.
BR1	124 sq. ft.	126 sq. ft.
BR2		128 sq. ft.

Total area: 500 sq. ft.; 650 sq. ft. excluding private balconies, 45 sq. ft. and tenant stores.

CONSTRUCTION OF POINT BLOCKS AND SLAB BLOCKS

The load-bearing structure of the point and slab blocks is in reinforced concrete. The point blocks have a normal r.c. frame: the maisonettes have an unusual combination of r.c. frame and solid load-bearing r.c. walls with party wall construction alternating between solid r.c. and r.c. frame, with non-load-bearing cavity panels between structural members.



building illustrated

Left: close-up of a 12-storey point block. Below: view from a point block flat. Centre, south elevation of a point block, showing the inset private balconies and the central staircase and lift hall; these blocks sit low on the ground and the



shallow height of the piloti helps to retain the human scale. The buildings are generally without bright colours apart from some emphasis on entrances to the tall blocks and their main staircase reveals. Usually the colours are white or grey with a terracotta coloured brick used in the four-storey maisonettes and a dark green-grey colour for the spandrel



infillings to the crosswall panels. This subdued colour treatment serves to emphasize the landscape, particularly the many fine evergreen trees on the site. Bottom: a raised paved area adjoining a small shopping block from which one of the point blocks can be seen over the roofs of the single-storey dwellings.



Section
[Scale:

2 ROOM FLAT

Typical

45' 9"

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analysis

12-storey point block

PLAN

The point blocks have a simple, rectangular plan with a central through lift-hall and staircases, the lifts stopping at alternate floors. The design provides two 2-bedroom and two 1-bedroom flats on each floor, apart from the ground floor, which is open. The plan is symmetrical about the central hall.

Each flat has an inset balcony the full width of the living room, and economy in circulation space in the 2-bedroom flats is achieved by the kitchen opening off the living room. These 2-bedroom flats provide liberal cupboard space. All the flats have internal bathrooms and w.c.s, mechanically ventilated, and there is a drying cabinet in each flat.

The ground floor incorporates the main entrance, refuse chambers and tenants' stores. Only 24 tenants' stores are provided to serve 44 dwellings, a standard of provision which is not generous for a multi-storey block.

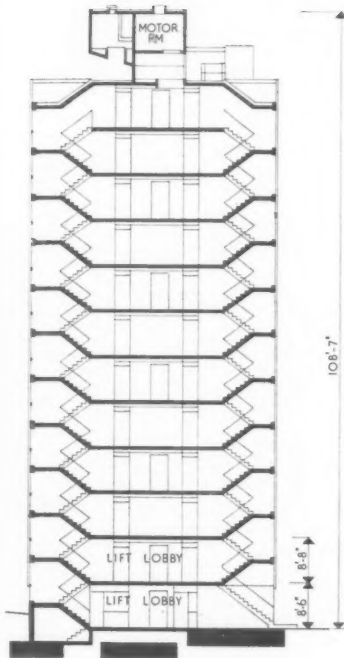
SUMMARY

Ground floor area: 3,097 sq. ft.
 Total floor area: 38,125 sq. ft.
 Net floor area, inside dwellings: 27,711 sq. ft.
 Type of contract: LCC lump sum.
 Tender date: November, 1954.
 Work began: December, 1954.
 Work finished: June, 1957.
 Tender price of foundations, superstructure, installations and finishes: £98,138.

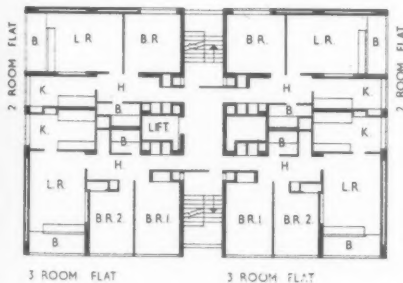
	price per sq. ft.	s	d
Preliminaries and insurances	1	9½	
Contingencies	1	3½	
Work below ground floor level	8	4½	
Proprietary in-situ concrete piled foundations.			
Average depth: 30 ft. to 35 ft.			

STRUCTURAL ELEMENTS

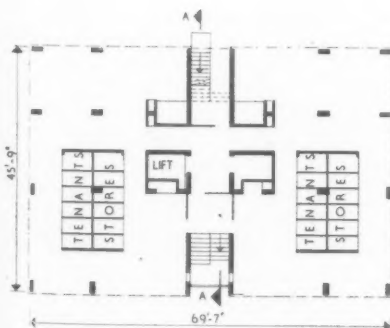
Frame or load-bearing element	9	4½
Reinforced concrete frames, including refuse chamber and chutes.		
External walls and cladding	6	8½
Precast concrete cladding with exposed aggregate units 4 in. thick, dished to 2 in., hung on concrete frame with back-up wall.		
Ratio: $\frac{\text{solid wall}}{\text{floor area}} = \frac{0.399}{1}$		
Windows	2	9½
Standard LCC metal windows; glazed screens to balconies in wood.		
Ratio: $\frac{\text{windows}}{\text{floor area}} = \frac{0.212}{1}$		
External doors included with internal doors.		
Upper floors	4	5½
5-in. and 6-in. solid r.c. floors, with 1½-in. screed on ¾-in. to 1-in. acoustic quilt. Normal domestic loads		
Span: 13 ft. average.		



Section A-A, 12-storey point block
 [Scale: 1/8" = 1' 0"]



Typical upper floor plan



Ground floor plan, 12-storey point block
 [Scale: 1/8" = 1' 0"]

building illustrated



A view through the western cluster of point blocks looking towards the end of the slab blocks. It is unexpected views such as these which are the greatest charm of this scheme.

analysis

12-storey point block

Staircases

2 r.c. public staircases.
Width: 3 ft. 4 in.
Total rise: 8 ft. 9 in. f/f.
(Staircase walls included under "external walls" above.)

Roof construction

6-in. solid r.c. roof, covered with 3-in. minimum lightweight screed and 3-ply bituminous felt.
Area: 3,324 sq. ft.

Glazing

21-oz. and 32-oz. sheet and ¼-in. georgian wired glass in panels under windows and to staircases.

Total of structural elements: 25s 6½d

PARTITIONS AND FITTINGS

Internal partitions

2-in. clinker blocks within dwellings.
2½-in. lightweight concrete blocks behind p.c.c. cladding.

Internal and external doors

Each flat has one entrance door, ½-hour standard fire resisting.
6 standard 1⅝-in. hardboard flush doors.
5 standard 1⅝-in. cupboard doors (2 pairs of double doors).
1⅝-in. glazed door to balcony.

Ironmongery

LCC standard specification, satin finish anodized aluminium alloy door and window furniture.
To BS elsewhere.

Fittings

Dresser unit, work top, shelving, drying cabinet, refuse and fuel hopper in each flat.

Total of partitions and fittings: 7s 5½d

FINISHES

Floor finishes

½-in. thermoplastic tiles to dwellings.
¾-in. quarry tiles to public areas.

Wall finishes

One coat bonding plaster to concrete walls.
Two coats Class B gypsum plaster to clinker block partitions.

Ceiling finishes

Bonding plaster to concrete soffits.

Roof finishes

Three-ply bituminous felt.

Decorations

Distemper in living and bedrooms.
Emulsion paint in kitchens, w.c.s and bathrooms.
Hardgloss paint on internal joinery.
Varnish to external woodwork.

Total of finishes: 7s 5½d

s d SERVICES

1 1½

Plumbing

4-in. c.i. pipes and fittings; one pipe system and ventilated w.c.s.

1 3

Cold water installation

Galvanized iron to MWB requirements. Communal storage tank on roof, providing storage for 50 galls. per dwelling. Break pressure tanks within each dwelling.

1 4

Sanitary fittings

Type of fitting	Number of each type
W.c. fireclay	1
Bath, cast iron	1
Basin, fireclay	1
Sink, cast iron	1

1 5

Heating, hot water and ventilation

Central hot water and heating by high temperature hot water system.

The cost includes a proportion of the cost of the central boiler house and ducts.

Internal temps.: 65 deg. F. in living room,
50 deg. F. in bedrooms.

Air change: 6 air changes per hour to w.c.s (mechanical ventilation).

U of walls and roof: 0.25.

(Cost includes a proportion of the cost of boiler house and ducts).

8 4½

Gas installation

Points for cooker, water heater and refrigerator.

3½

Electrical installation

Type of point	No. of each type
In two-room flats: light points	5
13-amp. power	7
cooker	1
In three-room flats: light points	7
13-amp. power	9
cooker	1

1 11½

Lifts

2 eight-person passenger lifts, 100 ft. min.

4 1½

Total of services: 18s 8½d

Drainage

Separate soil and surface water sewers.
S.g.s except where c.i. under building.

6

Other elements

Dry riser
Lightning conductor.

1½

1½

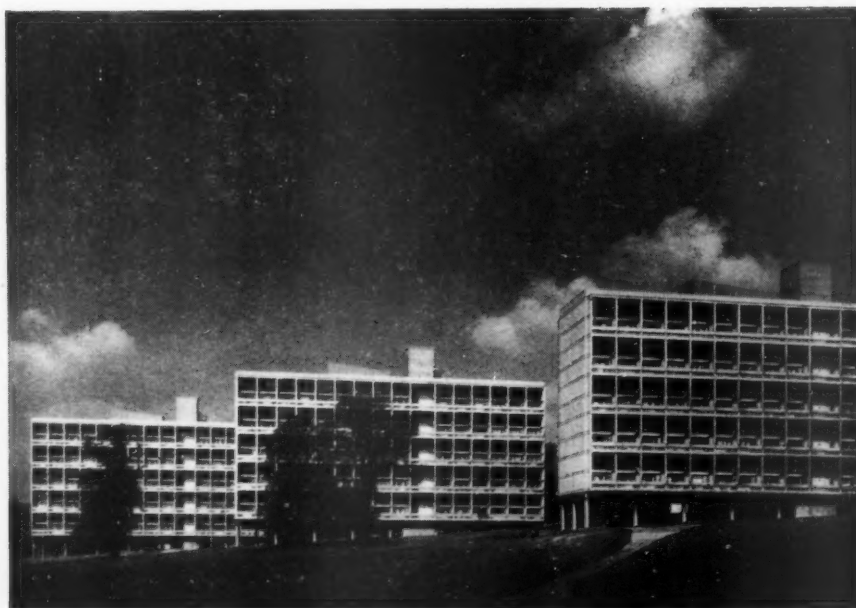
Total per sq. ft. of floor area:

£98,138 (net cost excluding external works and drains).

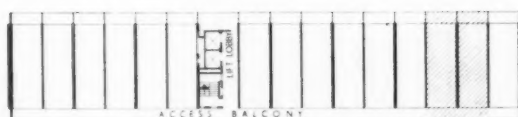
27,711 sq. ft. (net area within dwellings including private balconies)

= 70 10

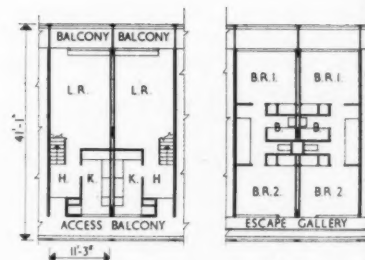
building illustrated



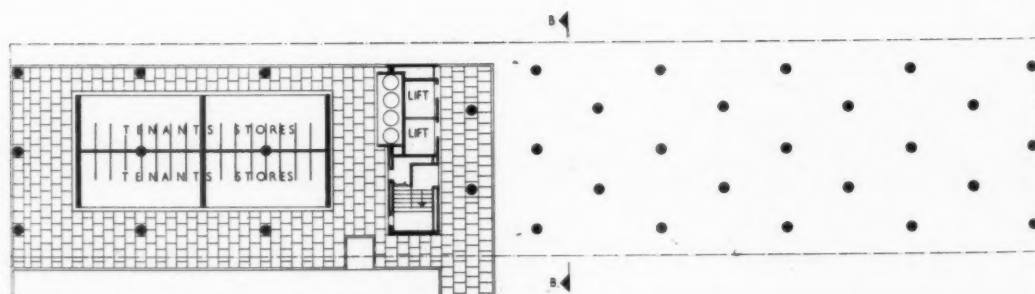
Above: the private balcony elevation of the eleven-storey maisonette blocks. The method of cladding on the flank wall is clearly visible in the picture opposite. Although the design of these blocks is virile and strong they are not as successful as the point blocks. The vertical precast non-structural mullions, which from a frontal view appear part of the structural frame, look thin and mean from an oblique view.



Key plan. The plans of the maisonettes in the shaded area are shown right.



Typical upper and lower floor plans.



Ground floor plan, 11-storey slab block [Scale: $\frac{1}{4}$ " = 1'-0"]

analysis

11-storey slab block

PLAN

These blocks comprise 75 maisonettes, each providing 2-bedroom accommodation for four people within the narrow frontage of 11 ft. 2½ in. between party walls. They have gallery access which is served by two lifts and a public staircase within the block. An additional escape gallery is provided on the 6th, 8th and 10th floors, on the same side as the access balcony, to provide emergency escape from the bedroom floors of the upper maisonettes. Private balconies are provided which extend the full width of each dwelling. The internal staircase is in the centre of each maisonette, running parallel with the party wall and there is an internal bathroom with separate w.c., mechanically ventilated. These form a central core on the bedroom floor which also includes drying and linen cupboards and built-in wardrobes.

The ground floor of each block contains tenants' stores, lift and entrance staircase under one half of the building, while the other half is left completely open. Tenants' stores are provided on the basis of one store between two dwellings. The plan on the ground floor has been dictated by the considerable fall of the site within the length of a block, and in that half of the ground floor which is left open the pile caps are exposed and the ground between covered with shingle.

SUMMARY

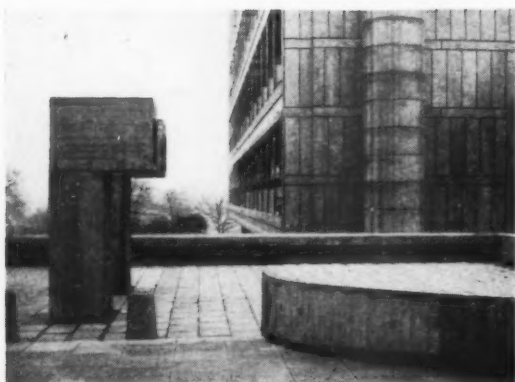
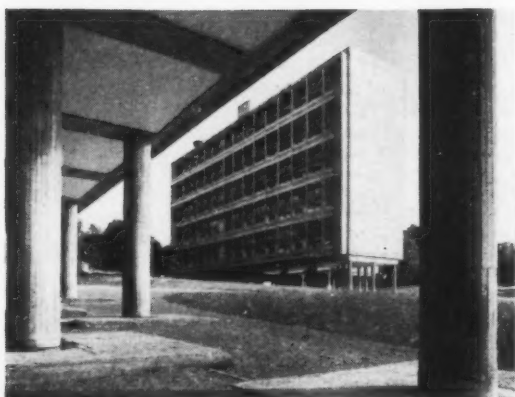
Ground floor area: 7,673 sq. ft.
 Total floor area: 85,581 sq. ft., gross area including balconies.
 Net floor area, inside dwellings: 56,022 sq. ft.
 Type of contract: LCC lump sum.
 Tender date: November, 1954.
 Work began: December, 1954.
 Work finished: April, 1958.
 Tender price of foundations, superstructure, installations and finishes: £179,616.

	cost per sq. ft.	s	d
Preliminaries and insurances		1	7
Contingencies		10	½
Work below ground floor level		7	4
Proprietary in-situ r.c. piled foundations. Average depth, 30-35 ft.			

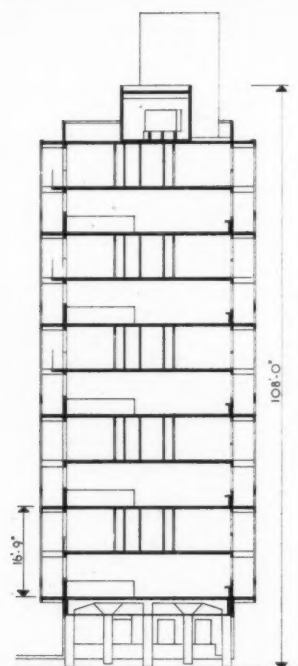
STRUCTURAL ELEMENTS

Frame or load-bearing element	9	3
6-in. in-situ concrete cross walls and 1-ft. concrete frame walls, alternately, with reinforced concrete columns and beams. (Cost includes refuse chamber and chutes.)		
External walls	4	1½
Precast concrete cladding with exposed aggregate units, 4-in. thick dishd to 2 in., hung on concrete framed gable wall.		
Ratio: $\frac{\text{solid wall}}{\text{floor area}} = \frac{0.186}{1}$		
Windows	2	5½
Wood-framed infill panels with glazing (standard LCC type sashes) and composite underwindow panels.		
Ratio: $\frac{\text{windows}}{\text{floor area}} = \frac{0.312}{1}$		
(External doors to flats included under "internal doors" below.)		





building illustrated



Section B-B through 11-storey slab block
[Scale: $\frac{1}{8}$ " = 1' 0"]



Left, top to bottom: an 11-storey slab block seen past a 12-storey point block; looking north-east from under one slab block towards another; the roof of the boiler house at the east end of the slab blocks (the projecting towers are intake shafts); a typical living room in the 11-storey maisonette block, looking towards the kitchen. Above: another view inside a typical maisonette; the kitchen is on the left, and the living room is in the centre. The walls are plaster, dis-tempered in the living room and bedrooms and emulsion painted in the kitchen, w.c. and bathroom; floors inside the maisonettes are $\frac{1}{8}$ -in. thermoplastic tiles.

analysis

11-storey slab block

Upper floors

5-in. and 6-in. solid r.c. floors with 1½-in. screed on ¾-in. to 1-in. acoustic insulation (to separation floors only).

Span of each type; 12 ft. generally.

Superloads: normal domestic loadings.

Staircases

1 staircase to block (internal staircases to maisonettes given under "partitions and fittings"). Width: 3 ft. 4 in.

Total rise: 8 ft. 9 in. from floor to floor.

(Cost includes staircase only, excluding walls).

Roof construction

5-in. solid r.c. roof covered with 3-in. minimum lightweight screed.

Area: 8,087 sq. ft.

Glazing

21-oz. and 32-oz. clear sheet.

¼-in. georgian wired glass to underwindow panels and staircases.

Total of structural elements: 21s 7d

PARTITIONS AND FITTINGS

Internal partitions

2-in. clinker blocks within dwellings.

5-in. lightweight concrete blocks to gable walls and for back-up walls to under-window panels.

Internal staircases

Softwood timber stairs.

Width: 2 ft. 7 in.

Total rise: 8 ft. 9 in.

No. of internal staircases: 75—one in each maisonette.

Internal and external doors

Each maisonette has a 1½ in. entrance door

with ½-in. rough cast glazed panel

6 standard 1½-in. hardboard faced flush doors.

4 standard 1½-in. hardboard faced cupboard doors (1 pair, double).

1½-in. glazed doors to living room and 1 bedroom.

Ironmongery

LCC standard specification, satin finish anodised aluminium alloy door and window furniture. To BS elsewhere.

Fittings

Each maisonette is fitted with dresser unit, worktop, shelving, drying cabinet, refuse and fuel hoppers.

Total of partitions and fittings: 7s 0½d

FINISHES

Floor finishes

Throughout maisonettes, ½-in. thermoplastic tiles. Public staircase and landings, ¾-in. quarry tiles.

Wall finishes

Glass and gypsum plaster to cross walls, perlite plaster to gable walls, ½-in. plasterboard and ½-in. t. and g. boarding to underwindow panels.

s	d		s	d
4	2	Ceiling finishes	11	½
		One coat of bonding plaster to concrete soffits.		

Roof finishes

Three-ply bituminous felt.

Decorations

4 Distemper to living and bedrooms.

Emulsion paint to kitchens, w.c.s and bathrooms.

Hard gloss paint to internal joinery.

Varnish to external woodwork.

Total of finishes: 8s 1d

5½ SERVICES

Plumbing

4-in. c.i. pipes and fittings; one pipe system and ventilated w.c.s.

Cold water installation

Galvanised iron to MWB requirements.

Communal storage on roof, holding 50 galls. per dwelling.

A break pressure tank in each dwelling.

Sanitary fittings

Each dwelling is provided with:

1 w.c., 1 c.i. bath, 1 wash basin, 1 c.i. sink.

Heating, hot water and ventilation

Heating and hot water are supplied from a central high temperature hot water system, warming the rooms by means of radiators.

Internal temperatures: 65 deg. F. in living rooms; 50 deg. F. in bedrooms.

Air change: 6 changes per hour in w.c.s, which are mechanically ventilated.

U of roof and walls, 0.25.

(The cost includes a proportion of the cost of central boiler house and ducts.)

Gas installation

Each dwelling is supplied with points in kitchen for cooker, water heater and refrigerator.

Electrical installation

Type of point	No. of each type per dwelling
Lighting	9
13-amp power	8
Cooker	1

Lifts

2 eight-person passenger lifts, travelling at 100 ft. per min.

Total of services: 17s 4d

Drainage

Separate surface water and soil sewers. s.g.s. except where c.i. under buildings.

Other elements

Dry riser and lightning conductor.

Total per sq. ft. of floor area:

£179,616 (net cost excluding external works and drains)

56,022 sq. ft. (net dwelling areas including private balconies)

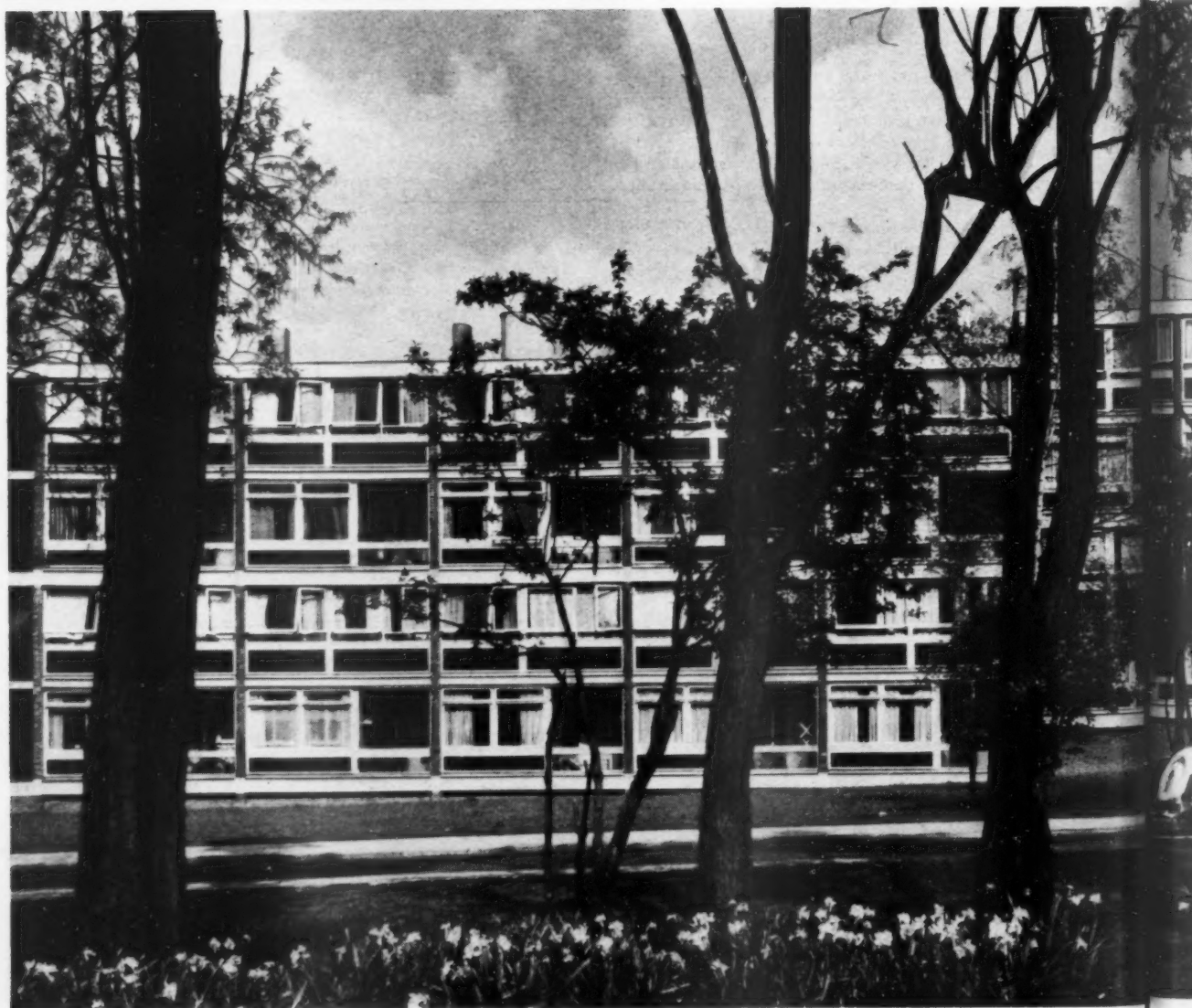
= 64 1½

building illustrated

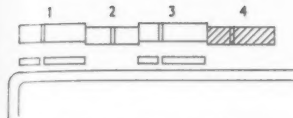


Below: a long block of four-storey maisonettes designed to make full use of the contours of the ground and very thoughtfully sited. The uninterrupted grass running right up to the building is most successful. Note the relatively unobtrusive use of the private balconies for drying clothes.

Left: rear gardens and tenants' stores to four-storey maisonettes showing the wall to private gardens to the lower dwellings and the use of the gardens for clothes drying. The general appearance is rather forbidding but the use of brickwork provides a certain amount of privacy for the lower maisonettes and, although initially expensive, eliminates substantial maintenance costs in the future. The balconies are timber frame with glass infill.



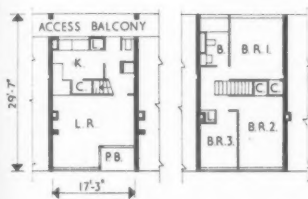
analysis



Block plan of 4-storey maisonettes.
Block 4 is the one analysed on the right.



Key plan. The flat shaded is shown in detail below.



Lower and upper floors of typical maisonette [Scale: $\frac{1}{32}'' = 1' 0''$]

4-storey maisonette block

CONSTRUCTION

The four-storey maisonette blocks are constructed with load-bearing brick crosswalls, 9 in. thick, in calculated brickwork. These are carried down to normal strip foundations. Floors and roofs are in solid in-situ r.c. construction. The external cladding is in timber and glass, the solid panels below the windows having wired cast glass externally and dry partitions internally. The penultimate cross-walls of all blocks are strengthened by r.c. columns and foundations, to stabilise the whole block.

The main staircases are r.c., while individual staircases within each dwelling are of timber. On the access balcony side the balcony is recessed with the first and third floors projecting over the access balcony below.

PLAN

The plan of these crosswall maisonettes is typical of those being built by many housing authorities. They have a span between party walls of 15 ft. 9½ in., with balcony access and a public staircase incorporated in the block.

The blocks are formed in multiples of this standard unit and each maisonette provides 3-bedroom accommodation for five people. Each has a combined bathroom and w.c. on the upper floor and a second w.c. on the ground floor, entered from the hall.

Except in one block, a drying cabinet is installed in the hall of each maisonette, and each has an inset private balcony. In general the ground floor maisonettes have private gardens, mostly not separated from the building by an access path. Independent tenants' stores are provided on the basis of about one to two dwellings.

SUMMARY

Ground floor area: 4,913 sq. ft.
Total floor area: 19,858 sq. ft.
Net floor area: 16,634 sq. ft.
Type of contract: LCC lump sum.
Tender date: November, 1954.
Work began: December, 1954.
Work finished: December, 1956.
Tender price of foundations, superstructure, installations and finishes: £34,774.

	cost per sq. ft.	s	d
Preliminaries and insurances		2	11
Contingencies		1	0
Work below ground floor level		3	7½
In-situ concrete strip foundations under cross walls, 6 ft. wide, 2 ft. 6 in. thick and 6 ft. deep.			

STRUCTURAL ELEMENTS

Frame or load-bearing element	4	7½
9-in. brick crosswalls, brick columns and r.c. floors and beams, including refuse chamber and chute.		
External walls	10½	
13½-in. brick flank walls.		
Panel walls: under-window panels of ½-in. wired glass, air space and 2½-in. dry partitions.		
Ratio: $\frac{\text{solid wall}}{\text{floor area}} = \frac{0.355}{1}$		

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analysis

4-storey maisonette block

Windows

LCC standard wood windows in non-standard painted softwood frames; large lights pivot hung. All windows can be cleaned from within the building.

$$\text{Ratio: } \frac{\text{windows}}{\text{floor area}} = \frac{0.511}{1}$$

External doors

Included with internal doors.

Upper floors

7-in. r.c. in-situ to normal domestic loading.
1½-in. screed on ¾-in. and ¾-in. acoustic quilt.
Span of each type: 16 ft. 6 in.

Staircases

1 public staircase: in-situ r.c.
Width: 3 ft. 4 in.
Total rise: 8 ft. 9 in.

Roof construction

In-situ 7-in. r.c.
Area: 5,197 sq. ft.

Glazing

21-oz. and 32-oz. clear sheet and obscured sheet.
¾-in. georgian wired to under-window panels.

Total of structural elements: 13s 9½d

PARTITIONS AND FITTINGS

Internal partitions

2-in. clinker partitions, plastered.

Internal staircases

Softwood stair, 2 ft. 9 in. between walls. Total rise: 8 ft. 9 in.

Internal and external doors

2 1⅝-in. external flush doors, one glazed.
7 1⅝-in. flush internal doors.
4 1⅝-in. flush cupboard doors (1 pair double).

Ironmongery

LCC standard specification. Satin finished anodised aluminium alloy door and window furniture. To BS elsewhere.

Fittings

Dresser unit, worktop, shelving, drying cabinet, refuse and fuel hoppers.

Total of partitions and fittings: 5s 11½d

FINISHES

Floor finishes

½-in. thermoplastic tiles throughout dwellings.
Grano in staircase areas.

Wall finishes

Fairfaced brickwork to public staircase enclosure.
2 coat perlited plaster to flank and walls of internal staircases.
2 coat Class B gypsum plaster elsewhere.

s d

2 6

Ceiling finishes

Bonding plaster to concrete soffits.

Roof finishes

2 coats ¾-in. asphalt on felt on 1-in. cork insulation.

Decorations

Distemper in living and bedrooms.
Emulsion paint in kitchens, w.c.s and bathrooms.
Hardgloss paint to internal woodwork.

Total of finishes: 8s 0½d

3 6½

SERVICES

Plumbing

3½-in. and 4-in. c.i. pipes and fittings.

Water installation

Galvanised iron to MWB requirements. Storage tank on roof providing 50 gallons storage per dwelling.
Break pressure tanks within each dwelling.

Sanitary fittings

Type of fitting	No. of each type per dwelling
W.c.s, fireclay	2
Bath, cast iron	1
Basin, fireclay	1
Sink, cast iron	1

Hot water

In each dwelling:
Open fire and back boiler.
Hot tank in linen cupboard.
Air change: 2 per hour.

Gas installation

Point for cooker, waterheater and fire igniter, in each dwelling.

Electrical installation

Type of point	No. of each type per dwelling
Lights	9
13-amp. power	9
Cooker	1
Immersion heater (2 kW)	1

Total of services: 6s 6½d

Drainage

Separate surface water and soil sewers in s.g.s. except where c.i. under building.

Total per sq. ft. of floor area:

£34,774 (net cost excluding external works and drains)
16,634 sq. ft. (net area within dwellings, including private balconies) = 41 10

2 5½

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s d

8

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2 1

1 5½

11½

1 5½

11

2½

1 6½

10½

building illustrated



Floor plan, single-storey house.
[Scale: $\frac{1}{8}$ " = 1' 0"]

Terraces of single-storey houses for old people are a feature of the Roehampton housing scheme, the point blocks of which can be seen towering in the background of the photograph above. The small, very simply constructed houses are stepped. The porch containing a fuel store and rubbish bin cupboard is beside the front door, while the white painted sidewall provides a sunny and sheltered corner in which the neighbours can

sit in the evening sun. The houses are of fair-faced cross-wall construction, painted white, built on a base of 4-in. hardcore with 5-in. concrete above and a fairfaced concrete edge beam. The flat roofs are finished with roofing felt and granite chippings, through which the in-situ r.c. chimney stack shoots up in rather a defiant manner—its height, of course, is dictated by the byelaws. Below is a close-up.



analysis

COST COMMENTS

This analysis compares the cost of providing accommodation in two types of tall block and in the more common 4-storey maisonette block. It is particularly interesting in its comparison between the 12-storey point block of flats and the 11-storey maisonette slab block. These buildings are similar in structural form and finishings, have open ground floor plans and heating and hot water supplied from the same source. Both were built by the same contractor under the same contract.

The analysis shows that the cost per square foot of floor area of the point block is 6s. 8½d. more than the cost per square foot of the slab block, the additional cost being mainly due to the following extra costs:

1s. extra per sq. ft. for work below ground level;

2s. 7d. extra for external walls and cladding;

9½d. extra for public staircases (the point block has two as opposed to one in the slab block);

1s. 5½d. extra for lifts.

This last is to be expected as the two lifts in the slab block serve 75 dwellings where the two lifts in the point block serve 44.

On further analysis the structural elements show a saving on the slab block of roughly 4s. per sq. ft. and services of about 1s. 4d. per sq. ft.

This would appear to support the view that the narrow-frontage maisonette with its small area of external walling is a more economical form of accommodation to provide. But against this it has to be remembered that the point block contains 50 per cent of two-person flats, which are notoriously expensive per square foot and this must have an impact on the cost per square foot over the block as a whole. As was to be expected, the cost per square foot of the 4-storey maisonettes is considerably lower than the cost of the multi-storey blocks, and this difference is almost entirely made up as shown below:

	12-storey point block		11-storey slab block		4-storey maisonette block	
	s	d	s	d	s	d
Structural elements	25	6½	21	7	13	9½
Partitions and fittings	7	5½	7	0½	5	11½
Finishes	7	5½	8	1	8	0½
Services	18	8½	17	4	6	6½

This analysis once again demonstrates that building high is more expensive than four-storey work and it is true that the building cost of the scheme could have been reduced and the same density achieved by building nothing but 4-storey maisonettes. The result, however, would have been of far less financial value than the present scheme, not to speak of architectural or human values. What would be the value to a private investor, building for letting or sale at market value, of these tall blocks with their magnificent views over Richmond Park? This value would not have been created had there been restriction on height.

CONTRACT PROCEDURE

The dwellings on this site were erected by two contractors: Wates Ltd. built the tall blocks and Tersons Ltd. the remainder. The first stage of the development contained one 11-storey slab block, three 12-storey point blocks, six 4-storey maisonette blocks, twenty-nine 3-storey, sixteen 2-storey and sixteen single-storey houses, a boiler house and heating ducts. The remainder of the scheme was carried out as a continuation of the initial contracts.

The main interest of this job is the method of erection of the tall blocks which were built without scaffolding and with an extensive use of precasting. Every possible item of equipment was power driven, electricity being used for tower cranes, hoists, mixers and many small hand tools. Piling and

foundation work went on progressively as a section independent of construction work. Horizontal floor beams, balconies and staircases were precast on the site and the cladding was delivered straight from the factory. The equipment for structures was primarily organised around the use of tower cranes, which were employed in the placing of shuttering and precast units, lifting of steel, concrete bricks, all heavy timber units and timber staircases for maisonettes without external scaffolding. Following completion of the structures and the sealing of the roofs, the tower cranes were removed and hoists erected for the use of trades. This technique considerably increased the speed of erection.

CONTRACTORS

Principal quantity surveyor to the LCC: M. F. Rice; *chief engineer to the LCC:* J. Rawlinson; *landscape work:* L. Huddart, chief officer Parks, LCC; *site acquisition:* J. E. A. Toole, valuer to LCC; *housing management:* R. J. Allerton, Director of Housing, LCC.

General contractors for slab and point blocks: Wates Ltd. *Sub-contractors for point blocks only:* Piling: West's Piling & Construction Co. Ltd. *Electrical:* Haines & Sheppard Ltd. *Sub-contractors for both:* Piling: Frank Compressed Pile Co. Ltd. *Electrical:* A. & V. Baxter Ltd. *Builders smiths:* E. C. Blackmore Ltd. *Precast concrete:* The Modular Concrete Co. Ltd. *Metal windows:* The Crittall Manufacturing Co. Ltd. *Heating and ventilation:* A. G. Manly & Co. Ltd. *Terrazzo:* The Mosaic and Terrazzo Precast Co. (Staines) Ltd. *Lightning protection:* R. C. Cutting & Co. Ltd. *Insulation:* Celcon Ltd. *Lift engineers:* The Express Lift Co. Ltd. *Thermoplastic floor tiling:* Rowan & Bowden Ltd. *Street lighting:* Erecon Ltd. *Plastering:* T. F. Rooney & Sons Ltd. *Painting:* J. W. Adler & Sons (London) Ltd. *Plumbing:* D. F. Wiseman & Sons Ltd. *Glazing:* Faulkner, Green & Co. Ltd. *Floor and wall tiling:* Herbert H. Nutman Ltd. *Felt roofing and asphalt:* The General Asphalt Co. Ltd. *Road surfacing:* Constable Hart & Co. Ltd. *Paving:* S. C. Bent. *Tree felling:* A. F. Warner. *Fencing:* W. A. Skinner & Co. Ltd. *Mastic jointing:* Mann-Reddington Ltd.

General contractor for four-storey maisonettes: Tersons Ltd. *Sub-contractors:* Timber: C. F. Anderson & Son Ltd. *Cement and drainage goods:* William Ashby & Son Ltd. *Wrought iron sundries:* G. A. Baker (Builders' Merchants) Ltd. *Reinforcement fabric:* BRC Engineering Co. Ltd. *Gully gratings, manhole covers and frames:* Broad & Co. Ltd. *Joinery:* Davies Bros. (Timber & Joinery) Ltd. *Electrical installations:* Electric Contracts (London) Ltd. *Glazing:* Faulkner Greene & Co. Ltd. *Wrought iron work and ironmongery:* General Iron Foundry Co. Ltd. *Plumbing:* Home Counties Plumbing Ltd. *Fireplaces:* Kirby Bros. Ltd. *Common bricks:* London Brick Co. Ltd. *Terrazzo:* The Malacarp Terrazzo Co. Ltd. *Thermoplastic flooring:* Marley Tile Co. Ltd. *Asphalt:* Natural Rock Asphalt Ltd. *Facing bricks:* Richard Parton (Builders' Merchants) Ltd. *Plastering:* Plastering Ltd. *Reinforcement:* The Rom River Co. Ltd. *Formwork and scaffolding:* SGB Ltd. *Balustrades and guardrails:* R. Smith (Horley) Ltd. *Carcassing timber:* W. T. Storer & Co. Ltd. *Throat units:* True Flue Ltd. *Wrought iron work:* F. Watson Steel Construction Co. Ltd. *Wall and floor tiling:* Wiggins-Sankey Ltd. *Painting:* Jenner Bros. Ltd.

working detail

BALUSTRADE: TRAINING CENTRE IN STOCKHOLM

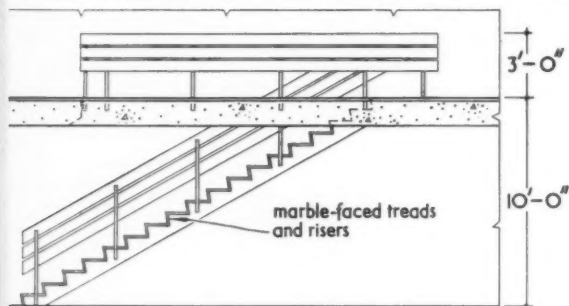
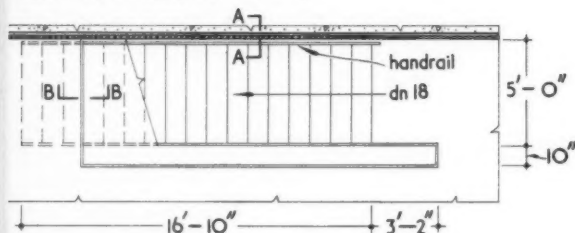
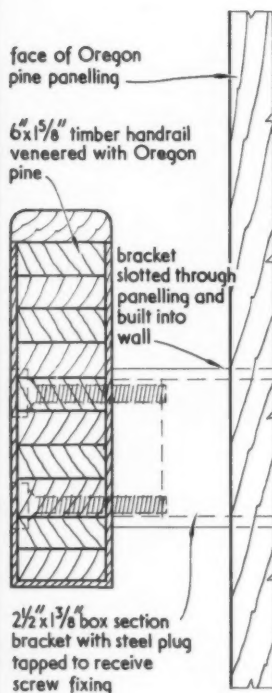
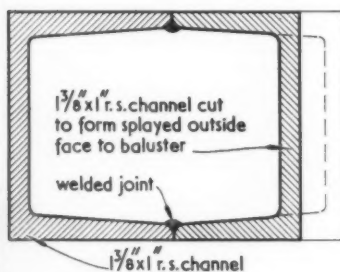
Anders Tengbom, architect (material supplied by Alice Mylo)

This balustrade serves to remind us of one of the objectives of detailing in the modern movement, the keeping of primary plane surfaces free from interruption which, because difficult to attain, is easily forgotten. In this case the chief plane to be kept clear is the floor, as seen on plan. To achieve it, the balusters are carried up well clear of the stair edge and the railing has been designed to repeat the simple rectilinear pattern to which the plan gives rise.

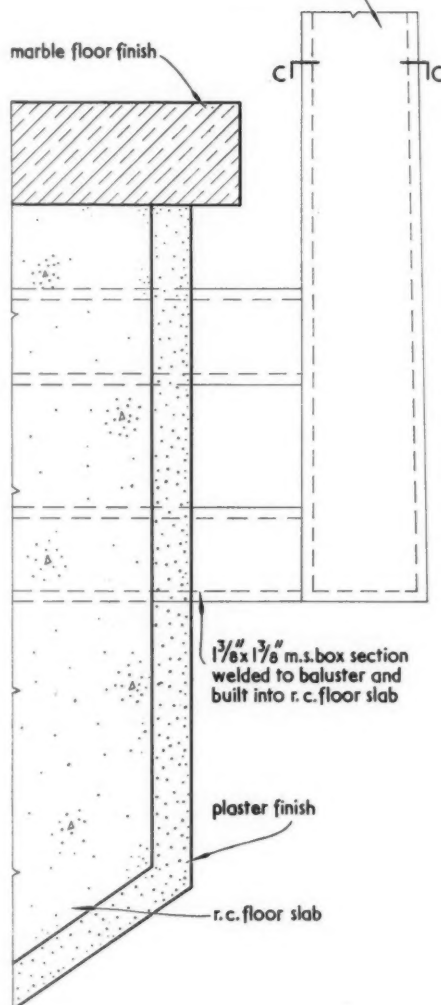
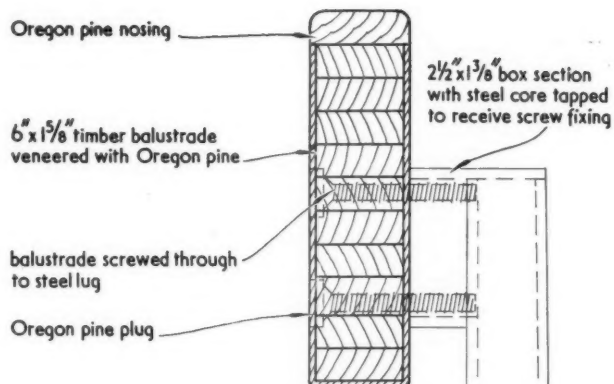
working detail

BALUSTRADE: TRAINING CENTRE IN STOCKHOLM

Anders Tengbom, architect (material supplied by Alice Mylo)

ELEVATION. scale $\frac{1}{8}" = 1' - 0"$ PLAN. scale $\frac{1}{8}" = 1' - 0"$ SECTION A-A. scale $\frac{3}{8}"$ full size

PLAN AT C-C. scale full size

SECTION B-B. scale $\frac{3}{8}"$ full size

steel lug tapped to receive screw fixing of balustrade

two 1 3/8" x 1" r.s. channels, welded together to form box section baluster, buffed smooth

3/4" x 3/4" steel lugs welded to baluster

steel lugs tapped to receive screw fixing of balustrade

note: figured dimensions in feet and inches are approximate

STACKING CHAIRS: TRAINING CENTRE IN STOCKHOLM

Anders Tengbom and Sven Kai-Larsen, architects (material supplied by Alice Mylo)



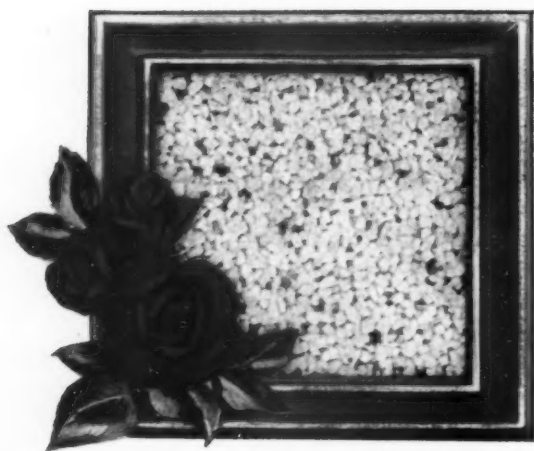
Generally speaking, stacking chairs, however sensible and comfortable they may be, have an unsatisfactory appearance when seen standing alone. This is usually due to the slightness of their structural parts. These chairs evade the dilemma by having relatively substantial fore and back legs which are thin and deep instead of square in section. Note the gap (on plan) between the outer edge of the seat and the inner edge of the armrest, which enables the back legs of all the chairs in the stack to nest neatly one against the other.



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Two new buildings for Liverpool University just coming to completion are Basil Spence and Partners' Physics Building, to be known as the Chadwick Laboratory, of which the eight-storey tower block is shown left, and E. Maxwell Fry, of Fry, Drew, Drake & Lasdun's, Civil Engineering and Building (right).



One wall has been used as a memorial panel to some great engineers of history—one wonders how selected. The panel had to be bricked after the pre-cast concrete letters were in place. The Physics Building will be cost analyzed in the JOURNAL shortly. The tower block, which contains research laboratories, quiet rooms for theoretical study, and administrative offices, rises from a large single-storey area, containing lecture rooms and a laboratory requiring very heavy equipment. (General contractors of both, Holland & Hannen and Cubitts.)

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Announcements

PROFESSIONAL

A Technical Assistant has been appointed to the staff of the Department of Architecture, University of Edinburgh, 18, George Square, Edinburgh 8. At this address he will be glad to receive trade literature and samples; travellers on Tuesday mornings.

The Architectural Department of Brian Colquhoun and Partners, Consulting Engineers, would be pleased to receive trade literature in their Teheran Office, Persia: Address, 15, Khiaban Aban, Teheran, Iran.

John B. Morton, A.A.Dipl., A.R.I.B.A., and Brian H. Harmsworth, A.R.I.B.A., Dipl.Arch., A.R.C.M., have merged their two practices and will now be practising under the title of Morton & Harmsworth at 31, Carfax, Horsham, Sussex (telephone Horsham 3444). In future they will operate only in association with MacLeod Wallace, A.A.Dipl., F.R.I.B.A., of Chichester.

H. A. Halpern & Associates refer to their recent announcement and wish to make it clear that they have no office at 60, Woodlands Lane, Leeds, but that this address was merely an accommodation address, the use of which has now been discontinued; the only addresses at which they practise are: Cumberland Chambers, 7, Edgware Road, Marble Arch, W.2 (Head Office) and 26, High Street, Chatham, Kent.

Arthur J. Willis & Thompson, Chartered Quantity Surveyors, have taken into partnership W. H. Steele, A.R.I.C.S. The name of the firm will remain unchanged.

H. J. Spiwak, A.R.I.B.A., of 22, Campden Hill Gardens, London, W.8. would be pleased to receive trade literature, but asks representatives not to call.

J. H. Napper & Partners, Chartered Architects, have moved to 133, Osborne Road, Newcastle upon Tyne 2 (telephone 81-3045) where they will be pleased to receive trade catalogues of International A4 or A5 size.

TRADE

J. R. Gordon & Co. Ltd. have moved to Chemistry Lane, Pentre, Queensferry, Flintshire, (telephone Hawarden 2001/4). The new telephone number will also apply to PD Insulation Board Mill and Queensferry Sawmill.

Siemens Edison Swan Ltd. have moved their Leicester branch office to 247, Western Road, Leicester (telephone Leicester 58124/5).

Paramount Asphalte Ltd., of Kennington, London, S.E.11. have licensed Apex Bitumen Industries Pty. Ltd., of Marrickville, Sydney, New South Wales, to be sole manufacturing and selling agents of Parovents in Australia.

S. Hallam, E.R.D., Assoc.I., Plant E., is now manager of David Brown Construction Equipment Ltd., Meltham, Yorkshire.

C. W. V. Davis, a Director of Research and Control Instruments Ltd., will head the newly formed Industrial Products Division of that Company.

British Insulated Callender's Construction Co. Ltd. announces the retirement of C. H. Frankland, M.I.E.E., from the Board and the appointment of R. Betley as an Executive Director of the Company.

Kwikform Ltd. have moved their London office and depot to East Road, Upper Wickham Lane, Welling, Kent (telephone Woolwich 9177/8/9).

The Velux Co. Ltd. have moved to Town Square Chambers, Stevenage, Herts (telephone Stevenage 2570).

E. G. Brooks has been elected a director of The De La Rue Co. Ltd.

Scaffolding (Great Britain) Ltd., have formed a new subsidiary Company to be known as SGB Shuttering Ltd.

W. M. Todd has succeeded K. Druce as Manager of The English Electric Company's Bristol office.

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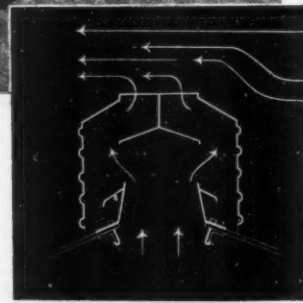
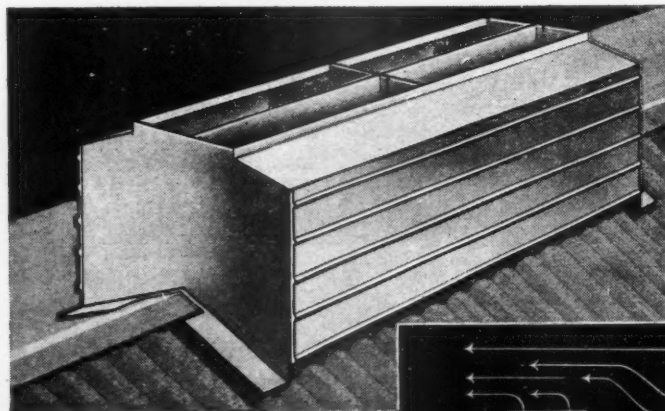
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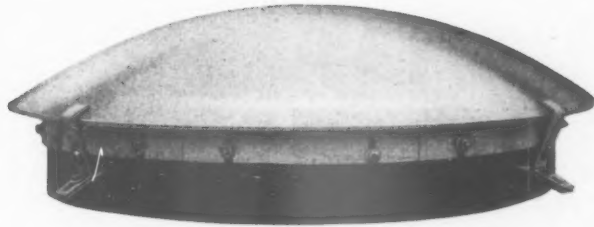
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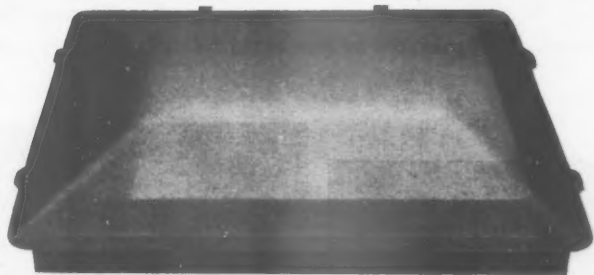
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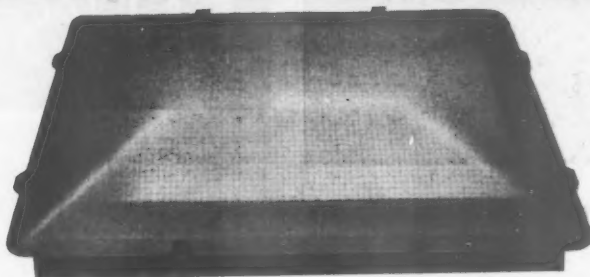
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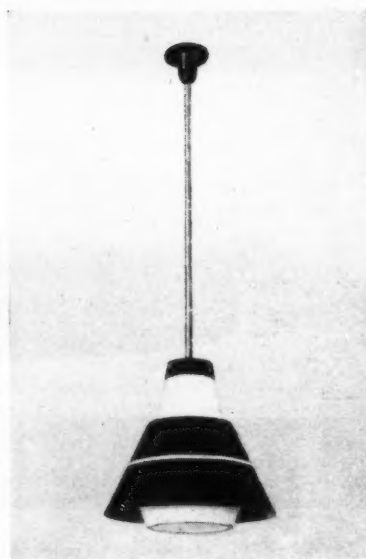
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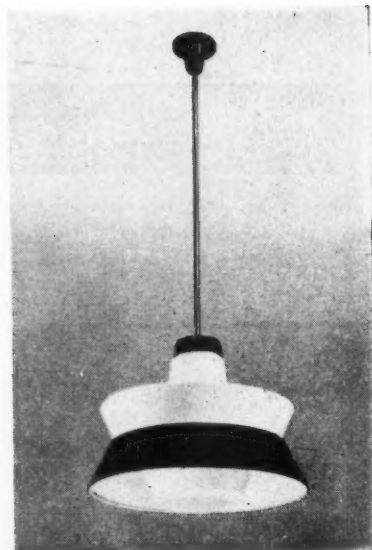
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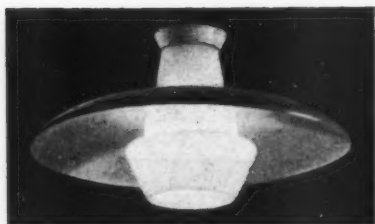
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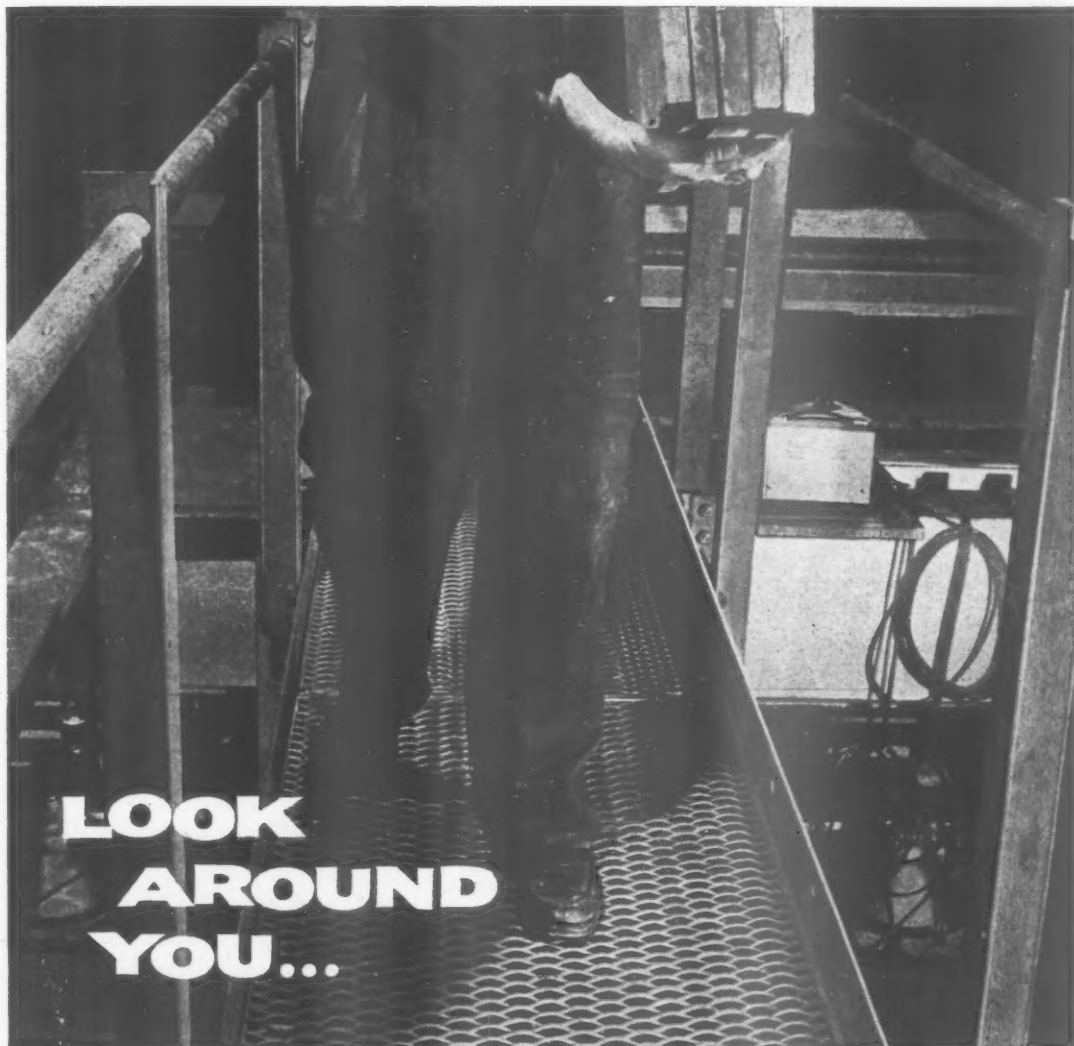
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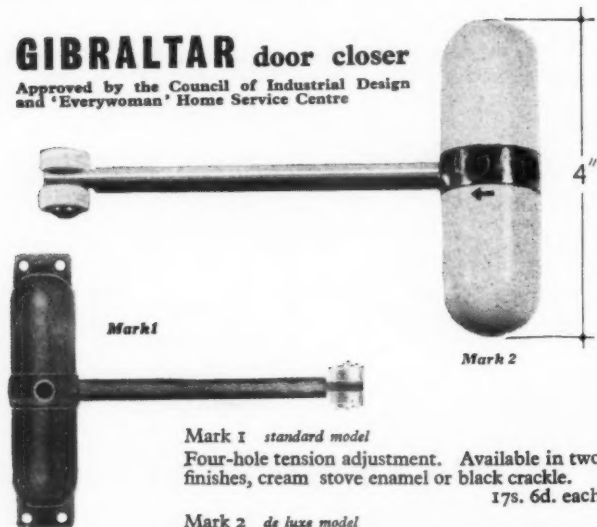
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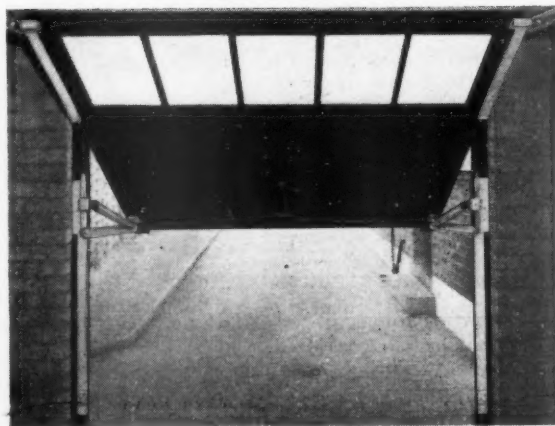
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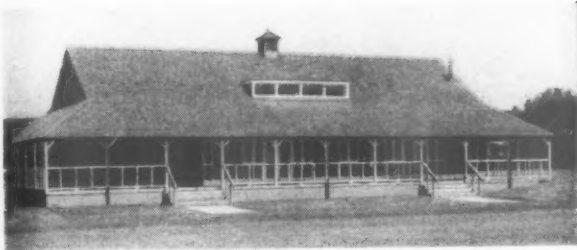
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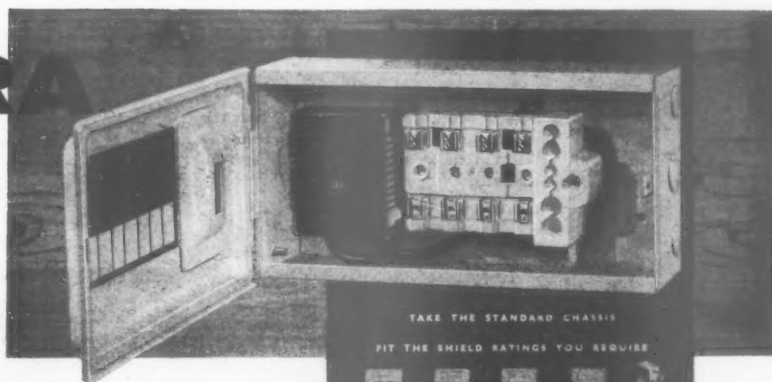


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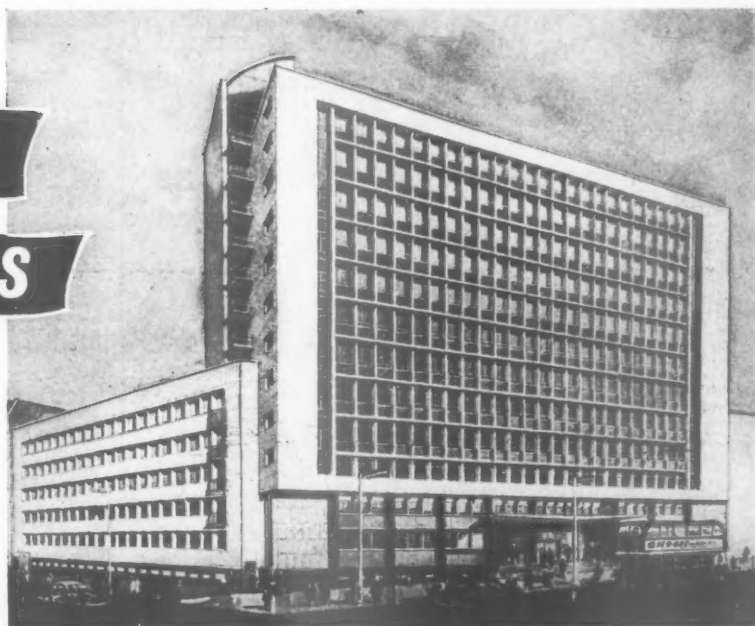
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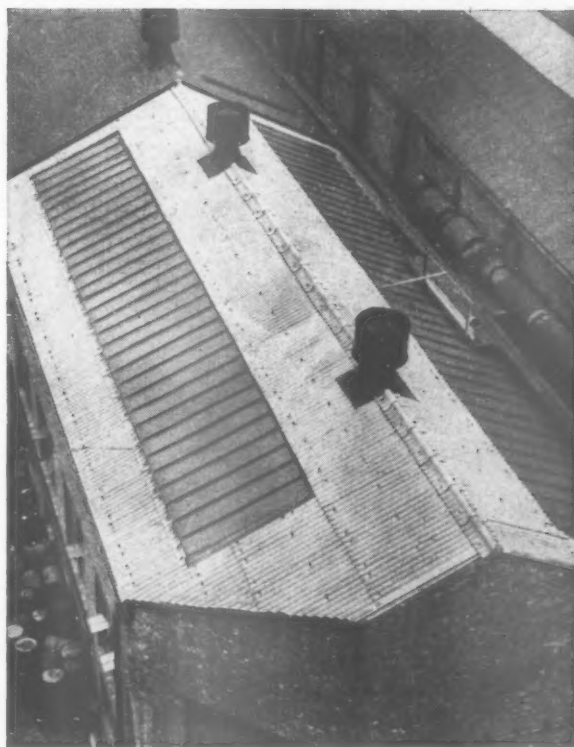
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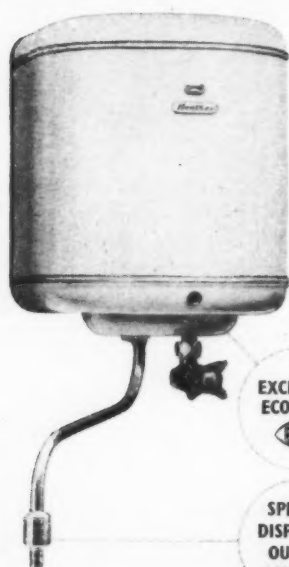
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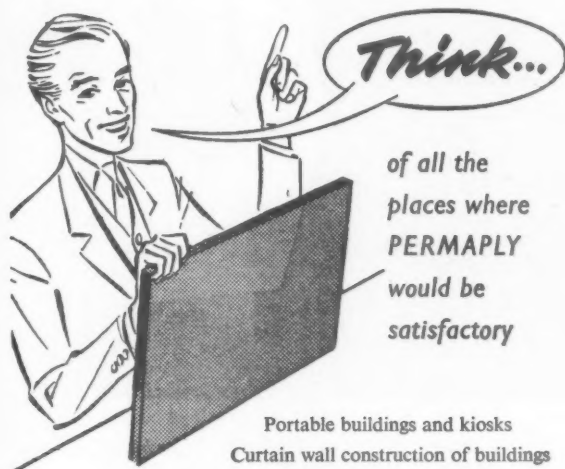
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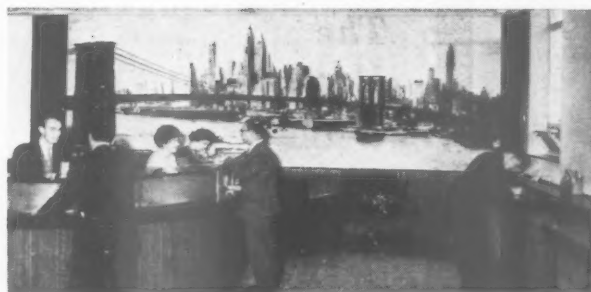
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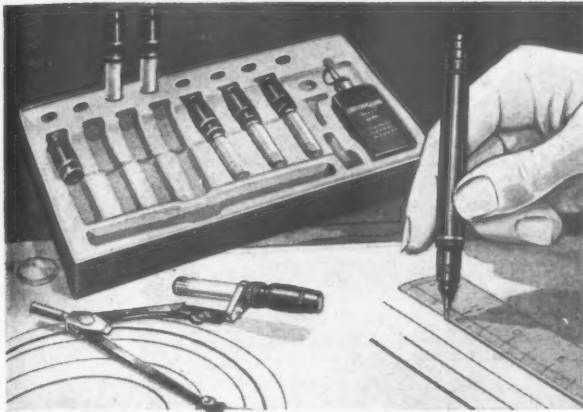
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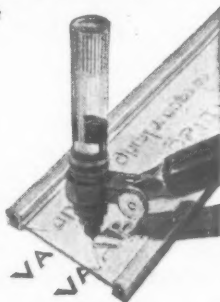
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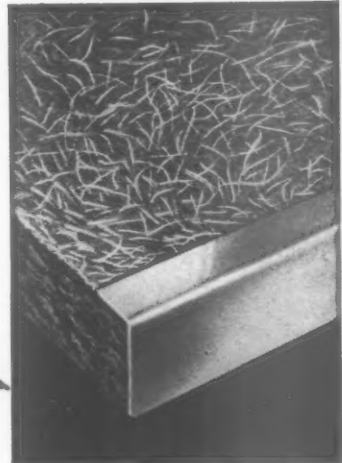
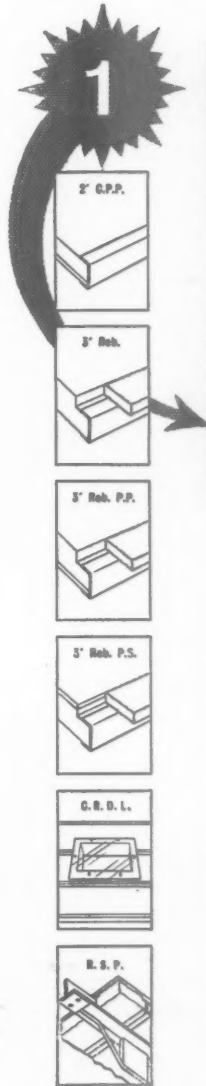
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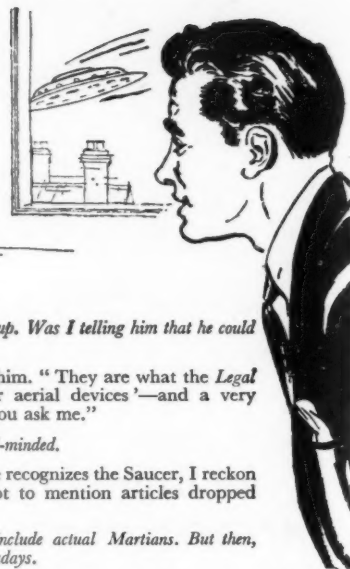
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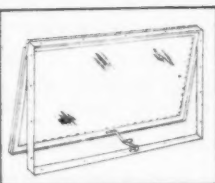
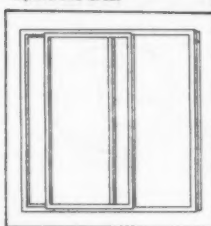
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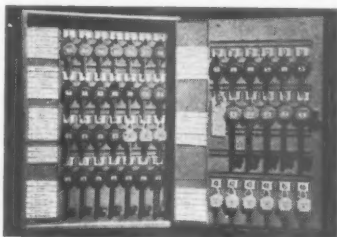
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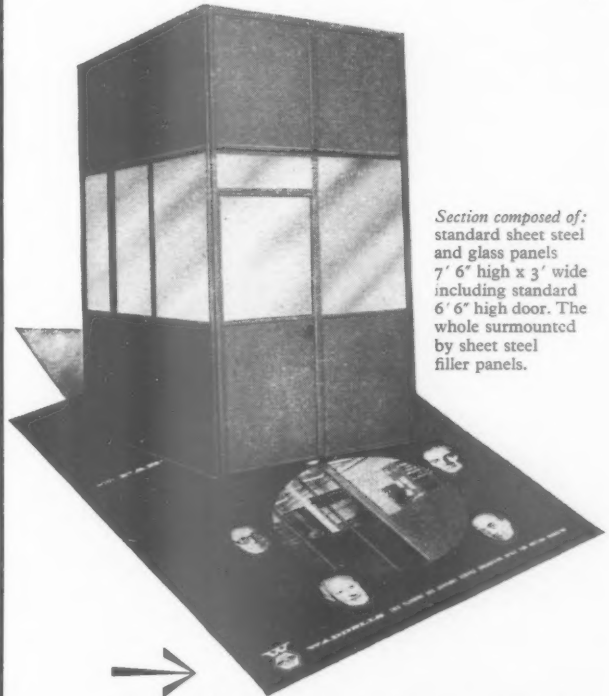


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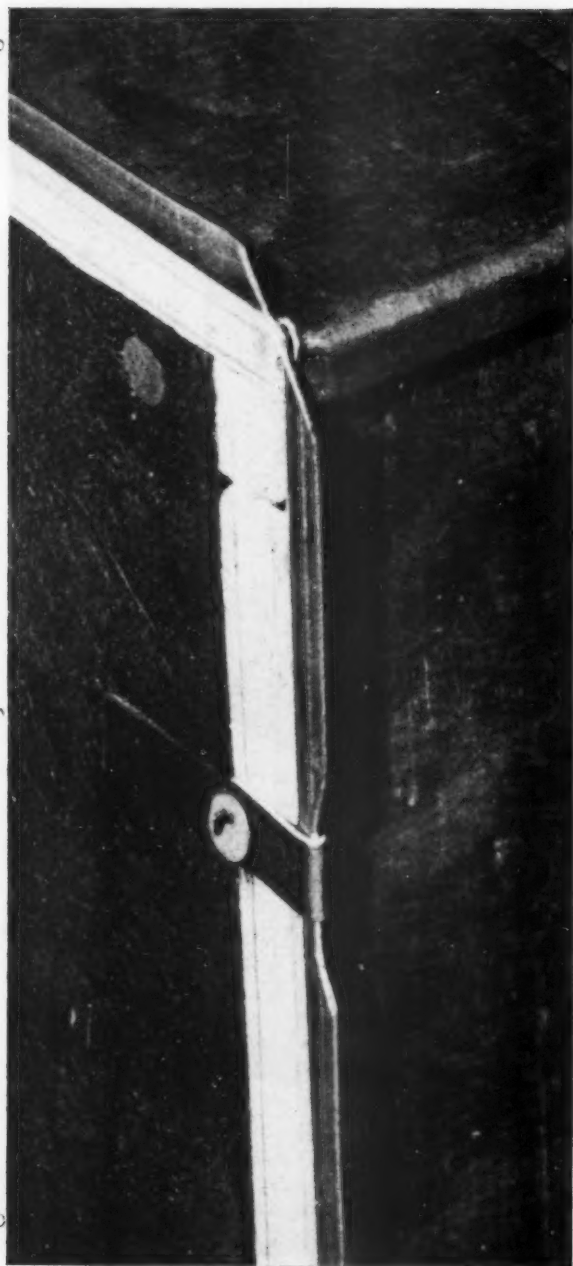
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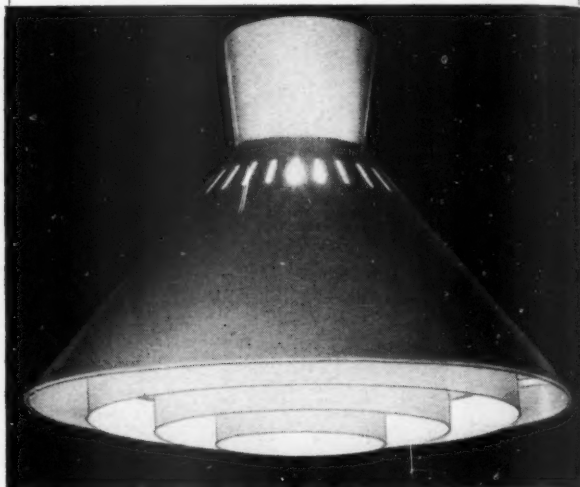
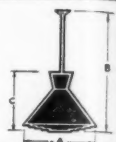
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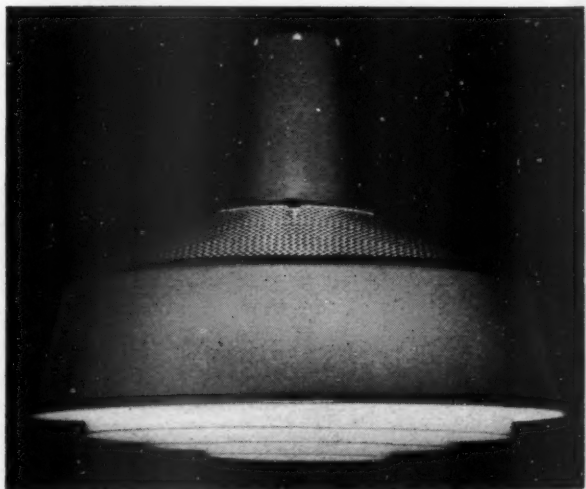


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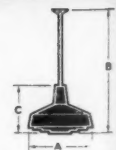
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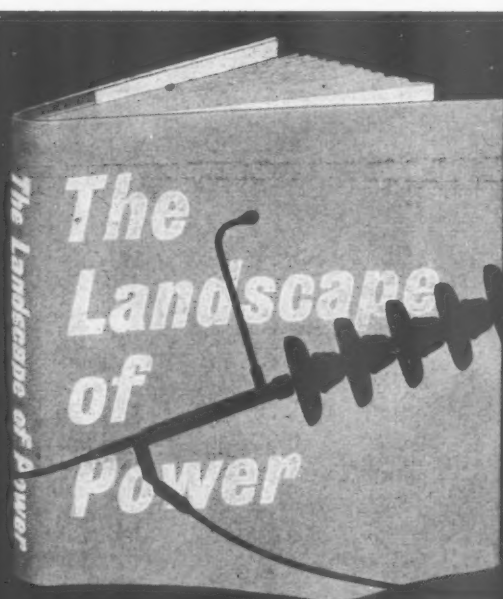
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Sylvia Crowe

The Landscape of Power by Sylvia Crowe P.I.L.A.

THIS BOOK is addressed to everyone who cares about Britain's landscape. Sylvia Crowe, the eminent landscape architect, is not a preservationist. She accepts the fact that you cannot put the clock back; she accepts the essential need for the construction of immense oil refineries, nuclear reactors, power stations, and the network of the electricity grid. 'This network of power' she says, 'opens up a prospect of future wealth for the country, of clean industry and more efficient agriculture.' What she will not accept is that the introduction of these vast new structures into the landscape need necessarily ruin it, and in this practical, lucidly written handbook she calls for more thoughtfulness among those who are responsible for their construction. She shows, with text, photographs and diagrams, that giant buildings and their accessories can be incorporated in the landscape without destroying it—indeed, that given skilful design and sensitive siting they can in some circumstances enhance the natural scene.

There are nine chapters in the book and they deal with The New Industrial Age; Power and National Parks; Nuclear Power Stations; Hydro-Electric Power; Electric Transmission; Oil; Airfields; New Industries in Old Areas; Conclusion. Size 8½ in. × 5½ in. 116 pages including over 70 diagrams and halftone illustrations. 16s. net, postage 10d.

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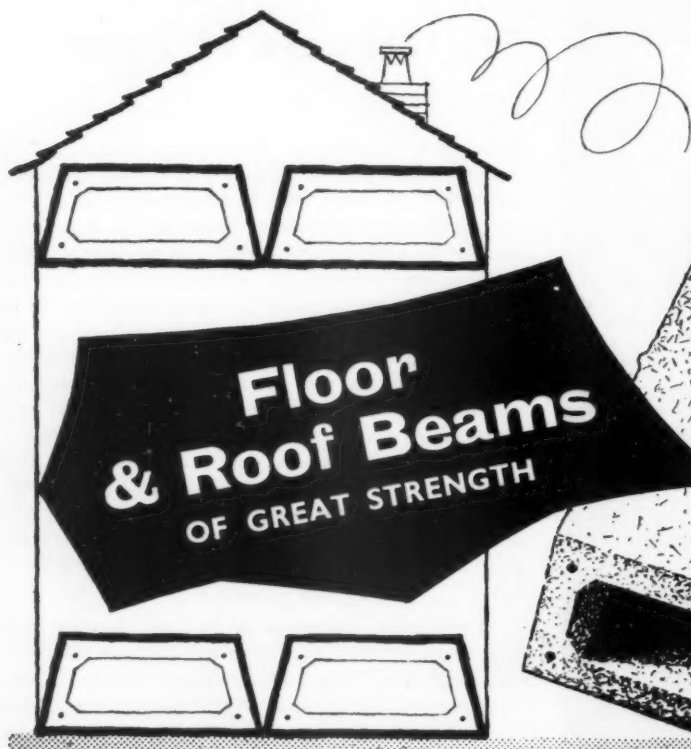
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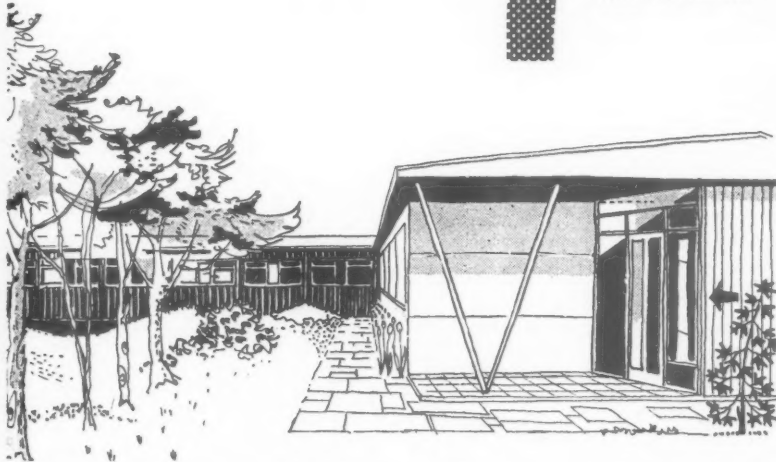
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- | | |
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| Chief Architect | .. Woolworth House,
242/246, Marylebone Road,
London, W.1. |
| District Architect | .. F. W. Woolworth & Co., Ltd.,
311, Oxford Street,
London, W.1. |
| District Architect | .. F. W. Woolworth & Co. Ltd.,
Armour House Lord Street,
Liverpool, 2. |
| District Architect | .. F. W. Woolworth & Co. Ltd.,
Crown Site Building
26/40, Kensington High Street,
London, W.8. |
| District Architect | .. F. W. Woolworth & Co. Ltd.,
47/49, King Street,
Dudley, Worcs. |

CLASSIFIED ADVERTISEMENTS

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

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

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

Public and Official Announcements

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

BEDFORDSHIRE COUNTY COUNCIL
The appointment of COUNTY ARCHITECT will fall vacant in March, 1960, and applications for the post are invited from Members of the Royal Institute of British Architects who have had wide architectural experience with a local authority and who possess administrative ability. The salary within scale £3,000-£3,335. Application forms and further particulars from Establishment Officer, Shire Hall, Bedford. Closing date 23rd November, 1959. 6480

BUILDING SURVEYORS
Architect's Department, London County Council, has vacancies in Building Regulation Division and District Surveyors' Service for work in connection with applications under the London Building Acts and Byelaws. District Surveyors' offices are in the Metropolitan Boroughs and work involves negotiations with developers and supervision of works in progress.
Up to £1,135 commencing according to qualifications and experience. Application form and particulars from Hubert Bennett, F.R.I.B.A., Architect to Council, EK/81/59, County Hall, S.E.1. (1960). 5554

CANADA
TOWN PLANNERS
Central Mortgage and Housing Corporation (the Federal Agency concerned with Housing and Planning in Canada) requires Town Planners with creative and administrative abilities in its expanding activities in Ottawa and across the nation.

The work includes the design of public housing and redevelopment projects and the review of housing and planning layouts submitted by private developers for Government mortgage approval. Openings are available at Head Office, Regional Offices and Branch Offices. Travel assistance. Health and Pension Benefits.
Applicants should possess a professional qualification and membership in A.P.I. or R.I.B.A. Salary in accordance with qualifications and experience. Apply in confidence by November 15th giving age, marital status, qualifications and experience with names of three references to: Mr. G. M. Morrison, Canadian Department of Labour, 61, Green Street, W.1. The Corporation's Chief Architect and Planner, Mr. Ian MacLennan, will interview applicants in London, end of November, by appointment. 6424

BOROUGH OF ENFIELD
BOROUGH ENGINEER'S DEPARTMENT
APPOINTMENT OF ARCHITECTURAL ASSISTANT
Applications are invited for the above appointment at a salary in accordance with Grade A.P.T. II of the National Scheme of Conditions of Service (£765 x £30-£280 per annum) with the additional appropriate London weighting.
The commencing salary will be fixed at a point within the Scale commensurate with qualifications and experience.
Application forms obtainable from Mr. H. D. Peake, M.Sc. (Eng.), M.I.C.E., Borough Engineer & Surveyor, 7, Little Park Gardens, Enfield, Middx., should be returned to the undersigned.
CYRIL E. C. R. PLATTEN
Town Clerk. 6343

Public Offices,
Gentlemen's Row,
Enfield, Middx.

MIDDLESBROUGH EDUCATION COMMITTEE

ARCHITECTURAL STAFF
Applications are invited for the following vacancies in the Education Architect's Office of the Education Department. An excellent opportunity is offered for participation in the expanding Educational Building Programme. Appointments will be made within the grades as indicated, subject to qualifications and experience.
(a) SENIOR ASSISTANT ARCHITECTS,
A.P.T. IV (£1,065-£1,290).
(b) ASSISTANT ARCHITECTS,
A.P.T. III (£880-£1,065).

HOUSING ACCOMMODATION will be considered for married applicants if required. Application forms and particulars from the Director of Education, Education Offices, Woodlands Road, Middlesbrough, to whom completed forms should be returned as soon as possible. 6619

METROPOLITAN BOROUGH OF CAMBERWELL
ASSISTANT ARCHITECTS
(BOROUGH ARCHITECTS' DEPARTMENT)
Vacancies for Assistant Architects, within a salary range of £795 to £1,405. Grade and commencing salary according to qualifications and experience. The work of the department includes design and construction of public buildings, housing estates, including multi-storey construction. Application form from Town Clerk, Town Hall, S.E.5. Closing date 14th November, 1959. 6386

ARCHITECT'S DEPARTMENT
QUANTITIES DIVISION
Opportunity for interesting and rewarding careers in various branches of quantity surveying. Applications invited, particularly from newly qualified SURVEYORS, for following types of work:
Junior taking-off/working-up.
Approximate estimating and assisting in cost planning.
Pricing bills of quantities for estimates comparable with tenders.
Preparation and settlement of final accounts for major building contracts including interim valuations.
Measurement of minor works, schedule accounts, etc.
General technical duties and working-up.
Salaries up to £1,135. Application form and further particulars from Hubert Bennett, F.R.I.B.A., Architect, London County Council, County Hall. (2285) 6383

NEWMARKET URBAN DISTRICT COUNCIL
ARCHITECT'S DEPARTMENT
ARCHITECTURAL ASSISTANT
Applications are invited for the above appointment at a salary in accordance with the A.P.T. Grade II, £765-£880.
The department is responsible for all the Council's building projects including interesting developments in connection with Urban Renewal and a new Town Centre. Candidates must be quick and accurate draughtsmen with a sound knowledge of building construction. A five-day working week is in operation and housing accommodation will be provided for the successful candidate.
Applications stating age, qualifications, training, experience and present appointment and giving the names and addresses of two referees, should be sent to the undersigned not later than 21st November, 1959.

JOHN CRABB
Clerk of the Council.
Council Offices,
Severals House,
Newmarket. 6507

ASSISTANT ARCHITECTS
REQUIRED BY
MINISTRY OF WORKS
FOR EMPLOYMENT IN BRISTOL AND LEEDS.
GENERAL CONDITIONS
Salary range between £800 (at age 25) and £1,260 per annum on the National Scale. Starting point according to age, qualifications and experience. 5-day week. Annual leave 4 weeks and 2 days initially. Prospects of promotion and opportunities for permanent and pensionable posts.

QUALIFICATIONS
Candidates must be Registered Architects by examination, or Registered Architects who, since registration, have passed a professional examination in Architecture recognised by the Architects Registration Council of the United Kingdom. They must also possess good professional experience.

APPLICATIONS
State age and full details of training and experience to Chief Architect, Ministry of Works, (A), Room 435, Abell House, John Islip Street, London, S.W.1. 6455

BOROUGH OF SUTTON & CHRAM
BOROUGH ENGINEER & SURVEYOR'S DEPARTMENT
APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of an Architectural Assistant, Grade A.P.T. II (£765-£880 per annum, plus £20/£30 London weighting per annum).
Applicants should have good general experience in Housing and Public Buildings and should have reached Intermediate R.I.B.A. standard.
The commencing salary will be according to ability and experience. The appointment, which is terminable by one month's notice in writing on either side, is on the permanent staff of the Corporation, is subject to the provisions of the Local Government Superannuation Act, 1937-53, and to the National Scheme of Conditions of Service.

The successful candidate will be required to pass a medical examination. Forms of application may be obtained from Mr. C. Needham, M.I.C.E., M.I.M.E., A.M.S.E., Borough Engineer and Surveyor, to whom they should be returned accompanied by copies of two recent testimonials not later than 14th November, 1959, endorsed "Architectural Assistant."
Applicants must state whether they are related to any member or holder of any Senior Office under the Borough Council. Canvassing in any form will disqualify.

ARTHUR PRIESTLEY
Town Clerk.
Municipal Office,
Sutton, Surrey.
October, 1959. 6463

COUNTY BOROUGH OF READING
ASSISTANT ARCHITECT
Applications are invited for the above appointment. Candidates must have passed Parts I and II, R.I.B.A. Final or Special Final Examination or their equivalent and have had at least five years' experience. Salary range £785 x £40 (3) x £45 (1) x £40 (3)-£1,070 according to experience. Post permanent and appointment subject to N.C. Conditions. Housing accommodation will be considered. Applications, stating age, qualifications and experience, together with names and addresses of two referees to Borough Architect, P.O. Box 17, Town Hall, Reading, not later than Monday, 16th November, 1959. 6513

COUNTY OF LINCOLN
PARTS OF KESTVEN
COUNTY ARCHITECT'S DEPARTMENT
TWO ASSISTANT ARCHITECTS
Special Grade (£785-£1,070)
Full particulars of the above appointments may be obtained from the County Architect, County Offices, Sleaford, Lincs.
Applications from suitably qualified persons, together with the names and addresses of two referees, should reach the undersigned not later than the 23rd November, 1959.

J. E. BLOW
Clerk of the County Council.
County Offices,
Sleaford, Lincs. 6501

AUSTRALIA-UNIVERSITY OF NEW SOUTH WALES

The University of New South Wales invites applications for appointment to the undermentioned positions. In each case the salary range is:-
SENIOR LECTURER, £A2,218 range £A2,568 per annum.
LECTURER, £A1,518 range £A2,118 per annum. Commencing salary according to qualifications and experience.

Appointees will be eligible for 12 months' study leave on full salary after six years of service. Subject to passing a medical examination the appointees will be eligible to contribute to the State Superannuation Fund.

First class ship fares to Sydney of appointees and family will be paid.

SENIOR LECTURER/LECTURER in ARCHITECTURE (History and Design), School of Architecture.

Applicants should possess an appropriate degree or diploma or possess equivalent qualifications and be members, or eligible for membership, of the R.I.B.A. or the R.A.I.A. The successful applicant will be required to lecture in the History of Architecture and preference will be given to applicants with first-hand knowledge of historic and modern buildings in Europe, and with practical experience as a designer.

Closing date for applications is 28th November, 1959.

Four copies of applications, together with the names of two referees, should be lodged with the Agent General for New South Wales, 55-57, Strand, London, W.C.2, and a copy forwarded by airmail in an envelope marked "University Appointment" to the Bursar, The University of New South Wales, Box 1, Post Office, Kensington, New South Wales, Australia, before the closing date mentioned above. 6577

ARCHITECTURAL ASSISTANTS

REQUIRED BY

MINISTRY OF WORKS
For employment in London. Keen and enthusiastic Assistants of Intermediate R.I.B.A. standard are required for the design of interesting and varied types of buildings in all parts of the world. The salary range is from £550 (at age 21) to £980. Starting rate according to age, experience, 5-day week, 35 weeks annual leave. Good prospects of promotion and permanency. Permanent posts are pensionable and the pension scheme is non-contributory. Apply, giving details of age, training and experience to: E. Bedford, C.B., C.V.O., A.R.I.B.A., Chief Architect, Ministry of Works, Abell House, Room 435, John Islip Street, London, S.W.1. 6456

COUNTY BOROUGH OF NORTHAMPTON
SENIOR ASSISTANT ARCHITECTS
A.P.T. V (£1,220-£1,375)

Applications are invited for two responsible appointments, one in Education & General Section which has an interesting programme of new schools and municipal buildings, and one in Housing Section: the Council's current programme includes multi-storey flats in redevelopment schemes.
Full particulars and application forms, returnable by 20th November, from Borough Architect, Guildhall, Northampton.

C. E. VIVIAN ROWE
Town Clerk.
6624

CITY OF LEEDS

APPOINTMENT OF CITY ARCHITECT
Applications are invited for this appointment from persons with appropriate qualifications and experience.

The salary will be within the scale £3,200 per annum rising to £3,605 per annum by three increments of £135.

Notes on the appointment may be obtained from me; no special terms of application will be provided and applications for the appointment must reach me by the 7th December, 1959.

ROBERT CRUTE
Town Clerk.
Civic Hall,
Leeds, 1. 6598

COUNTY BOROUGH OF WEST HAM BOROUGH ARCHITECT AND PLANNING OFFICER'S DEPARTMENT

Applications invited for established posts:
(a) DEPUTY GROUP ARCHITECT
(b) ASSISTANT PLANNING OFFICER
£785-£1,070 p.a. plus London Allowance.
Commencing salary according to qualifications and experience.

Application Form and Details from: Thomas
E. North, 70, West Ham Lane, E.15, returnable
by Tuesday, 17th November, 1959. 6490

BOROUGH OF SCUNTHORPE

(An expanding modern town of 61,000 population)
Applications are invited for the following
appointments in the Borough Engineer & Surveyor's Department:-

- (a) SENIOR ASSISTANT ARCHITECT, A.P.T. IV (£1,065-£1,220 p.a.).
- (b) ASSISTANT ARCHITECT, Special Grade or A.P.T. III (£785-£1,070 or £880-£1,065 p.a.).
- (c) QUANTITY SURVEYING ASSISTANT, A.P.T. I (£610-£765 p.a.).

Applicants for (a) must be fully qualified with considerable experience in the design of public buildings and for post (b) preference will be given to applicants with the appropriate qualification. Housing accommodation will be available if required.

Applications giving particulars of age, experience, qualifications and appointments, together with the names of two referees, should be submitted to the undersigned—not later than Wednesday, 11th November, 1959.

T. M. LISTER,
Town Clerk.

Municipal Offices,
34, High Street,
Scunthorpe.
22nd October, 1959. 6511

CWMBRAN DEVELOPMENT CORPORATION APPOINTMENT OF ASSISTANT ARCHITECTS A.P.T.IV

Applications are invited for the above superannuable posts in my Department in the Salary Range £880-£1,220 with a commencing salary according to Qualifications and experience.

Candidates should be Associates of the R.I.B.A. with suitable office experience and should have had good experience in house design, construction and layout; experience in shop design would be an advantage.

Housing accommodation will be made available to the successful applicants if needed.

Applications stating age, experience, details of present and former employment (together with applicable salaries) and the names and addresses of two referees must reach the undersigned by first post on Monday, 23rd November, 1959.

J. C. P. WEST, A.R.I.B.A., M.T.P.I.,
Chief Architect.

Victoria Street,
Cwmbran, Mon. 6625

COUNTY BOROUGH OF NORTHAMPTON DEPARTMENT OF BOROUGH ARCHITECT & TOWN PLANNING OFFICER

Applications are invited for the following appointments:

- (a) SENIOR TOWN PLANNING ASSISTANT, A.P.T. IV (£1,065-£1,220).
- (b) TOWN PLANNING ASSISTANT, Special Scale (£785-£1,070).

Full particulars and application forms, returnable by 20th November, from Borough Architect & Town Planning Officer, Guildhall, Northampton.

C. E. VIVIAN ROWE, Town Clerk.

CITY OF BIRMINGHAM PUBLIC WORKS DEPARTMENT TOWN PLANNING AND REDEVELOPMENT SECTION

Vacancy for PLANNING ASSISTANT, Special Grade (£785-£1,070 p.a.).

Applicants should be Corporate Members of the Town Planning Institute and have had considerable practical experience in the preparation of development plans and survey work related thereto.

The post is permanent, superannuable and subject to a medical examination.

Applications stating qualifications, age and experience, and naming two referees should reach the undersigned by the 28th November, 1959.

Canvassing disqualifies.

HERBERT J. MANZONI,
City Engineer and Surveyor.

Civic Centre,
Birmingham, 1. 6616

STEVENAGE DEVELOPMENT CORPORATION CHIEF ARCHITECT'S DEPARTMENT

Applications are invited for appointment to posts as ASSISTANT ARCHITECTS on the following New Towns Salary Grades:-

N.T. A.P.T. IV-£1,065 to £1,220.

N.T. A.P.T. III-£880 to £1,065.

Starting salaries according to qualifications and experience.

Candidates should have experience of the design and construction of modern buildings and the successful candidates will be engaged on varied and interesting work relating to the building of a New Town which will include Shopping Centres, Housing and Multi-storey Flats, Office Blocks and Industrial Buildings.

Housing accommodation will be available in due course in an appropriate case.

Applications, giving full details of experience and names of two referees, should be sent to the Chief Administrative Officer, Aston House, near Stevenage, Herts, by Friday, 20th November, 1959. 6547

HEMEL HEMPSTEAD DEVELOPMENT CORPORATION

Applications are invited for the following vacancies in the Chief Architect's Department:
ARCHITECTURAL ASSISTANTS and JUNIORS: Vacancy No. 175.

In grades A.P.T. II (£765-£880) or A.P.T. I (£610-£765) for those who have passed Intermediate Examination, R.I.B.A., or in lower grades for students not yet qualified. Excellent opportunities for young architects wishing to gain experience. Starting salaries according to age, experience and qualifications.

Conditions of service similar to those in Local Government. Housing may be provided.

Applications, endorsed "Vacancy No. 175," giving age, education, qualifications and experience, with names of two business referees, to reach General Manager, Westbrook Hay, Hemel Hempstead, by 13th November. 6531

STAFFORDSHIRE COUNTY COUNCIL COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:-

ASSISTANT ARCHITECTS

Special Grade (£785-£1,070)

Grade A.P.T. IV (£1,065-£1,220)

Candidates must be Associates of the R.I.B.A. and be suitably experienced.

ASSISTANT QUANTITY SURVEYORS

(a) Grade A.P.T.III (£880-£1,065)

(b) II (£765-£880)

Applicants for (a) must hold the Final Examination and for (b) the intermediate examination of the R.I.C.S.

ENGINEERING CLERK OF WORKS

Grade A.P.T. I (£610-£765 per annum)

Misc. Grade V (£650-£715)

Applicants should be suitably "qualified" and have had practical experience in electrical and/or heating installations in large public buildings.

Forms of application, which must be returned by the 16th November, 1959, may be obtained from the County Architect, Green Hall, Lichfield Road, Stafford.

T. H. EVANS,
Clerk of the County Council. 6620

CITY OF SHEFFIELD APPOINTMENT OF SENIOR GROUP LEADER ARCHITECT (EDUCATION)

Salary Scale-£1,215 x £60 (2) x £55 (2) to £1,445.

Applications are invited for the above mentioned appointment on the permanent staff of the City Architect, Mr. J. L. Womersley, F.R.I.B.A., Dist.T.P. M.T.P.I.

The post ranks next to the Chief Assistant Architect and the successful candidate will be required to deputise for him as the occasion demands on Education work, in addition to taking charge of a group responsible for the design and supervision to completion of major works on new schools and colleges.

Temporary housing accommodation available if required and reasonable removal expenses paid.

Applications, stating age, education and training, qualifications, experience, present and past appointments (with dates and salaries) and the names and addresses of two persons to whom reference may be made, should reach the undersigned by Monday, 16th November, 1959.

JOHN HEYS,
Town Clerk.

Town Hall,
Sheffield, 1. 6579

NATIONAL COAL BOARD SOUTH WESTERN DIVISION

Applications are invited for the following appointments in the Divisional Architect's Branch, Cambrian Buildings, Mount Stuart Square, Cardiff.

ARCHITECTURAL ASSISTANT, GRADE 1.-

Applicants should have passed the Intermediate Examination of the Royal Institute of British Architects and have not less than three years' subsequent experience, or have passed the Final Examination, and have had less than one year's subsequent experience.

Salary scale: (Male) £715 x £25-£850 per annum. (Female) £610 x £21-£720 per annum. (With equal pay-minimum £685-£812 maximum.)

Applicants of exceptional ability and experience may in special circumstances be given up to £150 above the maximum of the scale.

Please quote Staff Vacancy No. 247/36.

ARCHITECTURAL ASSISTANT, GRADE 2.-

Applicants should have passed the Intermediate Examination of the Royal Institute of British Architects and have had less than three years' subsequent experience. Applications will also be considered from those who have had exceptional practical experience but not passed the Intermediate Examination.

Salary scale: (Male) £595 x £25-£710 per annum. (Female) £507 x £21-£602 per annum. (With equal pay-minimum £569-£678 maximum.)

Please quote Staff Vacancy No. 248/36.

ARCHITECT, GRADE 2.-The successful applicant will be responsible for the preparation of sketch plans and working drawings of a variety of buildings, together with some duties of an executive nature.

Applicants must be Associates of the Royal Institute of British Architects.

Salary scale: (Male) £815 x £30-£1,125 per annum.

Please quote Staff Vacancy No. 249/36.

Application forms, which can be obtained from the Divisional Chief Staff Officer, National Coal Board, Cambrian Buildings, Mount Stuart Square, Cardiff, should be completed and returned by 20th November, 1959. 6558

COUNTY BOROUGH OF BOLTON BOROUGH ARCHITECT'S DEPARTMENT

Applications invited for the post of QUANTITY SURVEYOR on grade A.P.T. III (£880-£1,065) or Special Classes (£785-£1,070) according to qualifications. Commencing salary according to experience.

Applicants should have experience in taking off quantities for architectural works and measuring for interim and final accounts. Post superannuable, subject to medical examination. Previous local government experience not essential.

Applications, giving full details including experience, present post and salary, and naming two referees, should be received by me by 16th November.

PHILIP S. RENNISON, Town Clerk. 6617

LANCASHIRE COUNTY COUNCIL

Applications are invited from qualified applicants for the following permanent appointments:
QUANTITY SURVEYORS within the Salary Scale £1,220-£1,375.

Applicants should have had a wide experience in the preparation of Bills of Quantities for major projects of all types and be able to take charge from taking off to settlement of final accounts. Previous applicants should not re-apply.

ARCHITECTS within the Salary Scale £785-£1,070.

A large and varied programme offers scope for young Architects of ability and applicants should show keen design sense, a good grasp of building technology and above all enthusiasm.

STRUCTURAL ENGINEERS (a) within the Salary Scale £1,065-£1,220; (b) within the Salary Scale £785-£1,070.

(a) Applicants must be corporate members of the Institution of Structural Engineers and have had several years' experience in the design and detailing of reinforced concrete structures.

(b) Applicants must be corporate members of the Institution of Structural Engineers with some experience in reinforced concrete design and detailing.

Application forms from the County Architect, P.O. Box 26, County Hall, Preston, to be returned as soon as possible. 6600

COUNTY BOROUGH OF DEWSBURY BOROUGH ARCHITECT AND BUILDINGS SURVEYOR'S DEPARTMENT

Applications are invited for the following appointments:-

(a) TOWN PLANNING ASSISTANT-Special Grade.

(b) ARCHITECTURAL ASSISTANT-A.P.T. Grade I.

(c) QUANTITY SURVEYING ASSISTANT-A.P.T. Grade I.

The commencing salaries will be fixed within the scope of the grades stated according to qualifications and experience, i.e., Special Grade £785-£1,070 p.a., A.P.T. Grade I, £610-£765. Applicants for (a) must have passed the Final Examination of the T.P.I.

Housing accommodation may be made available if required.

The appointments will be subject to one month's notice on either side and to the provisions of the Local Government Superannuation Acts.

Applications, stating age, education, qualifications, full particulars of training and experience, together with copies of two recent testimonials, should be sent to the undersigned not later than Monday, 16th November 1959, in envelopes endorsed "Appointment of".

A. NORMAN JAMES,
Town Clerk.

Town Hall,
Dewsbury.
22nd October, 1959. 6532

BEDFORDSHIRE COUNTY COUNCIL invite applications from suitably qualified persons for the following posts in County Planning Department:-

(a) ASSISTANT COUNTY PLANNING OFFICER-Salary £1,250-£1,485.

(b) TWO SENIOR PLANNING ASSISTANTS (Development Control)-Salary £880-£1,065.

(c) DRAUGHTSMAN/WOMAN-Salary £610-£765.

(d) DRAUGHTSMAN/WOMAN-Salary £590-£650.

Bedfordshire is a County with a high rate of growth giving opportunities for an interesting variety of work. Particulars of the above posts and application forms from Establishment Officer, Shire Hall, Bedford. Closing date 14th November. 6589

EASTERN REGIONAL HOSPITAL BOARD. SCOTLAND

Applications are invited for the following appointments:-

(a) SENIOR ASSISTANT ARCHITECT. Salary £1,050-£1,245.

(b) ASSISTANT ARCHITECT. Salary £730-£1,055.

Salary scales are now under review.

Applicants must be Registered Architects preferably having practical experience of the design and construction of modern public buildings.

Applications, stating age, training, qualifications, past and present appointments, experience and the names and addresses of three referees, should be sent to the Secretary, Eastern Regional Hospital Board, Vernonholme, Riverside Drive, Dundee, not later than 20th November, 1959. 6628

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<i>Homes for Old People</i>	<i>3-Dimensional Planning</i>
<i>Fire Stations</i>	<i>Civic Design</i>

The Architect's Department of the London County Council offers unrivalled opportunity to Architects, Structural Engineers, and Town Planners. Applications are invited for the following vacancies:—

ARCHITECTS for the new building divisions. Designers of distinction are required and opportunity to design will be given to those selected. (Ref. EK/99.)

STRUCTURAL ENGINEERS—First-class designers required. (Ref. EK/100.)

TOWN PLANNERS—Architect/Planners for three dimensional planning within London's eight major comprehensive development areas (including Stepney/Poplar, the South Bank and Elephant and Castle) and other re-development areas. (Ref. EK/101.)

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Solicitors: Messrs. Middleton & Gutteridge,
13 High Street North, Dunstable.



Starting salaries range from £710 up to £1,355 according to qualifications and experience. Exceptional opportunities for young architects and engineers. Promotion strictly on merit. Application forms and further particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council, County Hall, S.E.1 please quote reference number.



COUNTY COUNCIL OF THE WEST RIDING

OF YORKSHIRE

OFFICE OF THE COUNTY ARCHITECT
The Council require SENIOR ARCHITECTS in salary grades A.P.T. IV (£1,065-£1,220) and Special Grade (£785-£1,070) for their extensive and interesting building programme which includes schools, colleges, old people's and children's homes, clinics, ambulance, fire and police stations, and other public buildings. Architects appointed will be employed at the Central Office in Wakefield solely upon capital works dealing with building projects from sketch plans to completion.

Applications are also invited for the under-mentioned posts at the Central Office:—

JUNIOR ARCHITECTURAL ASSISTANTS.

Grade A.P.T. II (£765-£880).

Grade A.P.T. I (£610-£765).

Applications to be submitted as soon as possible on forms to be obtained from and returned to the undersigned.

A. W. GLOVER, F.R.I.B.A.,
County Architect.

Bishopgarth,
Westfield Road,
Wakefield. 6607

SOUTHERN ELECTRICITY BOARD

ARCHITECTURAL ASSISTANT

Sub-Area Office of No. 3 (Portsmouth) Sub-Area. Salary N.J.B. Grade 5, Schedule "D" (£790 x £20-£890 per annum). N.J.B. Conditions of Service.

Candidates should have had experience in an Architect's office and be capable of designing and administering, during the construction stage, building work in connection with offices, show-rooms, workshops, etc. The possession of suitable qualifications would be an advantage.

The successful candidate will be required to contribute to the Electricity Supply (Staff) Superannuation Scheme, if eligible.

Applications on forms obtainable from the Sub-Area Secretary, Lower Drayton Lane, Cosham, Portsmouth, and returned to him, quoting Z.1135, not later than November 16, 1959. 6633

LONDON COUNTY COUNCIL

LANDSCAPE ASSISTANTS experienced in preparing schemes, working drawings, specifications and supervising contracts. Land surveying and good draughtsmanship essential. Interesting work on new parks and open spaces and landscape work at housing estates.

Up to £895 according to qualifications and experience. Apply, giving brief particulars, to Chief Officer, Parks Dept., County Hall, S.E.1. (WAT. 5000 Ext. 8076.) (2344.) 6548

BOROUGH OF BEDDINGTON AND

WALLINGTON

ARCHITECTURAL ASSISTANT

Applications are invited for the above appointment on A.P.T. Grade III (£880-£1,065), plus London weighting, starting salary depending on qualifications and experience. Preference will be given to applicants holding appropriate qualifications.

Housing accommodation will be made available to a suitable applicant, if required.

Applications on forms obtainable from the undersigned, to be returned not later than Saturday, 21st November, 1959.

A. B. BATEMAN,
Town Clerk.

Town Hall,
Wallington,
Surrey. 6544

FIFE COUNTY COUNCIL

COUNTY ARCHITECTS' DEPARTMENT—ARCHITECTURAL DRAUGHTSMEN required. Salary Grade Executive 2 and 3, i.e., £675-£795 per annum. Superannuation Scheme. Applicants must be skilled and accurate Draughtsmen with experience in Architect's and Drawing Office routine. Housing may be available. Applications, stating age, qualifications, past held and previous experience, with details of present salary and copies of recent testimonials, by 14th November, 1959, to the County Clerk, County Buildings, Cupar. No canvassing. 6546

LONDON COUNTY COUNCIL

BUILDING SURVEYING ASSISTANTS: ARCHITECTURAL ASSISTANTS: Good draughtsmen with experience of preparation of working drawings and specification and supervision of contract work. Up to £895. Apply Chief Officer, Parks Dept., County Hall, S.E.1. (WAT. 5000 Ext. 8076.) (2331.) 6552

CIVIL SERVICE—QUANTITY SURVEYORS AND ASSISTANT QUANTITY SURVEYORS required by several Government Departments. Posts in London, provinces and occasionally overseas. London salaries for suitably qualified and experienced men over 25 years of age, range from £830 to £1,300 per annum. Quantity Surveying Assistants and others having some experience in Quantity Surveying at salaries ranging from £350 per annum upwards also required. Prospects of promotion and pensionable status. Write for particulars of vacancies in each department and forms, quoting J.O.S. to M.L.N.S., Technical and Scientific Register, 26, King Street, London, S.W.1. 6530

DORSET COUNTY COUNCIL

ARCHITECTURAL ASSISTANT required in the County Architect's Department. Salary within A.P.T. Grade II (£765-£880 per annum). Applicants should have passed the Intermediate R.I.B.A. Examination. Previous Local Government experience not essential.

Application forms from the Clerk, County Hall, Dorchester, to be returned by 19th November, 1959. 6572

THE UNIVERSITY OF LIVERPOOL

Applications are invited for a DRAUGHTSMAN in the Department of Civic Design. Initial salary £450-£600 per annum, according to qualifications. Planning office experience is desirable. Apply in writing, quoting Reference No. 170, to the Registrar, The University, Liverpool, 3. 6569

MIDDLESEX COUNTY COUNCIL

ASSISTANT ARCHITECTS required for interesting work on Schools, etc. Must have passed parts I and II of R.I.B.A. Final. Commencing salary £215-£1,100 p.a. according to experience. Established, pensionable, five-day week. Prescribed conditions. Application forms (s.a. f'scap. e.) from the County Architect, 1, Queen Annes Gate Buildings, Dartmouth Street, S.W.1, returnable by the 16th November. (Quote B.348 A.J.) 6528

METROPOLITAN BOROUGH OF SHOREDITCH

Applications are invited for the appointment of ARCHITECTURAL ASSISTANT. Salary within Grade A.P.T. III, £210-£2,095 p.a. according to experience and qualifications. Subject to medical examination, Council's Superannuation Scheme and N.J.C. conditions.

Applications, stating age, training and experience and giving the names of two referees, to reach Borough Architect, Town Hall, Old Street, E.C.1, by 21st November, 1959. 6591

PADDINGTON BOROUGH COUNCIL

DRAUGHTSMAN, £640-£795. This appointment is suitable for probationer member of R.I.B.A. Starting salary will be according to qualifications and experience. Applications should state age, experience, present and past appointments with names of two referees, and should reach me by 16th November, 1959 (quoting A.435).

W. H. BENTLEY,
Town Clerk.

Town Hall,
Paddington, W.2. 6641

COUNTY BOROUGH OF BOOTLE

BOROUGH SURVEYOR'S DEPARTMENT—Applications invited for appointment of ASSISTANT ARCHITECT, Grade A.P.T. II, £765 to £880 p.a.

Preference to those having experience in design and planning of houses.

Application forms from Borough Surveyor, Town Hall, Bootle 20, Lancs., are returnable by Friday, 20th November, 1959.

By Order.

HAROLD PARTINGTON,
Town Clerk. 6629

Architectural Appointments Vacant

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

EXPERIENCED ARCHITECTURAL ASSISTANTS required, one Qualified and one of at least Intermediate standard, for Branch Office, Birmingham, engaged on a varied and interesting programme of Commercial projects. The positions are pensionable and a five-day week is in operation. Applications, giving full particulars, to G. S. Hay, F.R.I.B.A., Chief Architect, Co-operative Wholesale Society Ltd., 1, Balloon Street, Manchester, 4. 4307

LEWELLYN SMITH AND WATERS require Senior and Junior ASSISTANTS for a widely varied programme of work. Salary according to experience. Please write stating qualifications, experience and age to 103, Old Brompton Road, R.W.7. 4682

W. H. WATKINS, GRAY & PARTNERS require ASSISTANTS of Intermediate standard for interesting hospital work, salaries according to experience and capabilities, pension scheme in operation. Write or phone: 57, Catherine Place, S.W.1-VICTORIA 7761. 6746

SENIOR ARCHITECTURAL ASSISTANT capable of making site surveys, preparing sketch plans, working drawings and specifications, and supervising work in progress. Applications stating age, experience, qualifications and salary required to R. E. Akerman, F.R.I.B.A., Chief Architect, United Dairies Ltd., 51 St. Petersburg Place, W.2. 6760

RONALD WARD & PARTNERS have immediate vacancies for ASSISTANT ARCHITECTS with initiative and some experience, for interesting, commercial, industrial and civic projects. Salaries commensurate with ability. Apply, 29, Chesham Place, S.W.1. BELGRAVIA 3361. 6538

ASSISTANTS required for busy Architect's City office: sub-architects and industrial projects. Intermediate standard or above. Apply to: Secretary, Fairclough and Morris, Temple Chambers, Temple Avenue, E.C.4. FLE. 6295. 5932

ARCHITECTS' ASSISTANTS required for busy office: varied practice including Industrial, Housing, etc. Write, stating experience and salary required, to Francis W. Keyworth, L.R.I.B.A., 31, Friar Lane, Leicester. 6884

ARCHITECTURAL ASSISTANT at Final standard required by Buckinghamshire office. Interesting and varied work with scope for initiative and responsibility. State age, experience and salary required to Box 6871.

SENIOR ASSISTANT ARCHITECT required to take charge of project. Apply Ronald Ward & Partners, 29, Chesham Place, S.W.1. BELGRAVIA 3361. 5960

WEST END Architects require ASSISTANT with good knowledge of building construction and ability to prepare working drawings and details under supervision. Box 6033.

BOOTH, LEDEBOER AND FINCKHEARD, 17-20, Mason's Yard, Duke Street, St. James's, S.W.1, require ASSISTANTS in salary range £750-£1,000 p.a. Tel. T.E.A. 1866. 6957

COVELL & MATTHEWS require capable and enthusiastic Senior and Junior ASSISTANTS, to work on large central area redevelopment projects. Salary according to experience. Five-day week. King EIGHT 2291. 6627

ERIC FIRMIN & PARTNERS require Senior ASSISTANTS for work on industrial and commercial projects. Five-day week, Luncheon Vouchers. Salary by arrangement. Please apply 5 Holborn Circus, E.C.1. CITY 8811. 6084

ARCHITECTS and ASSISTANTS required. Minimum Intermediate standard. Very large programme commercial, industrial and residential work. London Office. Good salaries and bonus to right men. Five-day week. Box 6117.

ARCHITECTURAL ASSISTANT, Intermediate to Final standard, with some office experience, required for interesting work in West End Office. Plenty of scope for responsibility and experience. Telephone for appointment to MAYfair 9554, or write with particulars to Box 6123.

QUALIFIED ASSISTANT ARCHITECTS required, minimum three years' office experience, preferably in London. Salary according to ability and experience. Theo. H. Birks, 38, Portland Place, W.1. LAN 7236. 5956

INTERMEDIATE standard ASSISTANTS required, minimum two years' office experience. Salary according to ability. Theo. H. Birks, 38, Portland Place, W.1. LAN 7236. 5956

ARCHITECTS' ASSISTANTS required, Senior and Junior, qualified or otherwise, with practical experience, general private practice. Apply W. B. Starr, Clifford & Carman, 204, Derby Road, Nottingham. Tel. 43192. 6199

ASSISTANTS of Intermediate or equivalent standard, required in busy city office. Interesting and varied work, offering scope for initiative and responsibility. Commencing salary up to £800 per annum, according to qualifications. Write Stewart & Hendry, F.R.I.B.A., A.M. I.P.I., 90 Fenchurch Street, E.C.3, or telephone ROYAL 6216/7. 6202

YORKE, ROSENBERG & MARDALL require ASSISTANTS. Apply in writing to 2 Hyde Park Place, London, W.2. 6307

ARCHITECTURAL ASSISTANT required in the Constructional Engineer's Office of The General Electric Co. Ltd., Wembley. Experience in design and construction of Industrial Buildings and Office Blocks. Write stating age, experience and salary required to Box 6310.

ARCHITECTURAL ASSISTANTS required in Brewery Architect's Office. Final or Intermediate standard. Five-day week. Pension Scheme. Write stating age, qualifications and experience to Chief Architect, Benskin's Watford Brewery Limited, P.O. Box No. 105, Watford, Herts. 6312

ONE SENIOR ASSISTANT of Final R.I.B.A. standard and one JUNIOR ASSISTANT of Intermediate R.I.B.A. standard required in City office for a variety of interesting jobs. Five-day week. Apply, giving details of past experience and salary required, to Vigers & Co., 4, Frederick's Place, Old Jewry, E.C.2. Telephone MONarch 3733. 6344

SENIOR AND INTERMEDIATE ARCHITECTURAL ASSISTANTS required in Company's Architect's Department in Nottingham, working on pre-fabricated systems and the design and construction of traditional buildings. Qualifications desirable but not essential. Varied experience and enthusiasm required. Salary by arrangement. Please write to: Staff Architect, W. J. Simms Sons & Cooke Ltd., Building & Civil Engineering Contractors and Pre-fabricators, Haydn Road, Sherwood, Nottingham. Telephone 66264. 6311

SCHERRER & HICKS, 19 Cavendish Square, London, W.1, require immediately several ASSISTANTS of graduate standard prepared to accept responsibility. Interesting and varied projects. Apply giving age, qualifications, experience and salary required. 6346

ARCHITECTURAL ASSISTANTS. Intermediate standard, required for City Office. Good draughtsmen, previous office experience and sound knowledge of construction necessary. Apply stating age, experience and salary required to Box 6388.

ASSISTANT with office experience and wishing to supervise work from inception through construction to final settlement urgently required by R. J. Sargent, 8, Queen Street, W.1. Salary £875. Superannuation Scheme. Grosvenor 3254. 6394

STAFF ARCHITECT to a number of Development Companies requires ASSISTANT with L.B.A. experience, and capable of running jobs from start to finish. Salary £900. Box 6395.

SEELY AND PAGET, 41 Cloth Fair, E.C.1. need another responsible ASSISTANT to help with training colleges, churches and other varied work. Near Final standard preferred, with some office experience; salary by arrangement. Write or ring MET 8511. 6397

W. H. WATKINS, GRAY & PARTNERS require ASSISTANTS of Intermediate and Final standard, pension scheme and luncheon vouchers, salary range £700 to £1,000. Apply 57, Catherine Place, London, S.W.1. 6399

W. H. WATKINS, GRAY & PARTNERS require an ASSISTANT for their Oxford Office, pension scheme and luncheon vouchers, salary approximately £800. Apply 57, Catherine Place, London, S.W.1. 6400

SENIOR AND JUNIOR ARCHITECTURAL ASSISTANTS AND DRAFTSMEN required for multiple company's Architect's Department. Please reply stating age, experience and salary required to Box 6369.

ROBERT MATTHEW & JOHNSON-MARSHALL are forming design teams in Edinburgh and Dundee for work on major hospital projects, and have vacancies for recently-qualified ASSISTANTS at salaries from £650-£800 and for experienced ASSISTANTS at salaries from £800 upwards. Please reply to 31, Regent Terrace, Edinburgh, 7. 6504

ASSISTANT ARCHITECTS urgently required for work of contemporary character in rapidly expanding offices in Rochdale and Manchester. Assistants would be required to work in first instance in Head Office at Rochdale. Apply, stating age, salary required and experience and when available to Moir & Bateman, Dip. Arch. L'pool, F/A.R.I.B.A., A.M.T.P.I., Prudential Buildings, South Parade, Rochdale. 6469

BRISTOL—ARCHITECTURAL ASSISTANTS required, starting salaries between £500-£800 (with annual increments), depending on age and experience. Arrangements for part-time school study considered if required. Apply to Kenneth Nealon & Partner, F/A.R.I.B.A., 28, Orchard Street, Bristol, 1. 6485

A SENIOR ASSISTANT is required, preferably qualified, and with some office experience; able to work on own initiative. Salary according to experience, etc. Self-contained flat could be made available in New Year if required. Pension scheme available to married man. Apply in writing, giving full details, to: Ruddle & Wilkinson, F/L/A.R.I.B.A., Long Causeway Chambers, Peterborough. 6488

TAYLOR YOUNG & PARTNERS, MANCHESTER, require ASSISTANTS for work on schools, hospitals and other projects. Apply in writing to 195, Oxford Road, Manchester, 13. 6468

PATRICK GWYNNE requires an ASSISTANT to work personally with him on private houses and interior design. Must be thoroughly experienced and capable of first class detail drawing. The Homewood, Esher, Surrey. 6404

BUILDING CONTRACTORS engaged upon private development of housing estates require an ASSISTANT to WORKS DIRECTOR. Salary £1,500 per annum. Only men fully experienced in office administration and site supervision need apply. As the applicant will, after satisfactory trial period, be invited to join the Board of Directors. Write giving fullest details to Box 6409.

EXCELLENT opportunity for Senior and Intermediate ASSISTANTS in a permanent and progressive appointment with Midland firm of Architects who are working on large projects of an advanced type of design, including comprehensive development schemes, multi-storey office buildings, multi-storey flats, shopping centres, schools, banks, public houses and industrial projects. Apply Box 6415.

ARCHITECTURAL ASSISTANTS required. R.I.B.A. Intermediate and Senior grade respectively. Commercial practice. Five-day week. Salary according to experience. Eric H. Davie, F.R.I.B.A., A.M.T.P.I., Chief Staff Architect, Hillier Parker May & Rowden, 77, Grosvenor Street, London, W.1. MAYfair 7666. 6414

JOHN H. D. MADIN, Chartered Architect, 83/85, Hagley Road, Birmingham 16, has further vacancies for Senior and Intermediate ASSISTANTS. Suitable Senior Assistants would be required to take full responsibility for large scale interesting projects. 6416

ARCHITECTURAL ASSISTANTS with office experience required immediately. About Intermediate or equal standard. Good salary scale. L.V. and Pension. Five-day week. Ley, Colbeck & Partners, F/E.R.I.B.A., F.R.I.C.S. LON. 7282. 6422

TREHEARNE & NORMAN, PRESTON & PARTNERS, have vacancies for ARCHITECTS and ASSISTANTS with imagination and designing ability to assist with important new developments in the London area. Apply in confidence to 83, Kingsway, London, W.C.2. (HOL. 4071.) 6429

A NEW position is to be filled. Required, a reliable and experienced ASSISTANT ARCHITECT for this post. Salary by arrangement. Apply: A. R. Dannatt & Son, F/R.I.B.A., 65a, Duke Street, Chelmsford. Telephone 3857. 6446

SENIOR ASSISTANT required of Intermediate/Final standard in Croydon office. Varied practice of interesting work. Good draughtsman and sound knowledge of construction essential, together with ability to manage jobs. Five-day week. Salary according to experience. Apply, giving all particulars, to George Lowe & Partner, 4, High Street, Croydon 3608/9. 6444

ARCHITECTURAL ASSISTANT required for varied work on housing and industrial building. Applicant should be in early twenties with at least two years' experience in an Architect's Office and capable of undertaking projects with a minimum of supervision. Write, giving full particulars of experience and salary required, to Sheppardson & Dixon, 2, Museum Street, Ipswich. 6439

ARCHITECTURAL ASSISTANT required, to deal mainly with Factory Construction. Applicants should be of Intermediate standard, with at least four years' Office experience. Salary A.P.T. II, within the range £765-£850 per annum. Applications to D. Maxtone Craig, A.R.I.B.A., A.R.I.A.S., Chief Architect, The Wales and Monmouthshire Industrial Estates Limited, Treforest Industrial Estate, Pontypridd. 6432

DAMS, HOLDEN & PEARSON require a SENIOR ARCHITECTURAL ASSISTANTS and ASSISTANTS not less than R.I.B.A. Intermediate standard. The work includes Hospitals, Commercial Buildings and Laboratories. Apply, giving age, qualifications, experience and salary required to 38, Gordon Square, W.C.1. 6519

INTERMEDIATE STANDARD ASSISTANT required for position which offers prospects of early advancement. Interesting work mainly on Departmental Stores. Apply stating experience and salary required. George Baines & Syborn, A.R.I.B.A., 121, Victoria Street, Westminster, S.W.1. 6494

GOLLINS, MELVIN, WARD & PARTNERS are looking for Staff to work on the design of hospital, university and office projects. Age and experience are less important than enthusiasm and interest in architecture. Five day week, quarterly bonuses, pension scheme. Ring Welbeck 9991 for appointment. 6496

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The appointment will be based at the head office in the Midlands and will carry responsibility to the Managing Director for advising on the harmonising of outdoor advertising sites with amenity and drawing up plans, for the inspection and maintenance of the company's property and for building development either by the company or with the tenants.

Candidates must be qualified architects with experience of design and repair work and should be used to negotiations with Local Planning Authorities, surveyors and contractors A.M.T.P.I. or A.R.I.C.S. qualifications would be added recommendations.

Preferred age about 35. Salary: £1,500 to £1,750 with an attractive pension scheme.

Please send brief details in confidence quoting reference YT.1977, to M. B. Berks. In no circumstances will a candidate's identity be disclosed to our client unless he gives permission after a confidential interview at which he will be given full details of the appointment.

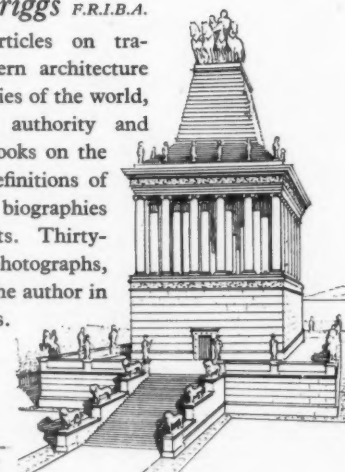
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Dent

ARCHITECTURAL ASSISTANT required for West Dorset Office; interesting and varied work. Salary £700-£2000. Apply in writing stating experience, etc. Lambert & Oliver, Chartered Architects, Bridport. 6497

RAMSEY, MURRAY, WHITE & WARD require qualified ASSISTANTS. Salary according to experience. Apply to the Secretary, 35, Wigmore Street, W.1. Telephone No. WELbeck 0681. 6521

ARCHITECTURAL ASSISTANT required of Intermediate-Final standard for interesting work in London and the Provinces. Apply in writing, giving details of experience, age, and salary required to Westmore & Partners, 121, Cheapside, E.C.2. 6508

ARCHITECTURAL ASSISTANTS (Intermediate and Final standard) required for SOUTHAMPTON OFFICE and NEW FOREST BRANCH, Lyndhurst. Administrative ability and car-owner necessary for Branch Office appointment. Apply, stating age, experience and salary required, to: Hill & Allum, F.R.I.B.A., A.R.I.C.S., 21, Carlton Crescent, Southampton. 6509

ARCHITECTURAL ASSISTANTS required. Why travel to Town when I can offer two Assistants, Intermediate-Final grade, first class work on Stores, Office Buildings, Factories, Dance Halls, etc. Five-day week, bonus scheme, luncheon vouchers. Use of cars on job visits and for summer holidays. Pleasant surroundings with easy access to Morden Underground and Southern Electric Merton Park Station. 146, Mostyn Road, S.W.19. Tel. Liberty 8181. 6517

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Require: **QUALIFIED ARCHITECTS**
ARCHITECTURAL ASSISTANTS.
Projects: Commercial, Domestic, Industrial, Academic.
Conditions: Five-day week, Pension, good salaries.
Apply: Cunard Building, Liverpool, 3. 6450

ARCHITECTURAL ASSISTANT, Intermediate to Final standard, with office experience, required for work in Manchester Area, operating from Oldham or Macclesfield office. Please state qualifications, experience, age and salary required. Box 6481.

ARCHITECTS' ASSISTANT, with ability and experience, wanted at once; varied work. Apply, stating age, experience and salary required, to: Quick & Lee, Chartered Architects, 11, Waterloo Place, Leamington Spa, Warwickshire. 6453

WORCESTER Architects require competent ASSISTANTS, preferably of Intermediate standard with previous office experience, for varied busy practice. Write, stating age, salary required and experience, to Llewellyn Smith & Waters, 33, Foregate Street, Worcester, or to 103, Old Brompton Road, London. 6457

H. A. HALPERN & ASSOCIATES require first-class ASSISTANT with at least five years' office experience and exceptional knowledge of building construction. Must be able to operate with minimum supervision from sketch stage to contract on Supermarkets in new developments and conversions. Apply with full particulars of experience and salary required to H. A. Halpern & Associates, Cumberland Chambers, 7, Edgware Road, Marble Arch, London, W.2. 6458

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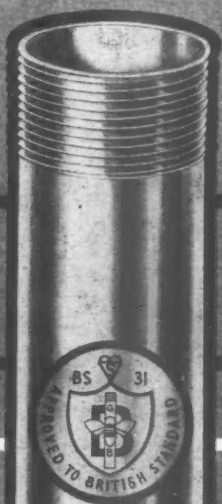
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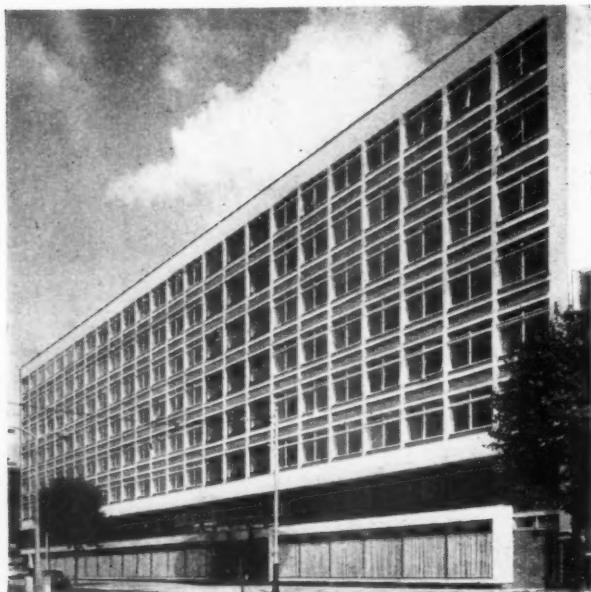
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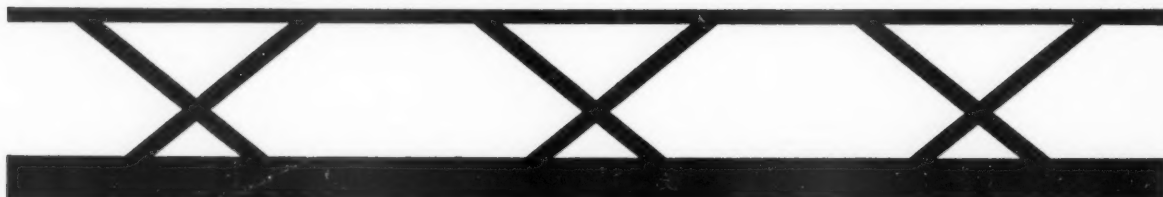
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