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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THE ARCHITECTURAL PRESS

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Registered as a Newspaper.

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

IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square.	Sloane 1601/3158
IIBDID	Incorporated Institute of British Decorators and Interior Designers. 100, Park Street, Grosvenor Square, W.1.	Mayfair 7086
ILA	Institute of Landscape Architects, 2, Guilford Place, W.C.1.	Holborn 0281
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand, W.C.2.	Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1.	Museum 7197
IQS	Institute of Quantity Surveyors. 98, Gloucester Place, W.1.	Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3.	Avenue 6851
IRA	Institute of Registered Architects. 47, Victoria Street, S.W.1.	Abbey 6172
ISE	Institute of Structural Engineers. 11, Upper Belgrave Street, S.W.1.	Sloane 7128
LDA	Lead Development Association. Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1.	Museum 3891
LSPC	Lead Sheet and Pipe Council. Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1.	Trafalgar 7711
MARS	Modern Architectural Research Group (English Branch of CIAM). Secretary: Trevor Dannatt, A.R.I.B.A., 71, Blandford Street, W.1.	Welbeck 4713
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1.	Mayfair 9400
MOH	Ministry of Health. 23, Savile Row, W.1.	Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1.	Whitehall 4300
MOLNS	Ministry of Labour and National Service. 8, St. James' Square, S.W.1.	Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, W.C.2.	Gerrard 6933
MOT	Ministry of Transport. Berkeley Square House, Berkeley Square, W.1.	Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1.	Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1.	Abbey 1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1.	Abbey 4813
NBR	National Buildings Record. 31, Chester Terrace, Regent's Park, N.W.1.	Welbeck 0619
NCBMP	National Council of Building Material Producers. 10 Storey's Gate, S.W.1.	Abbey5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, W.C.2.	Trafalgar 3927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1.	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4.	Macaulay 4451
NFHS	National Federation of Housing Societies. 12, Suffolk St., S.W.1.	Whitehall 1693
NHBRC	National House Builders Registration Council. 82, New Cavendish Street, W.1.	Langham 4341
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 5721
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1.	Whitehall 5322/9242
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, London, E.C.3.	Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, London, 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

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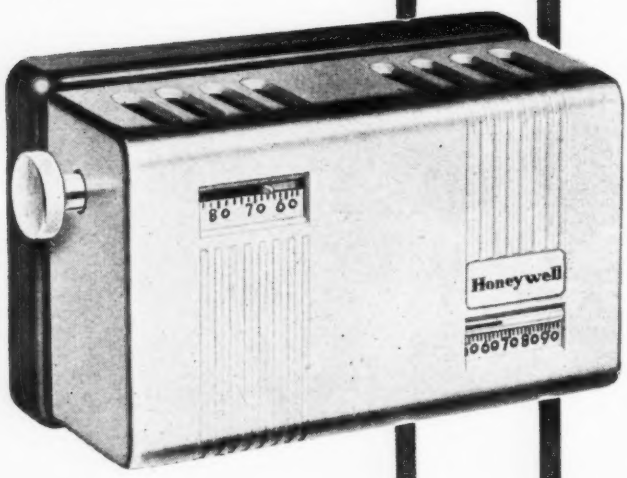

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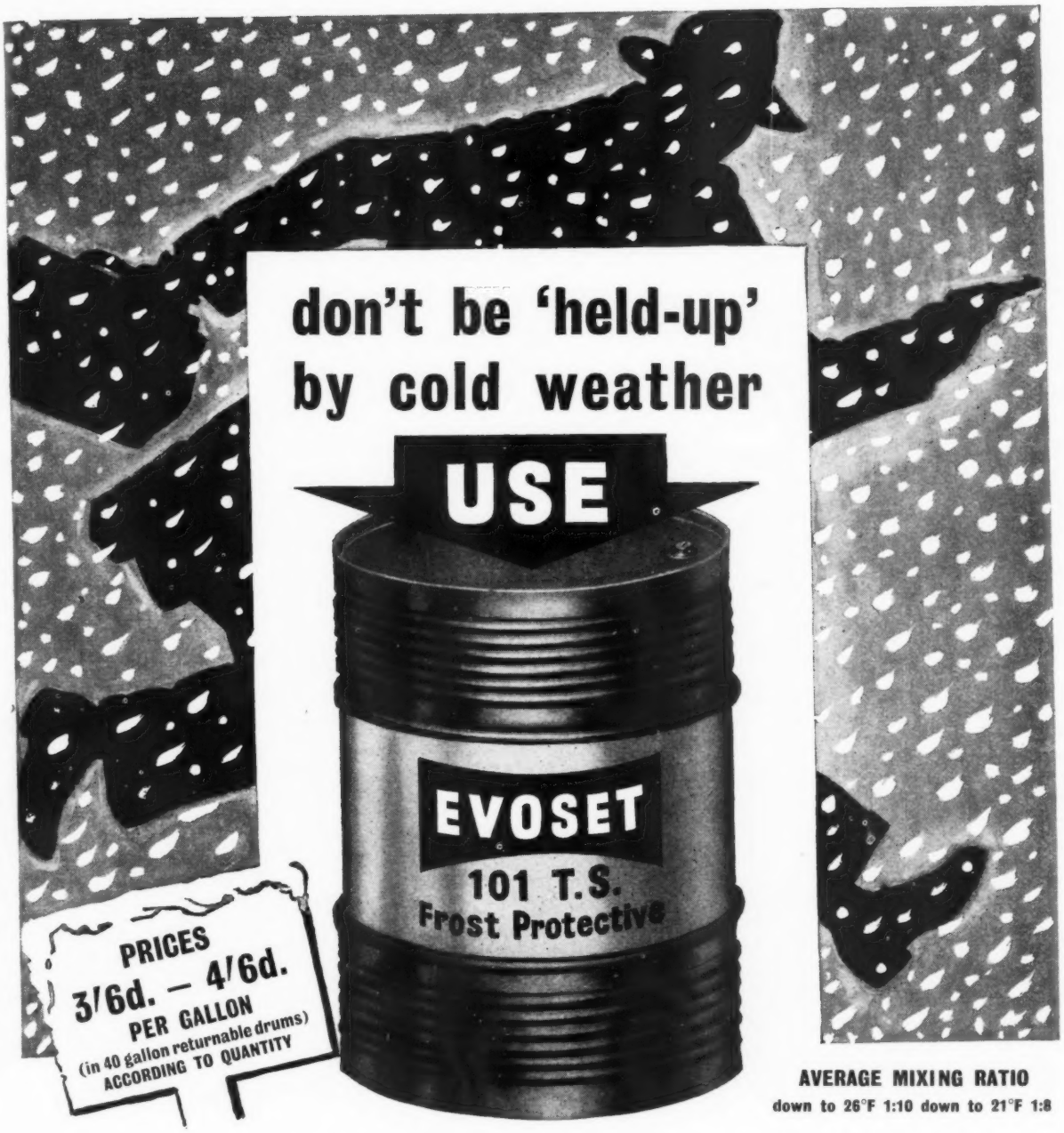

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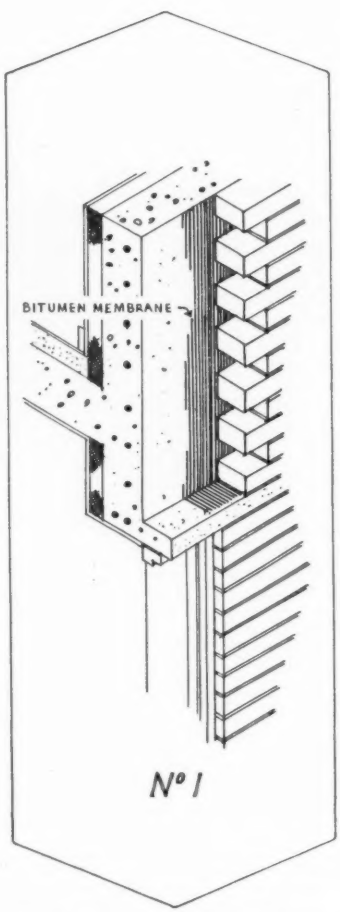
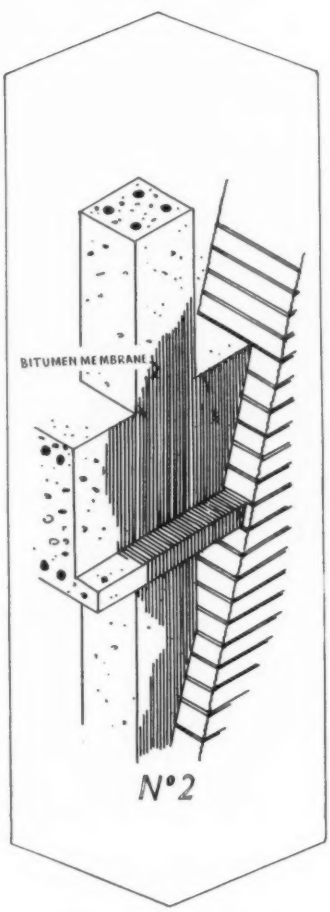
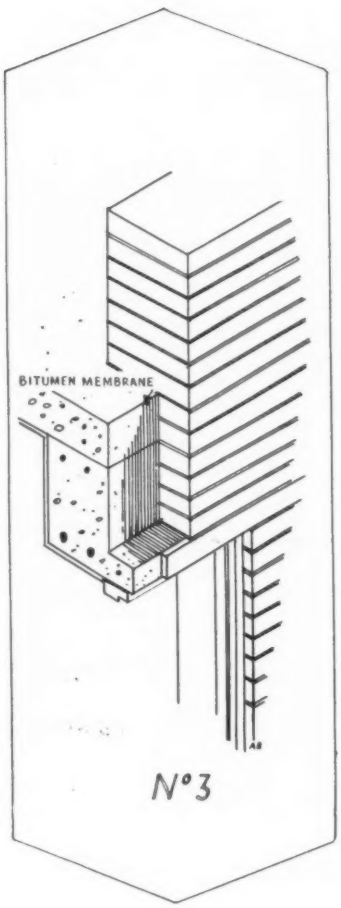


Applied to vertical face of reinforced concrete wall and to horizontal surface of concrete nib prior to infilling with brickwork.



Applied to external surfaces of reinforced concrete frame prior to encasing with brickwork.



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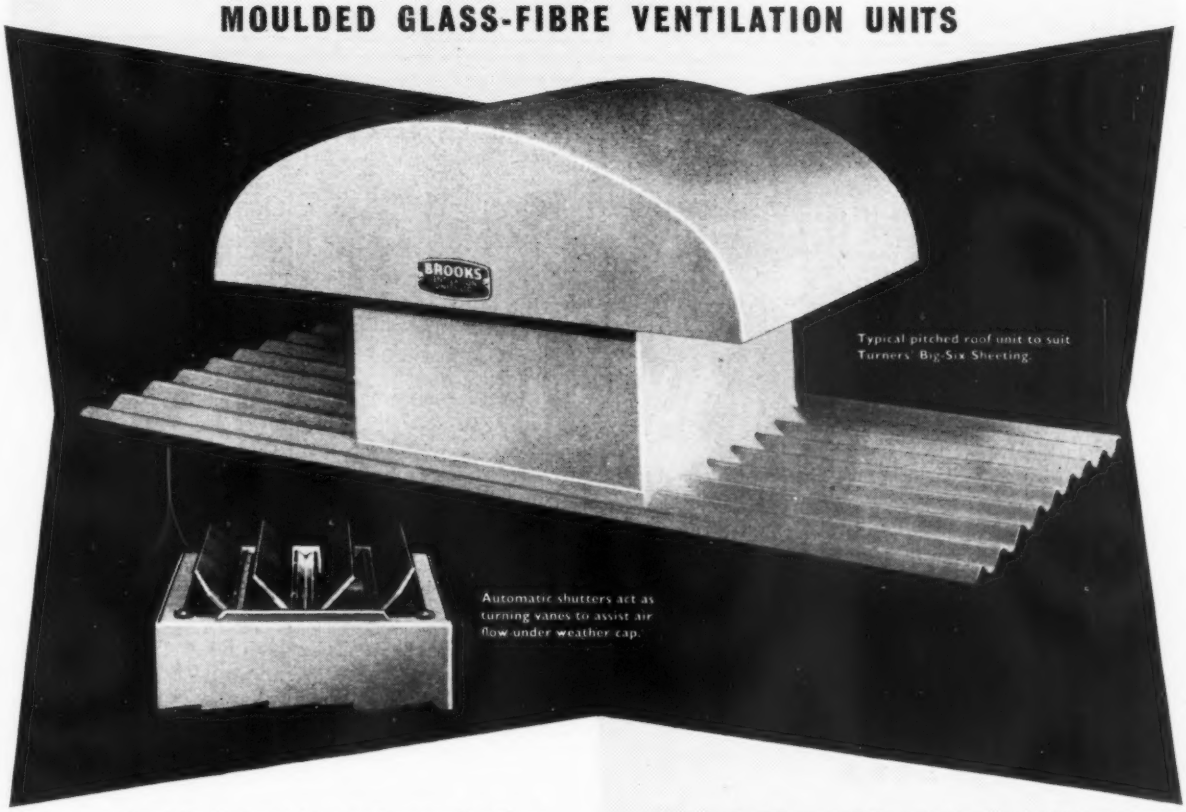

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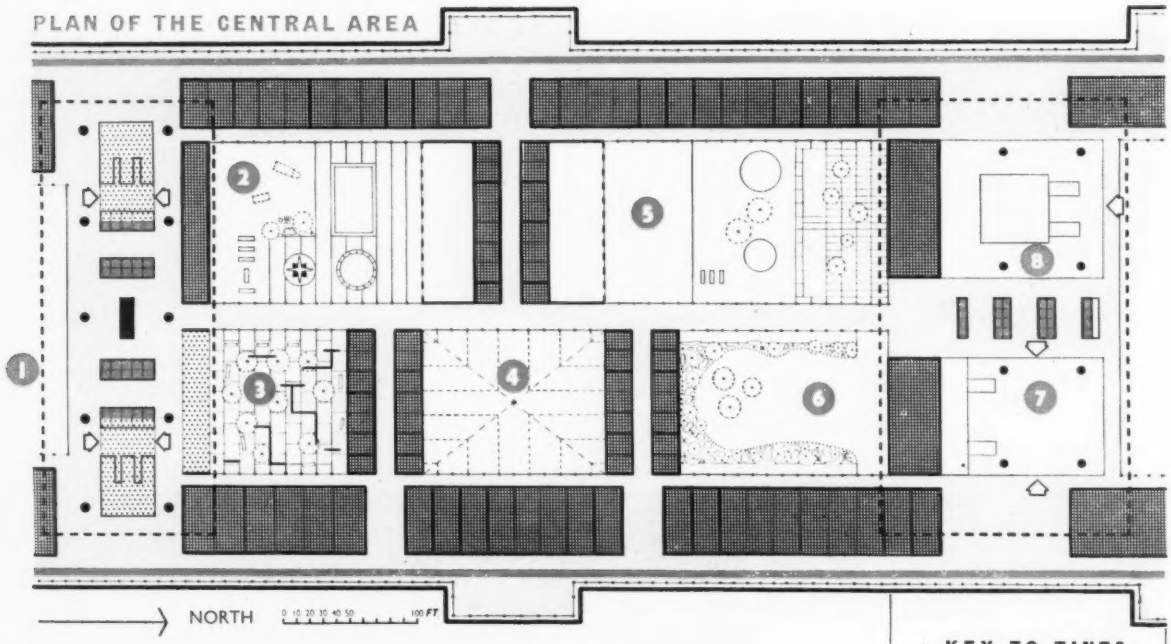
The Glass Age Development Committee

The Glass Age Development Committee consists of architects and engineers; it was convened by Pilkington Brothers Limited. The Committee has made proposals for creating a large scale shopping centre in the Black Country area. The primary survey and details have already been published, and it is called "The High Market Project", and has been designed under the direction of the Committee by Gordon and Eleanor Michell, A/A.R.I.B.A.

PLAN OF THE CENTRAL AREA



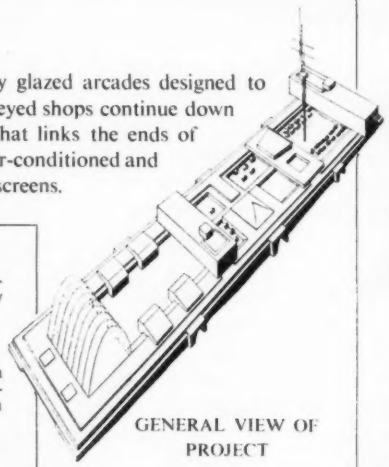
THE HIGH MARKET 6

CENTRAL AREA

The central area is divided into five open spaces by glazed arcades designed to accommodate very small shops. The larger single storeyed shops continue down each side, and in the centre there is a covered way that links the ends of the arcades. The whole of this shopping area may be air-conditioned and enclosed during winter months by removable glazed screens.

KEY

1. Department Store above
2. Playground at the south end
3. Paved garden
4. Tropical plant house
5. Creche with enclosed garden, and covered play space
6. Café with informal gardens bounded by shallow moats
7. Exhibition Hall with stairs to restaurant, ballroom and administration offices over
8. Stairs to cinema with illuminated aquarium under large half landing

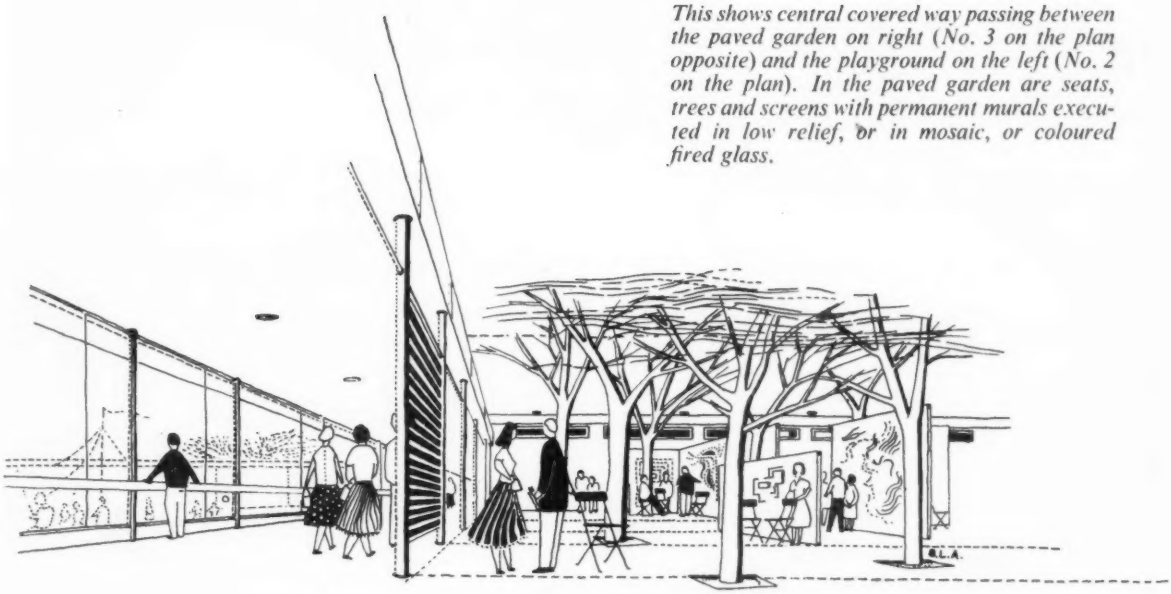


GENERAL VIEW OF PROJECT

KEY TO TINTS ON PLAN

- *Covered shopping area*
- *Single-storey shops*
- *Shoppers' lifts from car parks*
- *Goods lifts*
- *Moving articulated platforms*
- *Entrance to Department Store with lifts, escalators and display space. Dotted lines represent Department Store above*

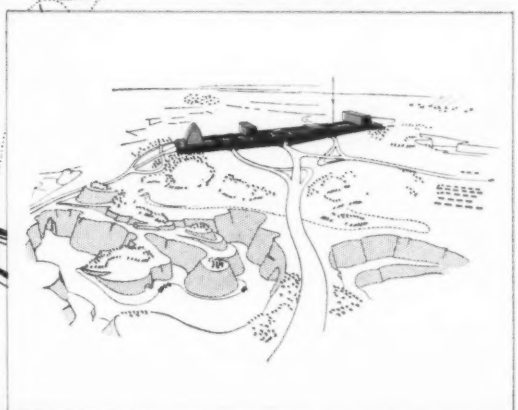
PILKINGTON BROTHERS



This shows central covered way passing between the paved garden on right (No. 3 on the plan opposite) and the playground on the left (No. 2 on the plan). In the paved garden are seats, trees and screens with permanent murals executed in low relief, or in mosaic, or coloured fired glass.

Interior of one of the closed arcades. The small shops on each side rise to a greater internal height than the arcade which allows them to have clerestory lighting in the front over the arcade roof. Unlike the other shops in the "High Market" they have no basement stores, and are serviced by communal lifts at the ends of the arcades.

Reduced bird's eye view of the area and site of the project.



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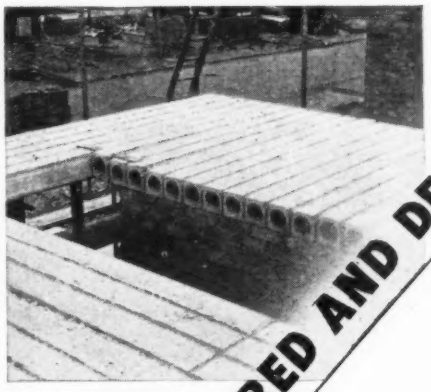
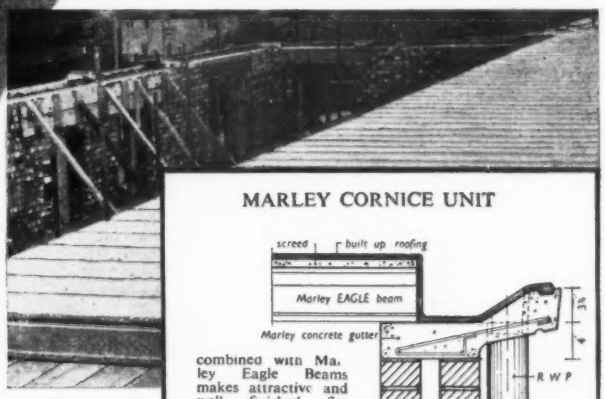
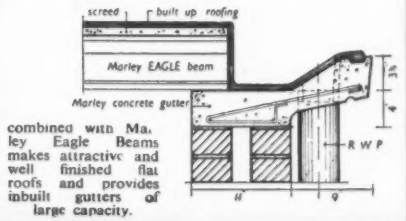




MARLEY CORNICE UNIT



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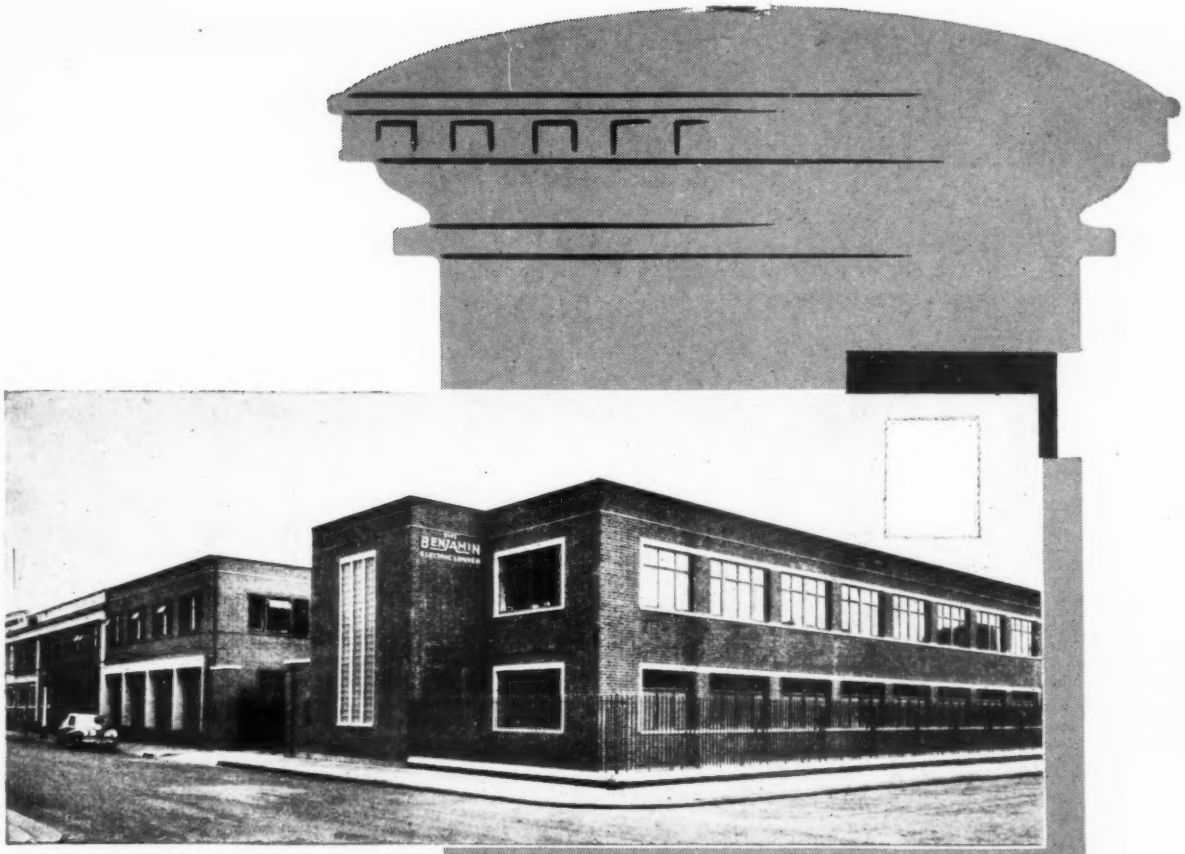

View of part of The Benjamin Works, Tottenham.

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Smee's 56

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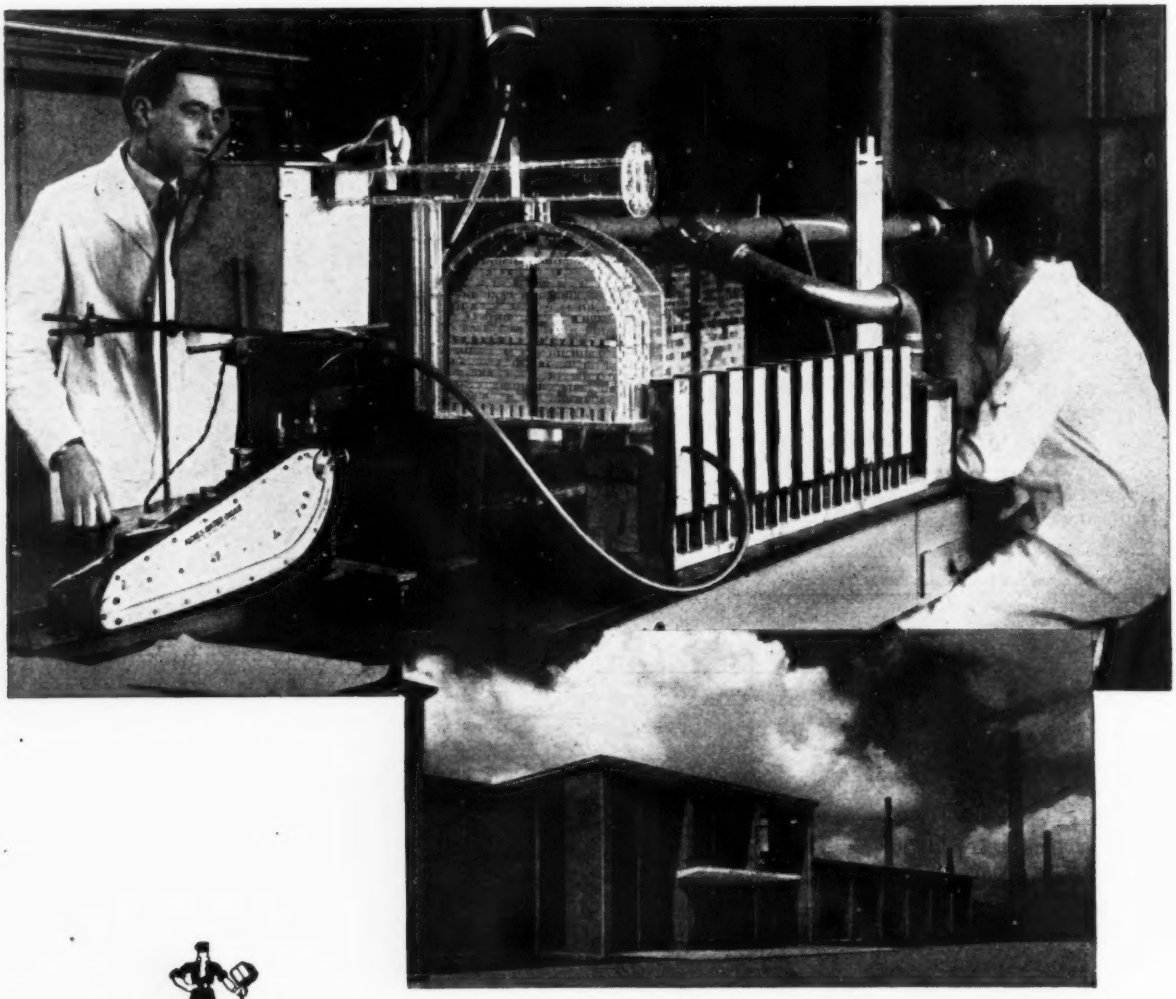

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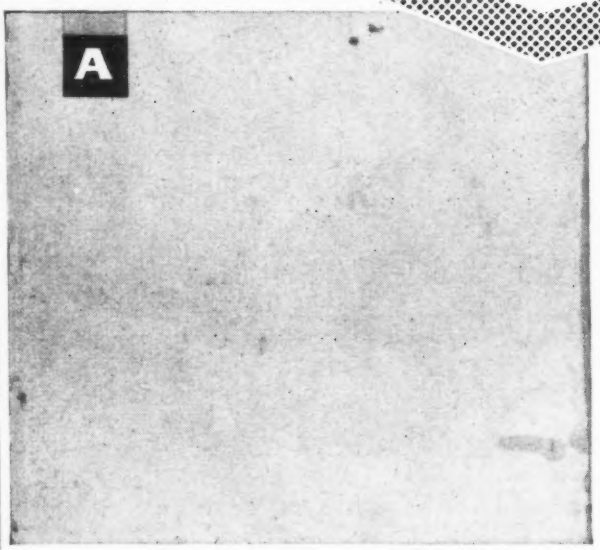
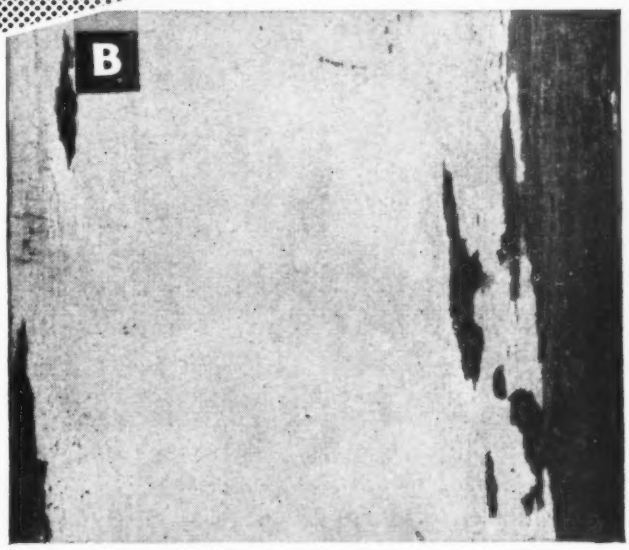
A

The surface of the panel treated with the Kinslac All-Alkyd system showed absolutely no sign of breakage or blistering.

B

Cracks in the finish of the panel treated with the oil primer system have allowed moisture to permeate the undercoat, the primer, and finally the wood itself.





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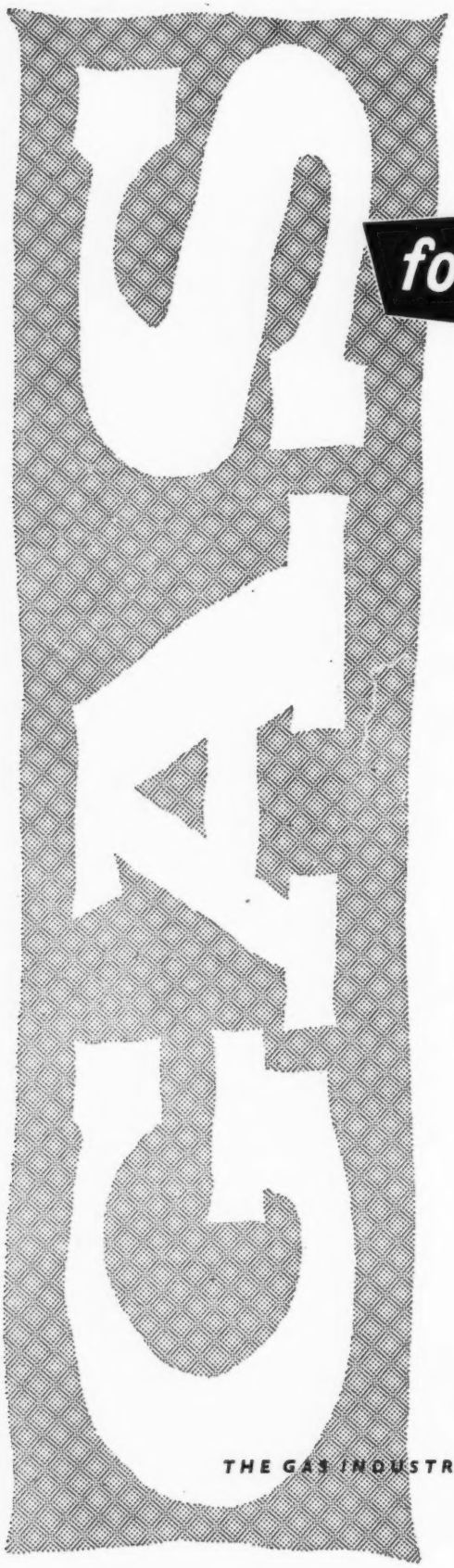

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By usefully harnessing three-quarters of the heat value in coal the Gas Industry offers two refined smokeless fuels, coke and gas. In addition the chemical engineering process of gasmaking simultaneously converts the potential smoke in coal into useful products like coal tar and pitch—and without these, expensive chemical imports would be necessary. Each of the Area Gas Boards offers expert advice to architects, building authorities and all engaged in providing smokeless heat. The advice is based upon the pooled knowledge of all the Area Gas Boards and the users of coke and gas in other countries.

consult your area gas board

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Clothes drying

To many womenfolk the home washing machine has provided the most favoured labour saver. Yet drying is often still a nightmare, particularly in large blocks of flats. Many building authorities are now installing these gas drying cabinets as a necessary amenity. Likewise in laundrettes, school cloakrooms or communal laundries, fitted in a battery of single units, they provide quick and efficient drying. At your Area Gas Board, Heating Engineers have a wide experience of a vast number of different heating problems which they will gladly discuss with the architect or his clients.

WHATEVER YOUR BUSINESS—**The Gas Industry appreciates the needs of individual consumers for prompt service and for advice which accords with the customer's special circumstances and requirements. Each Area Gas Board offers efficient service to users of gas-fired equipment and can give expert advice based upon the pooled knowledge of all the Boards and of gas users in other countries.**

—CONSULT YOUR AREA GAS BOARD

ISSUED BY THE GAS COUNCIL

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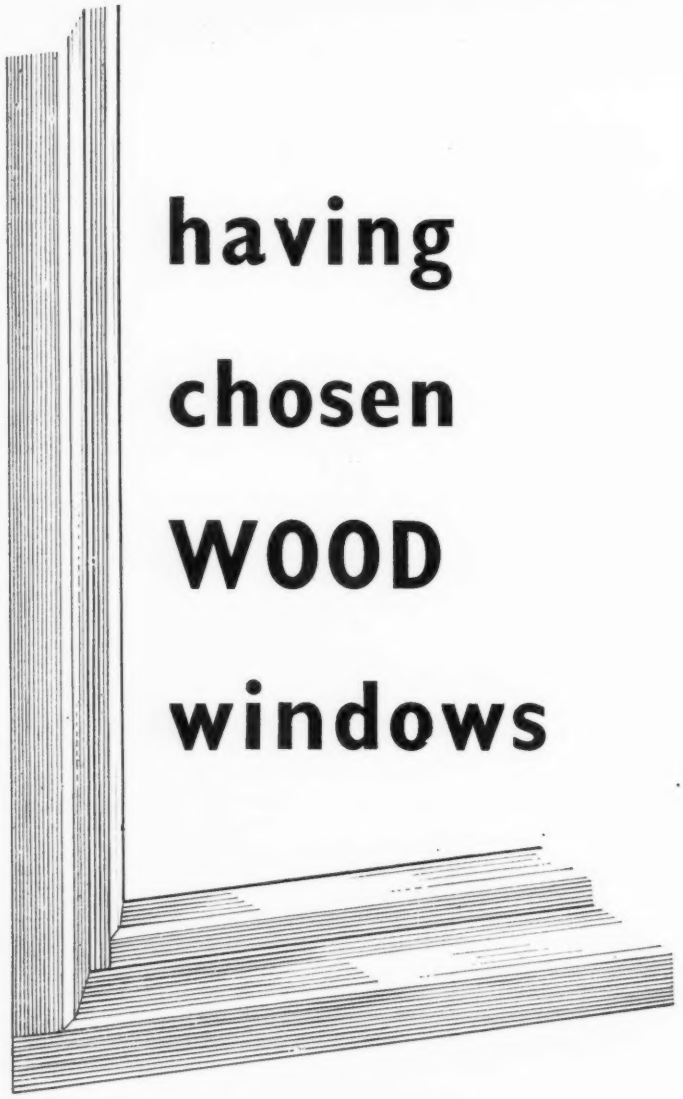

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The properties of Plain and Insulating Plasterboard are described in a brochure entitled "Improved Thermal Insulation with Reduced Fire Hazard". May we send you a copy?
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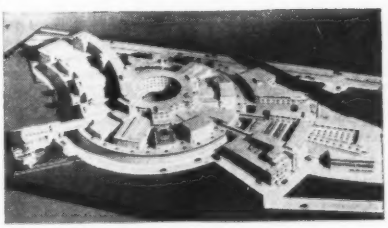

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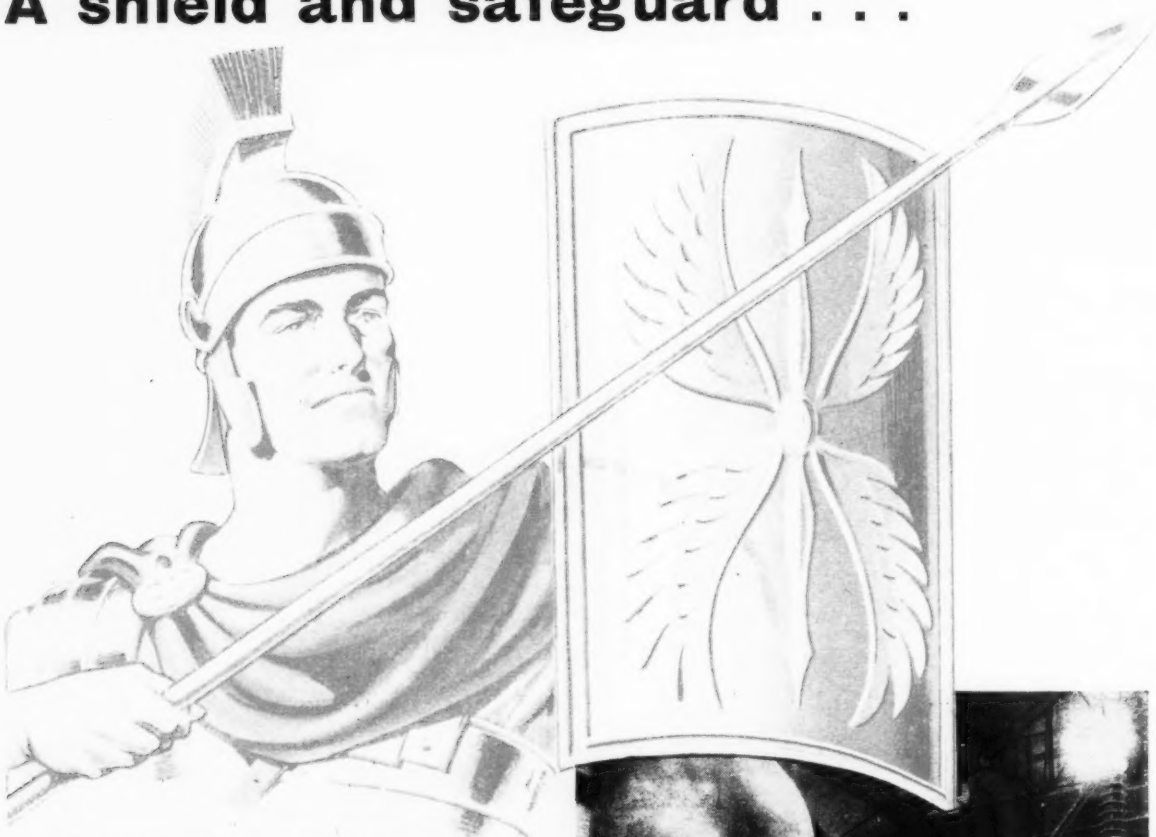

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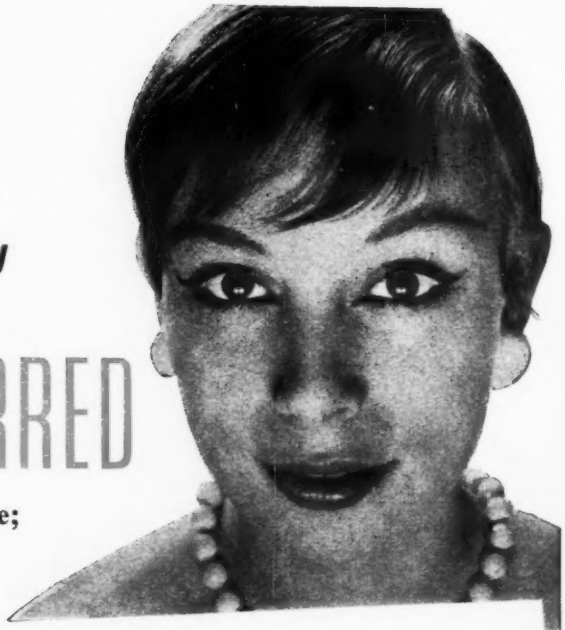
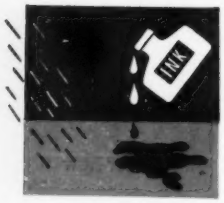


A long life of unblemished beauty in spite of abuse; a wide range of modern colours, woodgrains, linens, and other decorative designs; the fact that new production methods make it possible to produce Panax at a low price level . . . these are some of the many reasons why Panax is preferred.



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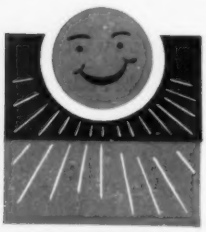

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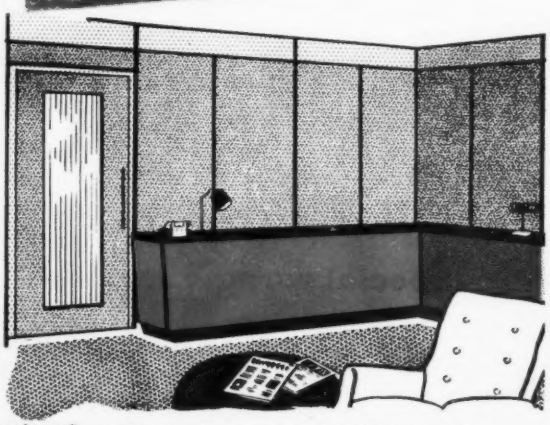

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Essential data on five of the latest, most efficient heating units

WHETHER you're specifying for a single dwelling or an entire estate, there's a Flavel appliance designed to fit almost any standard fireplace. Five of them are shown and briefly described on this page. For fuller details, you are invited to write to Flavels. Their Architectural Advisory Bureau is always ready to give expert advice and information about all Flavel appliances . . . solid fuel grates, boilers, cooker/water heaters, gas-heated clothes-dryer, water heaters, fires and cookers.

The four open fires shown can be supplied with gas burners for rapid and labour saving lighting. In the case of the Fulham Finned Back Boiler Unit, a special attachment is available for heating water when a solid fuel fire is not required.

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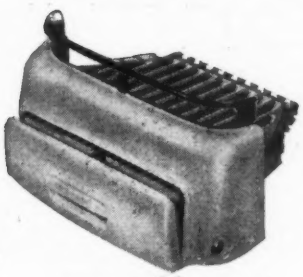
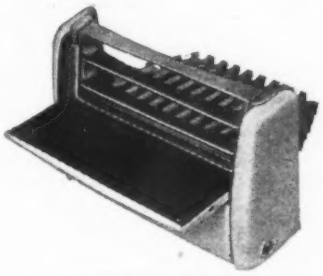


THE 'NEWBOLD'

Economical with all solid fuel, especially coke. Accurate fast or slow burning control; low construction ensures warm hearth. Cast iron construction: no costly fire bricks to replace. Available in 14" and 16" sizes for use as inset grates. In a wide range of vitreous enamel finishes.

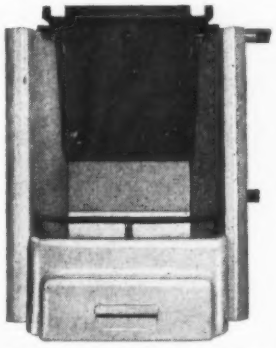


THE 'FLAVEL SEYMOUR'

New sixteen-inch safety grate suitable for use with or without back boiler. Fall door drops to show fire burning; fire intensity is controlled by opening or closing ashpit door. Closing both doors gives economical continuous burning.

THE 'METRO' BOILER UNIT AND VENTILATING CANOPY

Heats by radiation *and* convection. Cold air enters at sides and is heated and released through louvres. With dampers fully open the boiler unit will supply 10 to 15 gallons of hot water per hour. Output and fuel consumption can be controlled by using dampers.



THE 'FULHAM' FINNED-BACK BOILER WITH 'NEWBOLD' GRATE

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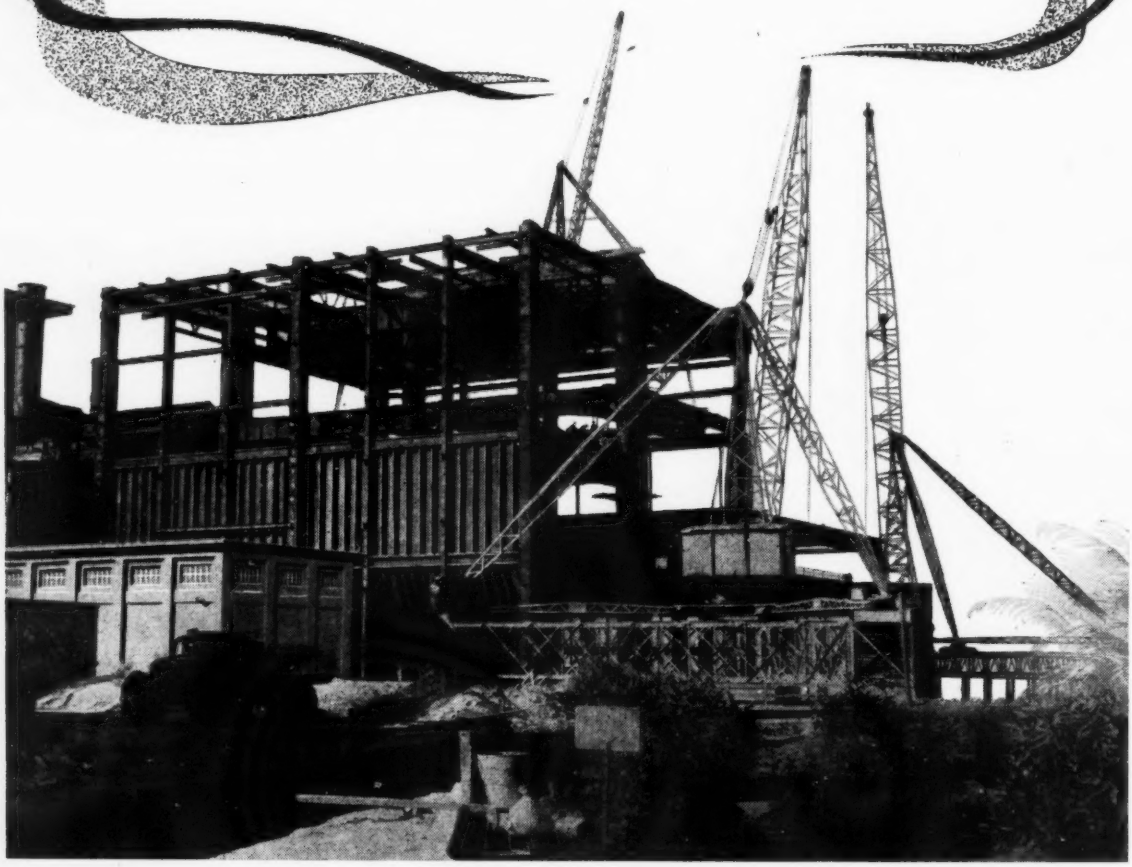

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The structural steelwork for this contract amounting to approx. 2500 tons, was designed by the South Durham Steel & Iron Co., Ltd., and fabricated in their Constructional Works at Stockton-on-Tees.

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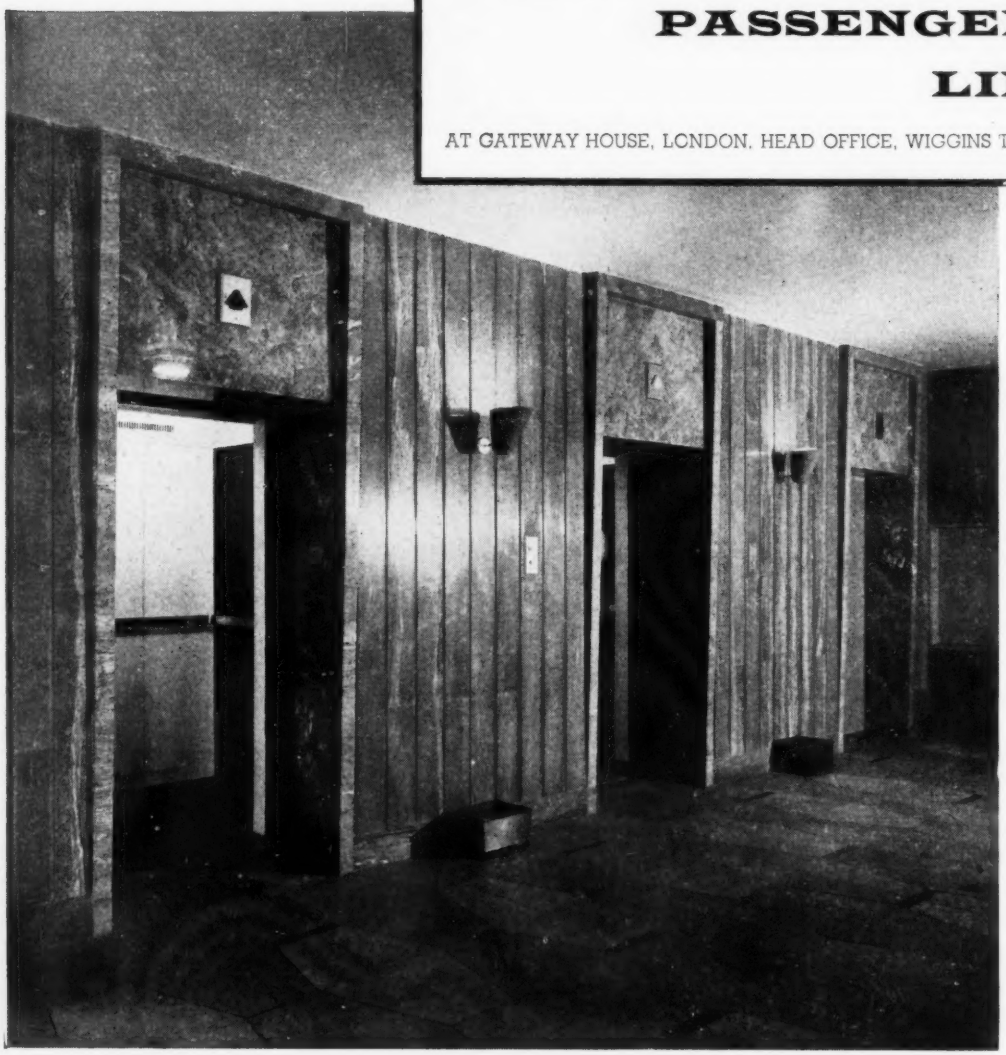

The installation consists of five high speed passenger lifts consisting of one bank of Triplex control and one bank of Duplex control. Two panel bi-parting power operated doors are fitted to car and landing entrances. One of the Triplex control lifts is fitted as a Fireman's lift to comply with the requirements of the London Fire Brigade.

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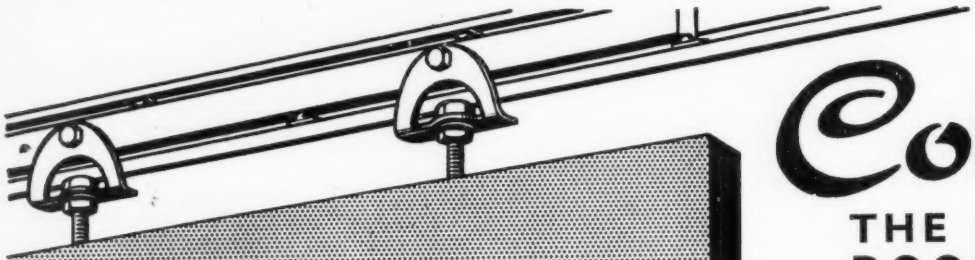

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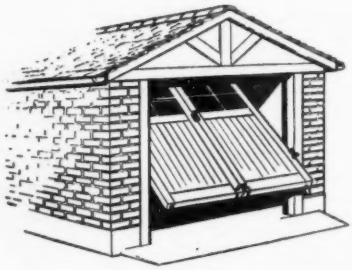

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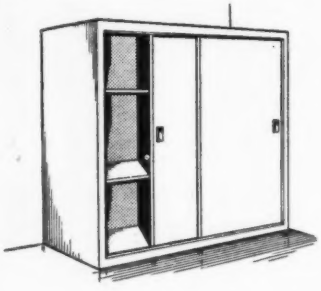

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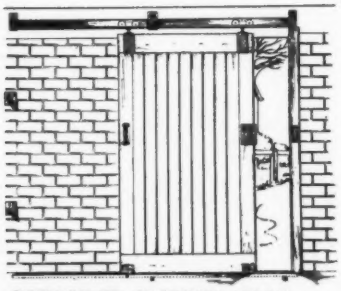
Light in weight, quiet in operation and unobtrusive in appearance; designed to suit quality or utility doors fitting into the rear face of the joinery. Maximum door weight recommended is 50 lb.



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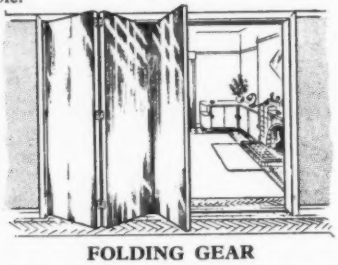

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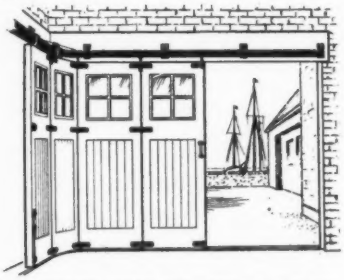
May be used for exterior and interior folding and sliding doors, screens and windows. It is particularly suitable when side walls may not be used.



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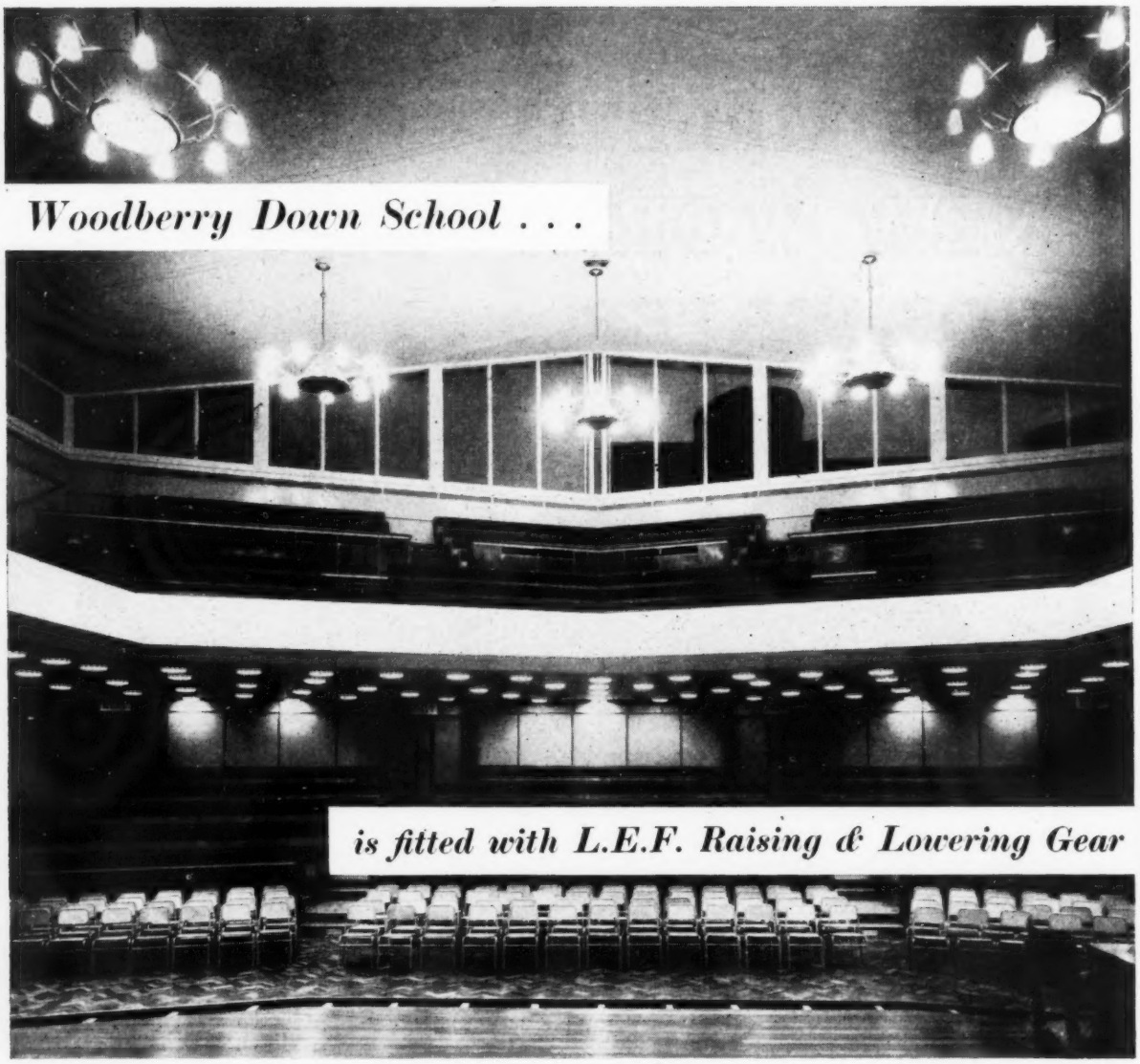

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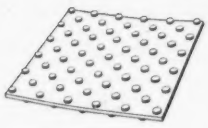

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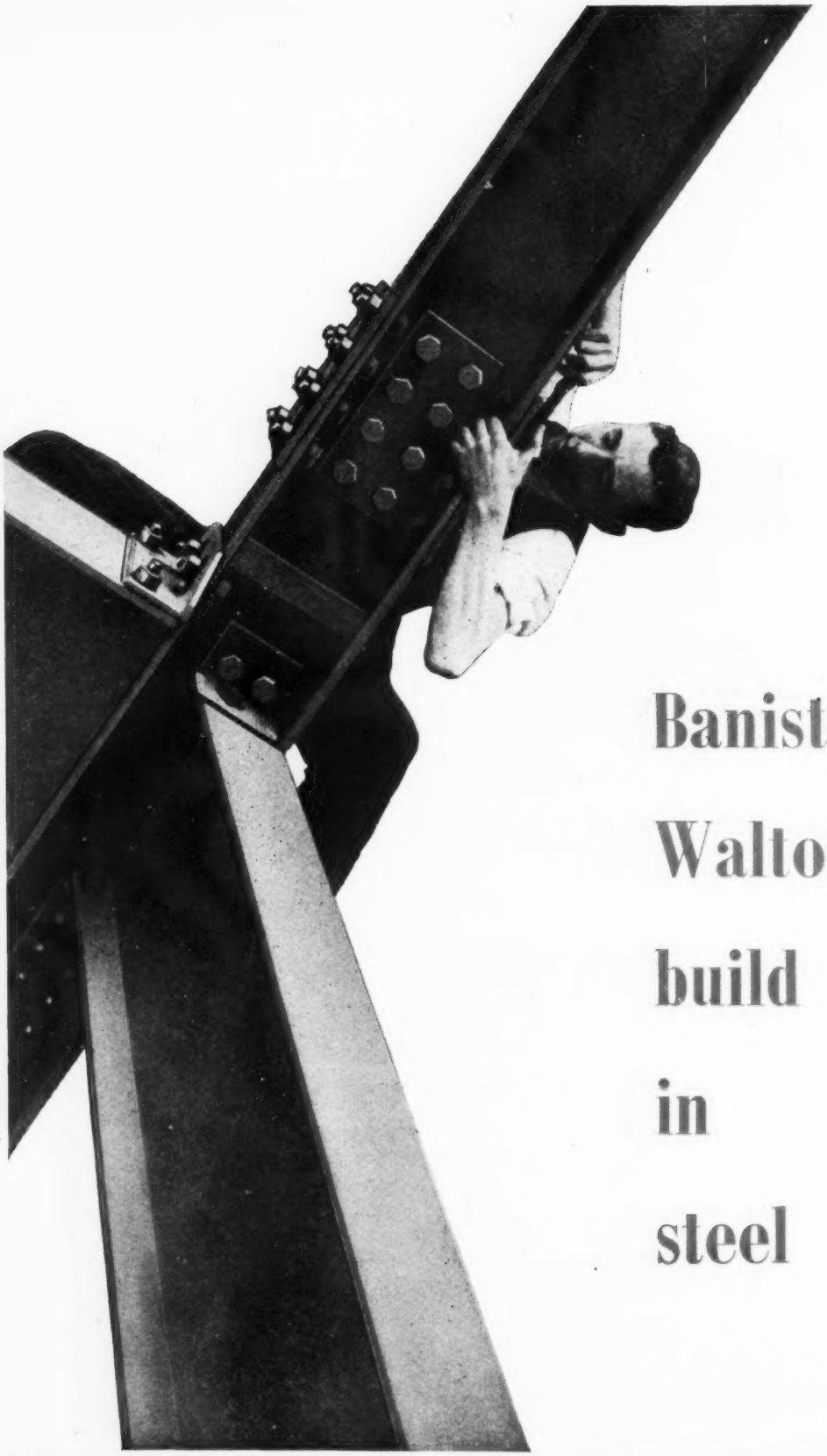

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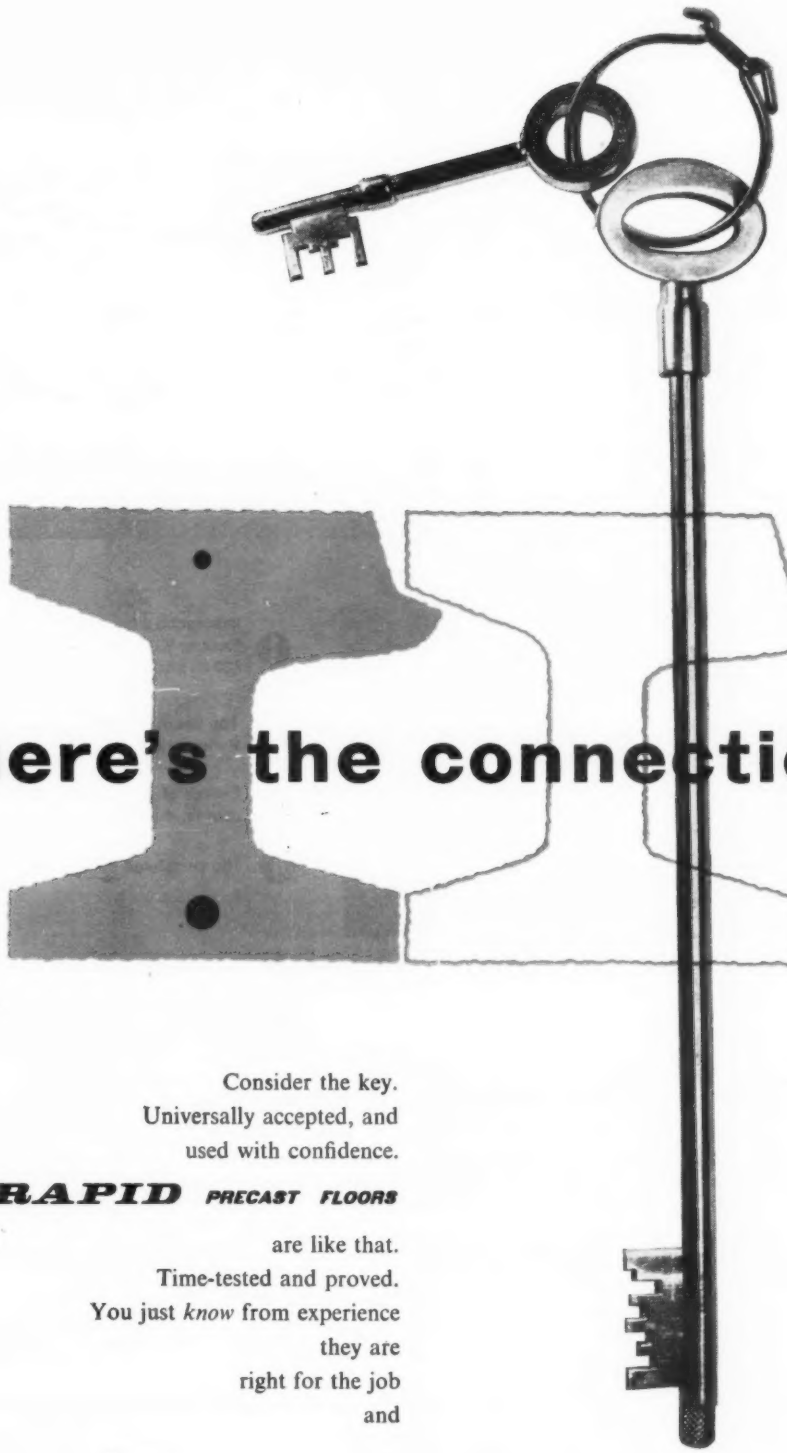

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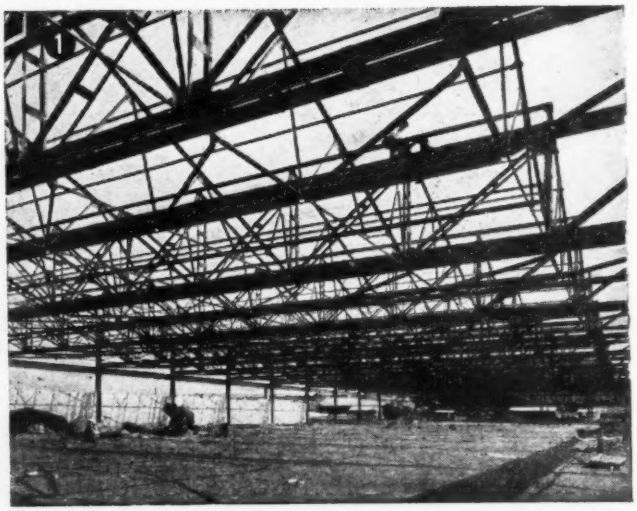

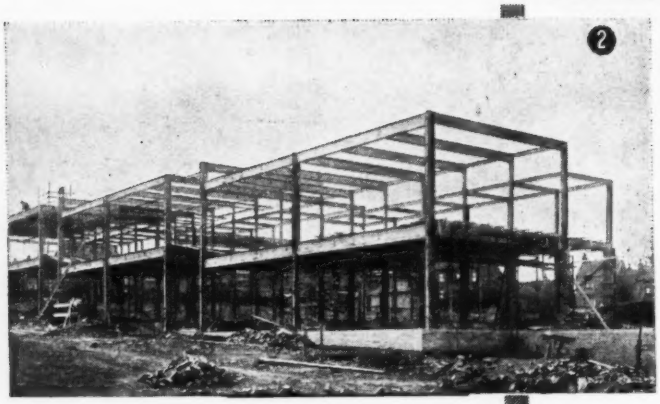

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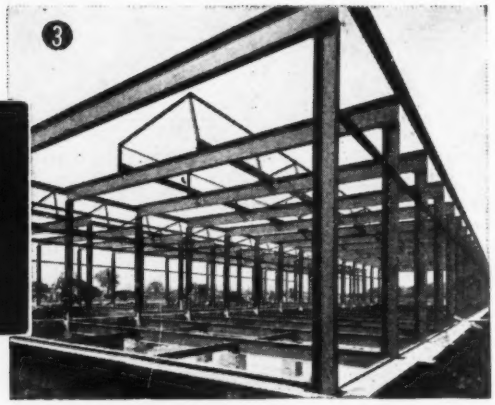

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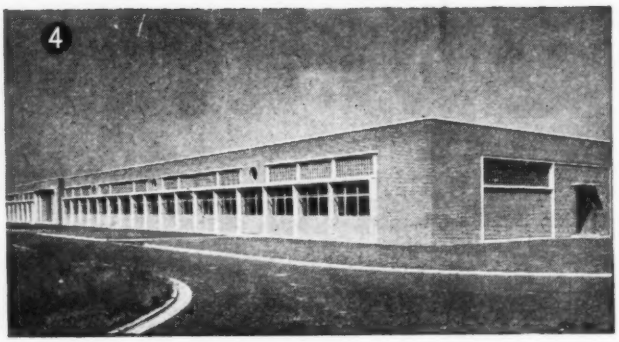

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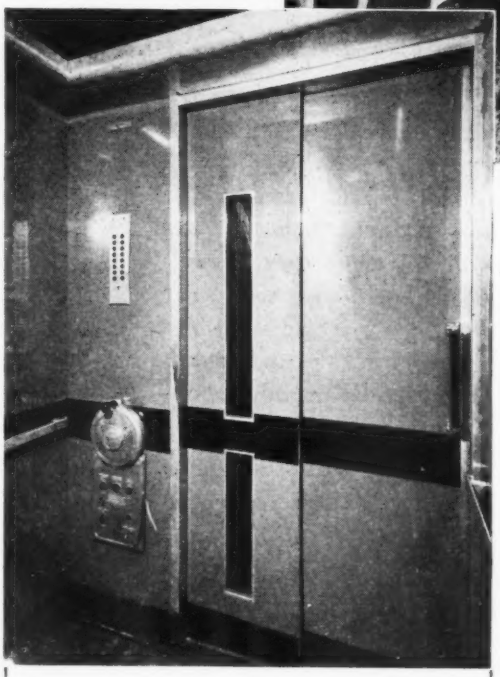
A modern bar at the "Apple Tree", Crawley. Architects: Godman & Kay, F/F.R.I.B.A.

Lift Panelling at Mount Royal, W.1.



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FOR many years Richard Costain Limited have played a major part in factory and research laboratory construction where speedy erection is so essential to maintain continuity of production and research. Pictured above is the fine new factory for Teleflex Products Limited who moved their entire staff, plant and machinery from Chadwell Heath to Basildon in Essex, and is now complete with administrative offices, service and maintenance blocks, canteen and kitchen wing, as well as a garage block. **It was in full production sixteen months after commencement of construction.**

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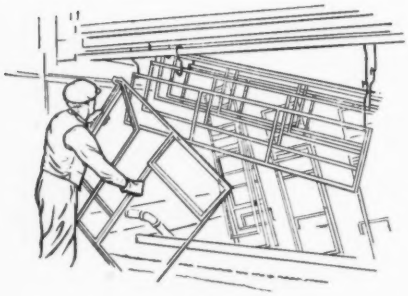
For steel windows everyone knows that the best protection against rust is a generous coating of zinc. But zinc won't adhere to steel unless its surface is properly prepared. That's why we shot-blast every Beacon Window to ensure a meticulously clean and slightly pitted surface entirely free from scale, grease and dirt, on which the zinc can be deposited to give life-long protection against Rust and Corrosion.

..THEN we coat with Zinc (99·5% pure)

There are several methods of coating steel with zinc to give it the maximum protection against rust and corrosion. As engineers of world-wide experience, Thompson's use every process, but the one chosen for Beacon Windows — the Zinc Wire Metallisation Process — has special advantages. Under the flame of the oxy-propane flame gun the whole window receives a generous coating of zinc—not less than ·004" thick—as an *integral* unit after assembly.



..FINALLY the surface is insulated

Thompson's are not content to stop at the zinc coating stage. Every Beacon Window is passed through a zinc chromate primer tank and stoved at a temperature of 400°F. This insulates against attack from any dissimilar metallic-based finishing paints. It also safeguards against corrosion when stacking on unsuitable ground, prior to use. But, more important, the priming coat being factory-controlled, its quality, density and workmanship can be guaranteed.

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There's a quality touch about a Beacon Window characteristic of a product made under the strictest engineering supervision. A Beacon Window always opens and closes smoothly — it fits accurately on all four sides to exclude all draughts. Its bronze furniture is sensibly robust. But, the really important fact — and something which is quite invisible — is that it has been rustproofed to satisfy the most exacting conditions to which steel windows can be subjected. Every Beacon Metal Window, you can be sure, will pass with flying colours all the tests described in B.S.729. There are no better windows made.

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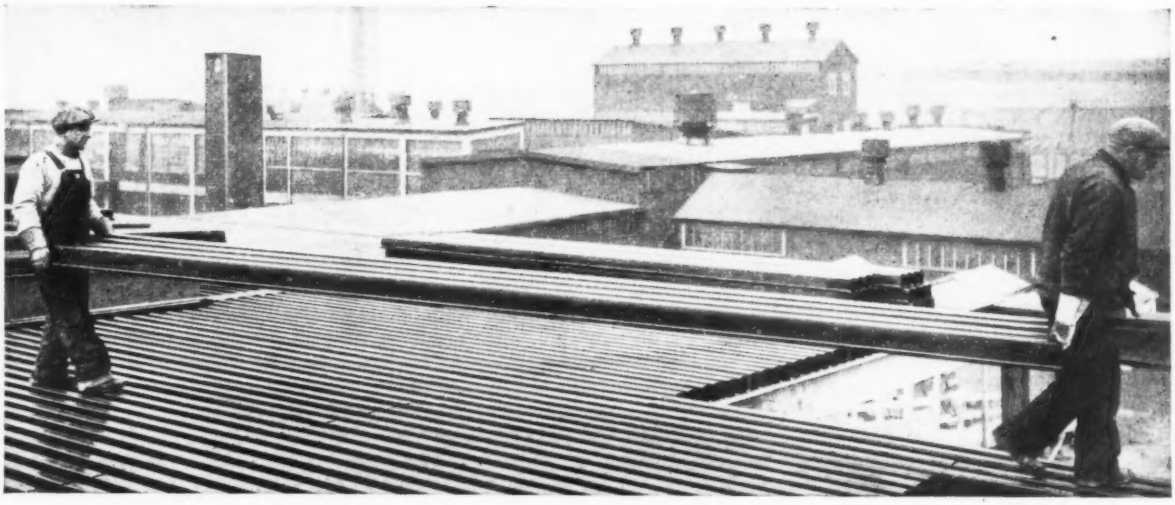
with Robertson Long-Span Q-Deck



ROBERTSON Long-Span Q-Deck assures economic construction when building design takes into account the outstanding advantages offered. Centres of support may be as much as 22′ 0″ (the maximum length of Long-Span Deck).

Robertson Long-Span Q-Deck units on load bearing walls are ideal for school construction and other types of buildings where the elimination of intermediate supports is an advantage.

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Long-Span Q-Deck is also suitable for other types of insulation and weatherproofing. See publication QD3A.

Robertson Long-Span Q-Deck units are 2 ft. wide and made from combinations of 16-20 B.G. steel, in sections and lengths to meet span/load requirements. Post coupon today

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LSD 150	**13 ft. 6 ins.**	**10 ft. 9 ins.**
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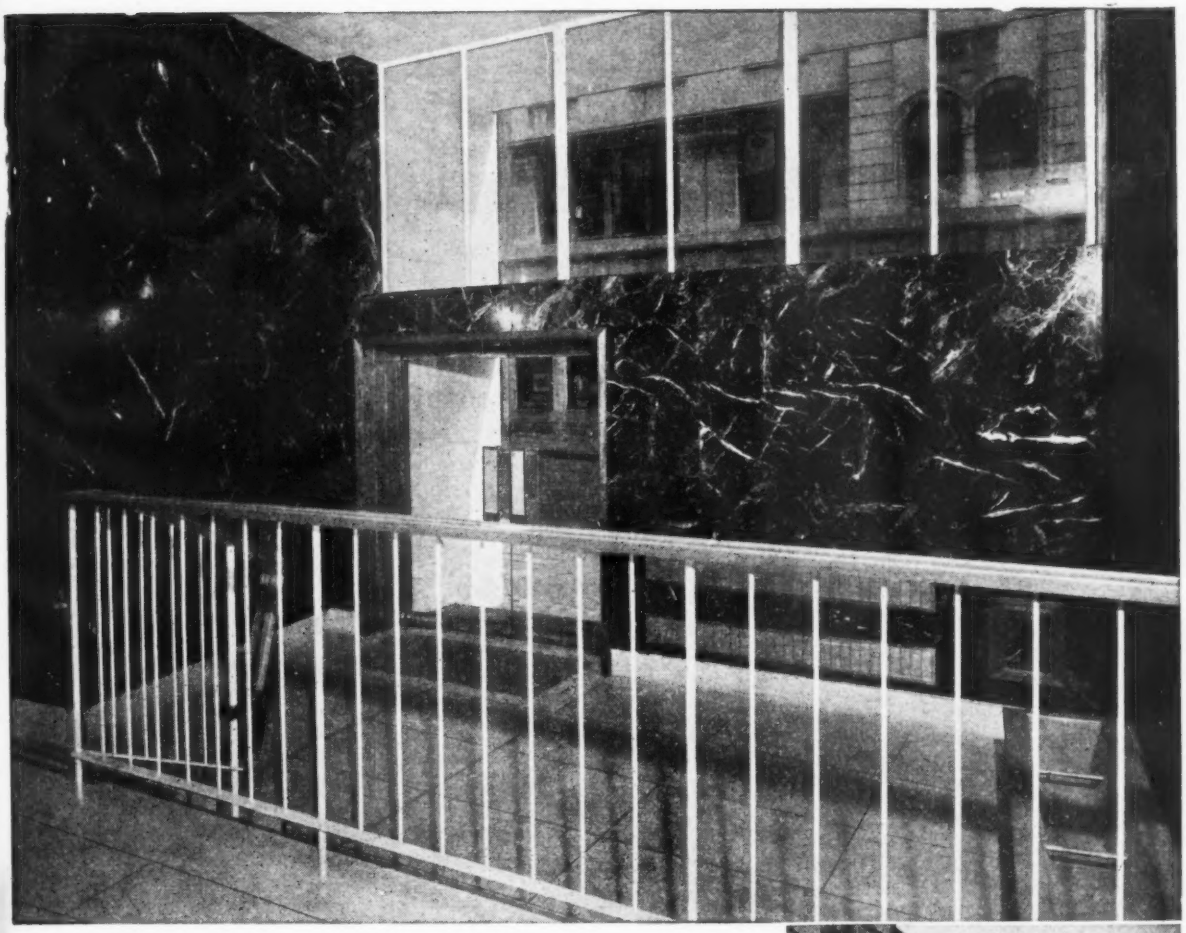

Entrance Hall and front view of 36/37 Queen Street, E.C.4.
Architect: Edward H. Eames, A.R.I.B.A.

The attractive green marble and mahogany entrance hall to 36/37 Queen Street has been designed for removal when plans for widening the street are put into effect. The set back will be achieved with minimum disturbance to the rest of the building. Partly repaired and partly rebuilt after war damage, this is another of the fine modern buildings constructed by Ford & Walton.

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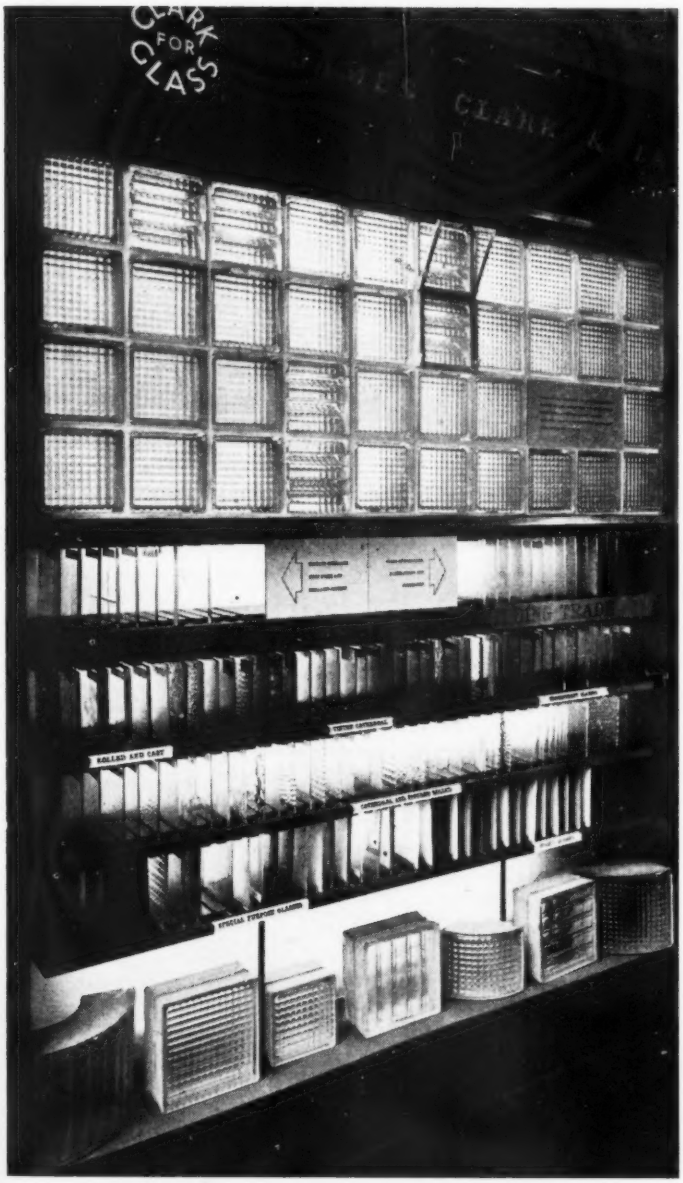

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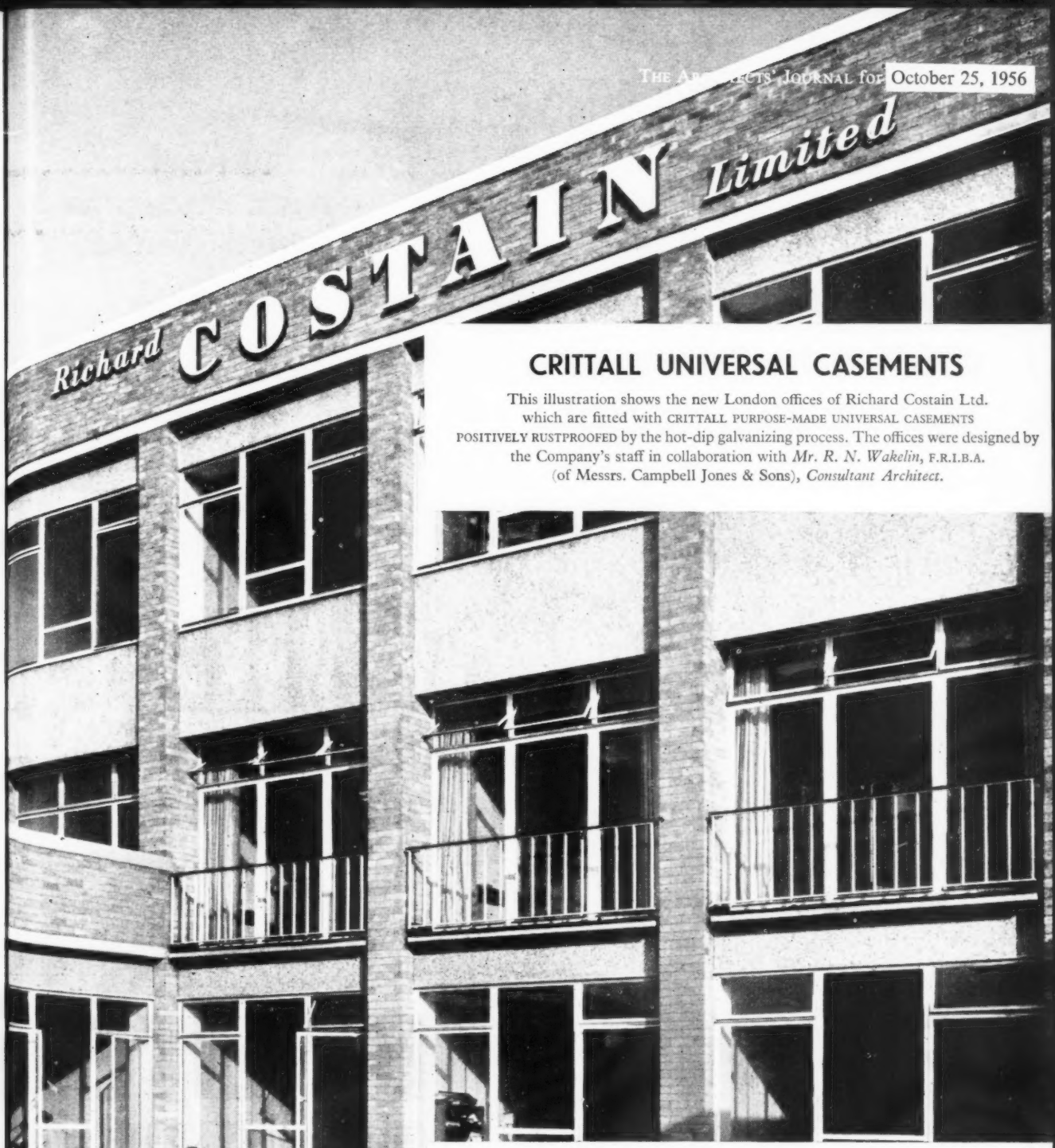

CRITTALL UNIVERSAL CASEMENTS

This illustration shows the new London offices of Richard Costain Ltd. which are fitted with CRITTALL PURPOSE-MADE UNIVERSAL CASEMENTS POSITIVELY RUSTPROOFED by the hot-dip galvanizing process. The offices were designed by the Company's staff in collaboration with *Mr. R. N. Wakelin*, F.R.I.B.A. (of Messrs. Campbell Jones & Sons), *Consultant Architect.*

Of all the many calls upon their services in the manufacture of purpose-made windows none has a readier welcome at Crittalls than that which poses some new problem in function or design. For it is out of the accumulated experience which comes from tackling such new concepts, that Crittalls will be made more able still to contribute their skills, and in greater measure, to the buildings of the future.

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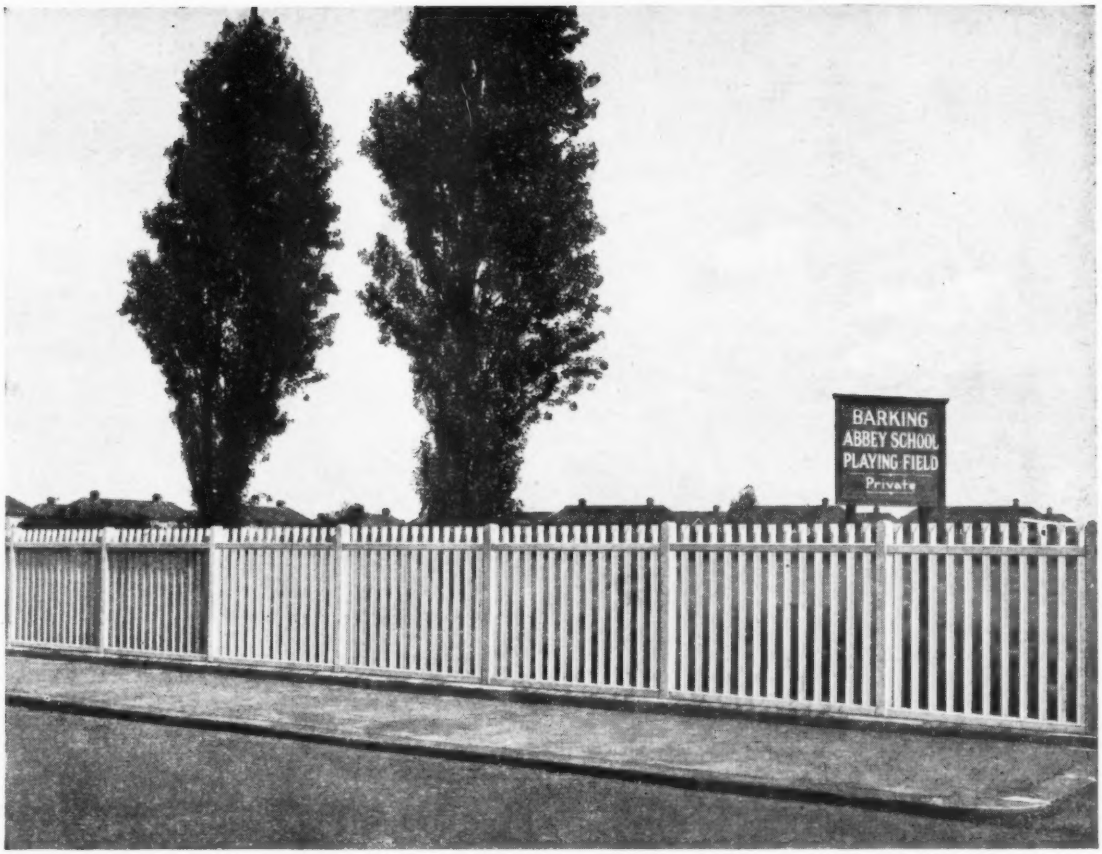

Fencing erected at Barking Abbey School Playing Fields. Reproduced by courtesy of the Borough of Ilford. Borough Engineer and Surveyor: H. J. Mulder, A.M.I.C.E., M.I.Mun.E., A.R.I.C.S.

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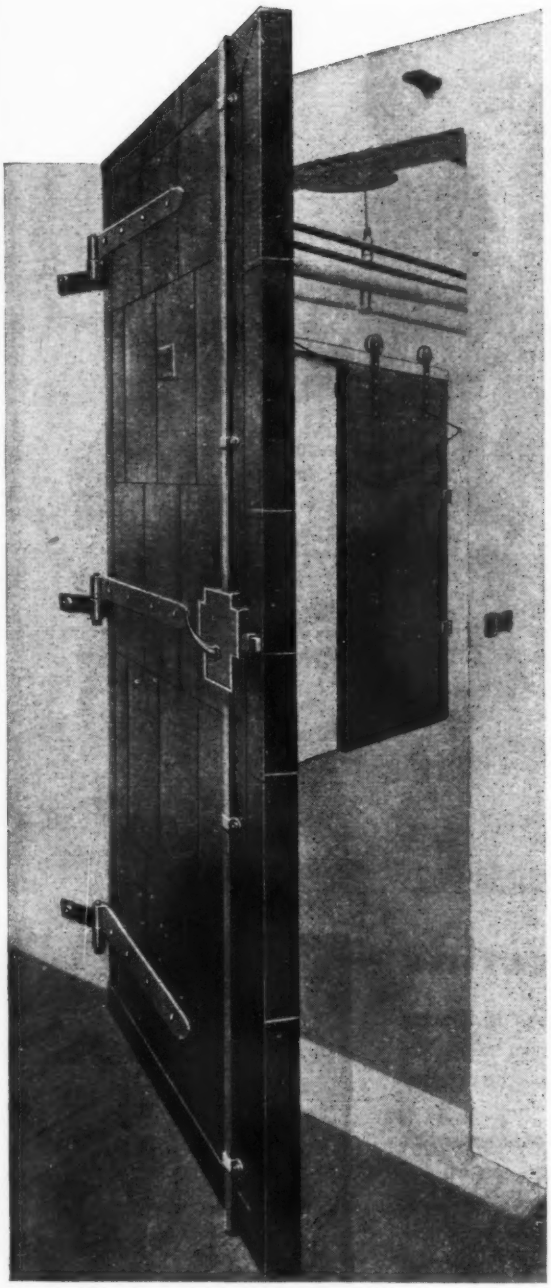

FIRE RESISTING DOORS

The trouble with fires is that they like to spread. Architects and builders know this—that is why modern buildings are cut up into sections by brick or concrete walls which can arrest the spread of fire, provided there are no loopholes such as doorways and stairways. If these loopholes are closed by efficient fire-resisting doors the spread of fire can be prevented.

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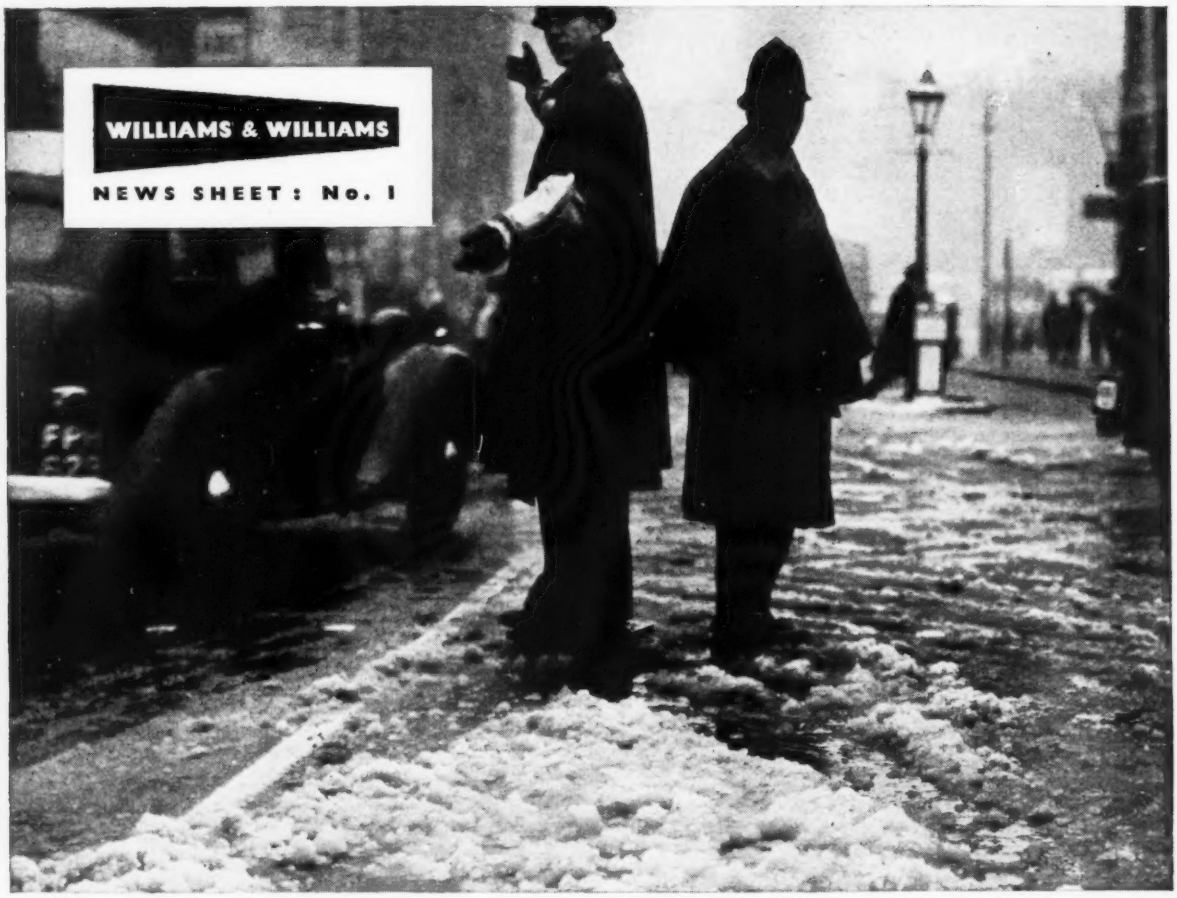


WALLSPAN BEATS THE WEATHER

Londoners will remember the winter of 1955/6 as the coldest on record. During one of the more chilly spells when the thermometer stood at eleven below, the new Bata Store in Oxford Street was in a near-completed state—the exterior finished but for the cladding of the main facade.

Fortunately, the architects had specified 'Wallspan' for this contract, work went ahead as planned and the building was ready for occupation on the scheduled day. In these conditions conventional building techniques would have come to a complete standstill. Using 'Wallspan', no delay was experienced (except on the occasions when the fixers' bare hands froze to the aluminium 'Wallspan' members) and the cladding was completed in six working days.

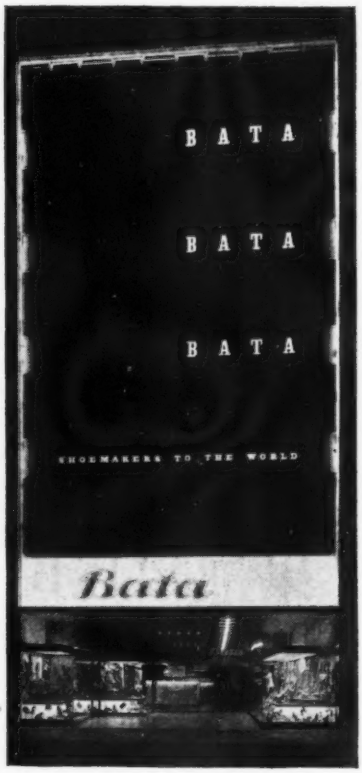
WHY WALLSPAN WAS USED

A glass curtain wall was decided upon for three reasons: speed of construction, light weight, and easy maintenance. Of the various methods considered, 'Wallspan' was thought to meet all three considerations most effectively. Lightweight, all-aluminium 'Wallspan' members with their clean lines and crevice-free profiles used in conjunction with glass-faced infilling panels fulfil points 2 and 3—while in the particular circumstances point No. 1 was more than amply justified!

FURTHER DESIGN ADVANTAGE

When the project was still on the drawing board a further advantage came to light. The architect of the Bata Store does a great deal of shop design where one of the obvious problems is that of integrating the Company name as part of the overall design of the front.

The 'Wallspan' 'grid' offered a happy solution in this case where it is used as a framework for some very large scale typography. The effect can be judged by this after-dark photograph.



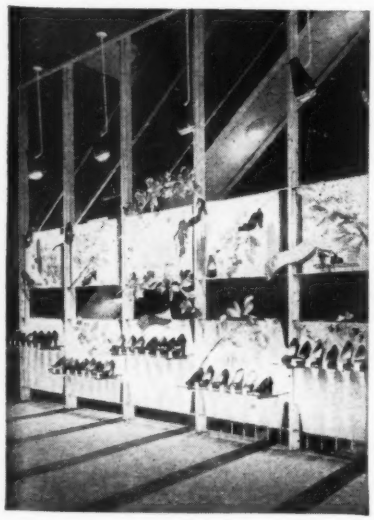
Bata Store, London. Architects: Bronek Katz and R. Vaughan.

WHAT MANCHESTER DOES TO-DAY!

But long before the London store was started, 'Wallspan' had been used on a small scale but in a very interesting way in another Bata shop in Manchester. As well as a more-or-less conventional application as a feature window in the main facade, it has been taken *inside* to form a part-glazed display screen to the staircase. Using 'Wallspan' in this way offers great scope, especially for showrooms, shops, reception areas, etc. where it is desired to carry the theme of the exterior decor within doors to impart a feeling of continuity to inter-related areas. Since the 'Wallspan' is protected from the weather the range of infilling materials is greatly extended, blank spaces can be left in the grid to be occupied by display fitments—and so on. In such circumstances the 'Wallspan' members themselves can be colour anodized or painted.

∧ *Bata Store, Manchester. Architects: Bronek Katz and R. Vaughan.*

Interior of the Manchester Store, showing use of Wallspan for screening to staircase well, incorporating display fitments. ∨



THE BUGBEAR OF EXTERIOR MAINTENANCE

Meyer Dumore Factory, Park Royal. Architects: Mark Jennings, Son & Partners, (Architect-in-charge: H. M. Cunningham A.R.I.B.A.)

Presumably when all our cities are 'smokeless zones' the constant deterioration of fabric through atmosphere corrosion will cease to be the pressing problem it is now. Until that long-wished-for day, the use of 'Wallspan' for outside walls goes a long way to solving it.

The aluminium alloy from which the 'Wallspan' members are extruded is extremely resistant to corrosion. Even in 'heavy' industrial atmospheres, once initial oxidation has taken place, subsequent pitting is of negligible proportions. In fact, the oxide layer which forms during the first few months of exposure acts as an extremely efficient barrier against the further inroad of corrosive airborne agents. For this reason it is better not to attempt to keep the 'Wallspan' in 'new' condition by means of abrasives but merely to wash off surface dirt with a mild detergent and water, leaving the oxide layer intact.

The same treatment is recommended for aluminium windows. It will be readily appreciated that in these circumstances—'Wallspan' with aluminium windows and a suitable glass or aluminium-faced infilling—maintenance is reduced to large-scale window cleaning for which provision may be made by installing a cradle runway around the eaves of the building. This has been done at the Meyer Dumore Factory, at Park Royal, illustrated above.

Dining room Extension to the 'White Hart' Hotel, Sonning. Architect: Eric G. V. Hives, L.R.I.B.A., Chartered Architect.

STANDARD WINDOWS IN A PERIOD SETTING

The 'White Hart' Hotel at Sonning—always a popular resort for Thames-side tourists—has recently opened a new dining room extension. Briefing to architect included:

1) Extension must harmonize *outside* with existing old building.
2) Extension *inside* must be light and airy.

One aspect of the design that helps to reconcile these diverse requirements is the extensive use of small-pane type BS.990 Standard Metal Windows and Doors (supplied rustproofed by Williams & Williams). White paint emphasizes the glazing bars to give that 'cottage casement' look. Slim metal sections let in lots of light and air . . . And standard windows are as economical as may be!

GRACIOUS EVANS!

Introducing a sight we hope will warm the cockles of your heart. Roger Evans—the-new-Area-Manager-at-Manchester is shown here practising for an intended visit to New Brighton or Blackpool—he hopes. A real Williams & Williams man he is, look you.

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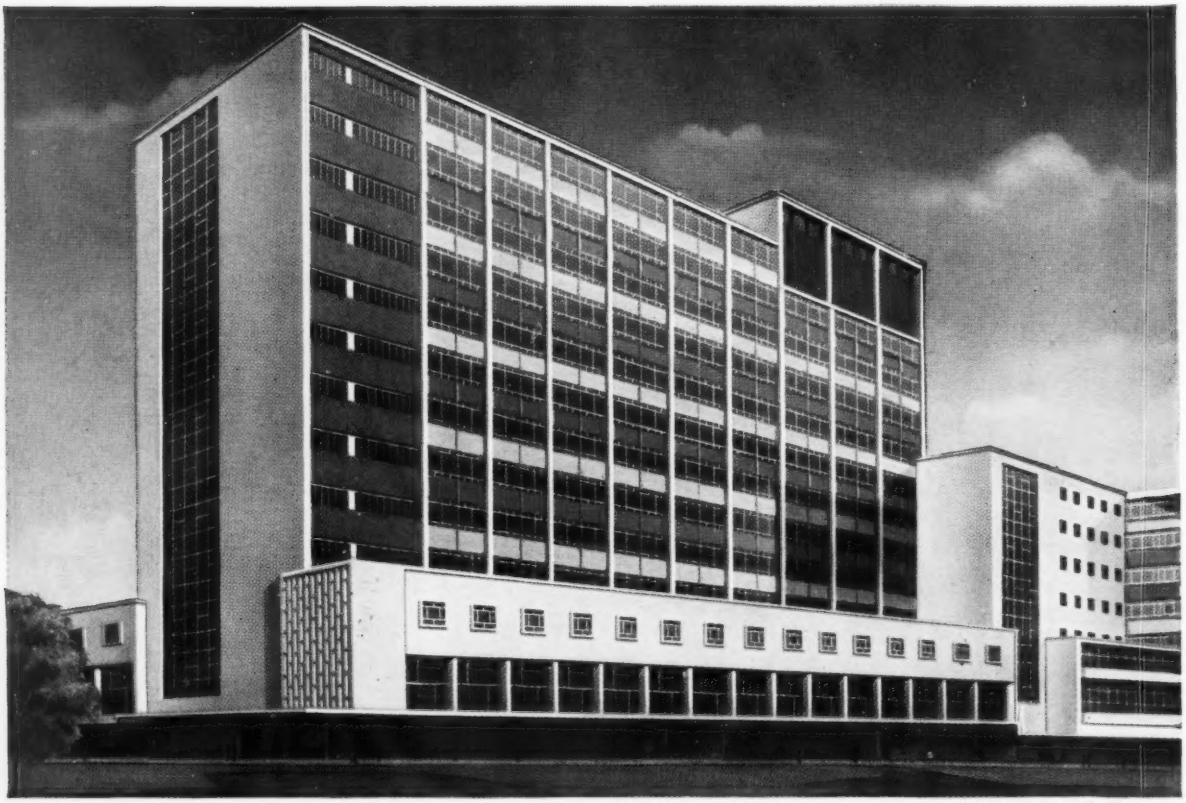
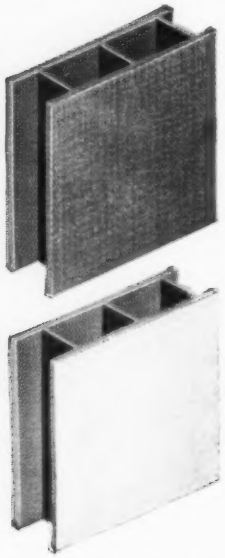
BATH.

HOLOPLAST CURTAIN WALLING



Cotton, Ballard & Blow, Architects & Surveyors. Sir Robert McAlpine & Sons Ltd., Contractors

THE 'BIG TOP' — *the largest curtain walling job in the country*



The great new architectural project in the City of Birmingham, the block of shops and offices known as the 'Big Top', is a very big venture indeed. Much of the elevation, 80,000 square feet in fact, is Holoplast Curtain Walling. Holoplast Ltd. provide more than the best material: they provide a *complete* curtain walling system of great beauty.

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Each job is specially designed and everything, including infill materials is supplied with it. Quotations cover the whole operation, including erection and delivery. Architects and builders should certainly know about the advantages of the Holoplast Curtain Walling System—and it's only a matter of a letter or a 'phone call to Dept. 140 for full particulars.

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To help you advise on baths, we've produced a full-colour catalogue—complete with colour chart, suggested layouts for modern bathrooms, and full specifications of all Bilston Baths. If you would like a copy for your files, please send a postcard to Department AJ56/6

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THE ARCHITECTS' JOURNAL

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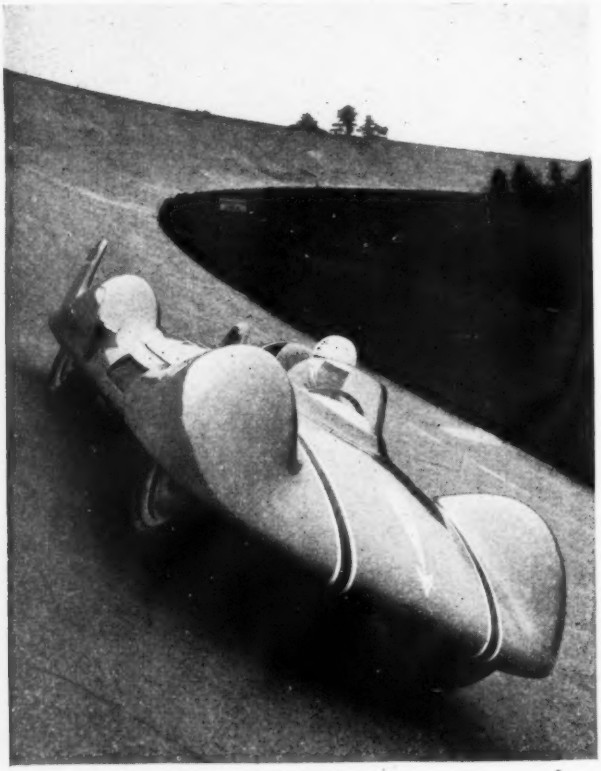
NOT QUITE ARCHITECTURE

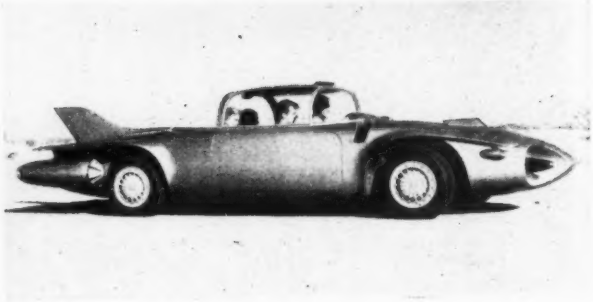
IN LOTUS LAND

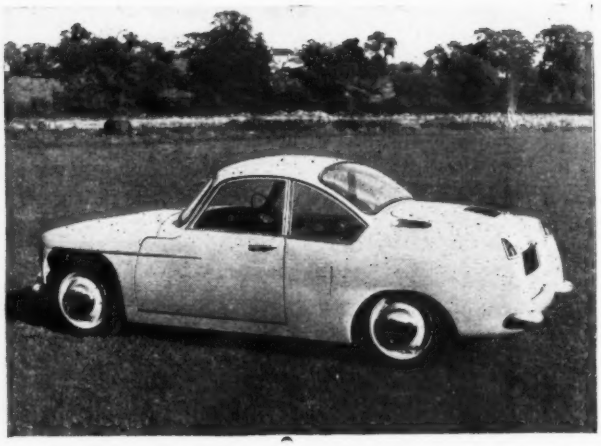
"How soon," Basil Taylor recently wondered, "before some shrewd car manufacturer begins to turn out new veteran cars . . ." He must have thought that there was some connection between the Vintage Cult, and the general dimness of British car styling, a connection sufficient to make a bit of automobilistic Betjemanism a profitable venture. However, he is demonstrably wrong—in contra-distinction to what goes on in the architectural field, the lunatic fringe of period-revivalists have little effect on the general product. Export markets have a good deal to do with this, hence the sudden de-vintagization of last year's MGs, but export isn't the whole story—who, outside the architectural profession, lamented the passing of the razor-edge Triumphs, the only known example of an attempt to sell a pseudo-Vintage car to the great British public? The evidence is that the home market, as well as the export business, would like friskier styling on English cars.

*

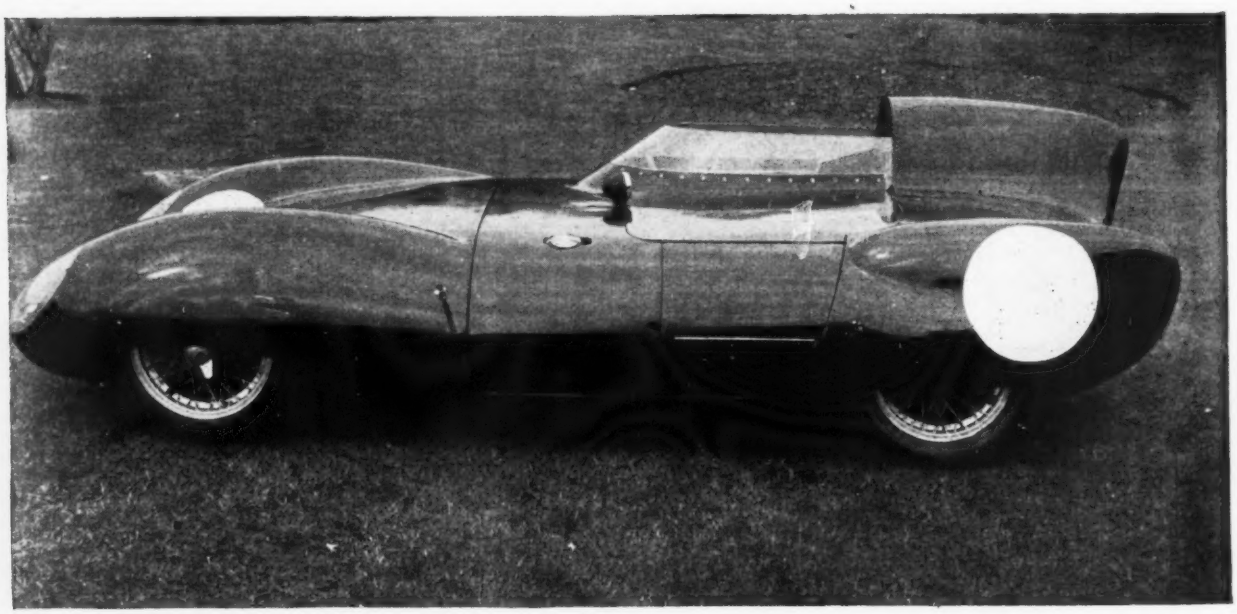
Except from Ford and the Rootes Group, though, they aren't getting it. This year's Motor Show reveals numerous well-studied and carefully-programmed mechanical advances and as many equally well-studied and carefully-programmed changes in styling. The former succeed, the latter—it is clear—do not. There is some mystery here, some failure of æsthetic nerve. The American stylist looks over last year's model, ties a couple of knots in the chrome-work, and two continents cheer. The Italian stylist breathes gently on the side panels, and gets a different sculptor to do the door pulls, and all Europe drools. The English stylist does his nut, near enough, and alters everything alterable, and the only voice that breaks the ensuing embarrassed silence is that of







Above, contrasts in turbo-car styling: Renault, left; General Motors, top right; Rover, above right. Below, aerodynamic form in British sports cars; the Lotus Mark Eleven.



Aunty *Times* chanting "Craftsmanship . . . continuity . . . traditions of. . . ."

*

Sometimes, it is clear, the dimness is purposeful. Rover's new turbo-car has as far-out a technical specification as anything in the show, and an exterior of studied reticence, clearly intended to give the product an air of maximum everyday probability. The outside is so shy that, apart from a transparent boot-lid that reveals the actual presence of a gas turbine, you might think it was driven by clockwork or a litter of friendly shmoos on a treadmill. It's a good gimmick, but just as the general public turns to come down from the raised platform that admits the view to the works in the boot, it catches sight of a much better gimmick —Renault's *Etoile Filante,* a turbo-car that really looks like a turbo-car. But one wonders why General Motors were so gentlemanly as not to send *their* turbo-car, the Firebird II, and make rings round all the opposition, for not only does it look as advanced as its specification, but it also has enough seats for a real family. It would have stolen the show, as it did in Paris.

*

But that Renault is bad enough, and it adds insult to injury by owing its eye-catching lines to English sources. Not the English sources complained of above, and epitomized in the now outmoded Docker Daimlers (beautifully mocked

this year by a minute German Goggomobil with gold trim outside and zebra-skin within) but the other English style, that of our most successful competition cars, the Winning Look that is common to the Vanwall, the Cooper, the Lotus, the aerodynamic Connaught, the D-Jag. It's a look compounded of complex curves that must have had Henry Moore for a god-father (Reclining Motorcars, sculptor Bill Turnbull once called them) but was bred in wind-tunnels by part-time fugitives from the aircraft industry. The Renault has it directly from the sports Coopers, which weren't on show, but Lotus were, and you could see nicely where those crafty bulges came from on the French jet-waggon.

*

This Winning Look hardly touches the rest of the Industry. The large plastic Jensen, and the tiny plastic Berkeley have a touch of it, but you won't find it elsewhere. One or two motoring papers have suggested that Big Industry might learn a thing or two from the Small Specialists about styling, but there seems to be a great and unbridgable gulf fixed between those inside the SMMT ring, and those without.

*

This gulf is a psychological one as much as anything, you could sense that at the Show. You know the type of high-pressure motor-industry man from that Midland town, or the other one. He can't be described here without precipitating legal action, but he does a lot to keep alive the Marxist idea of Boss Class and Big Money. But you couldn't find him on the Lotus stand. There, heads were worn long, pipes short; spectacles, sports coats were in evidence, and top pockets bulged to the unmistakable bulk of a six-inch slide rule—keen, clean-living English Tech-men you wouldn't be ashamed to introduce to Roger Bannister.

*

They had, at times, the same smug expression that you could see elsewhere at Earls Court, but they had their justifications. Not just that they were actually selling the product, nor that Colin Chapman, boss of Lotus, is clearly a man most likely to succeed. No, it was their new Formula II single-seater, a long thin whistle of a car finished in British Racing Green with clashing yellow wheels. And not just its looks either. It was that power-to-weight ratio. They were fairly modest about it, and a figure of 490 bhp per ton was quoted in smallish type on the data sheet.

*

But . . . Four-Ninety! Man, that's interplanetary!

REYNER BANHAM

The Editors

LET US PUBLISH YOUR COST STUDY

ON pages 591–595 we publish the cost study of a hypothetical building. It shows, for each element, the prices of a number of alternative materials or methods of construction. In other words, in a way more comprehensive and detailed than time or fees usually allow, it answers the question that architects repeatedly ask in the design phase: "What will it cost?"

The point about such cost comparisons is that they can point to savings that might out-weigh the extra fees involved in making them. How many architects and quantity surveyors make such cost comparisons? Probably a fair number make alternative estimates for one or two elements, but so far as we know, very few do so for *every* element. If any reader has made or intends to make a cost study similar to the one on pages 593–595 the JOURNAL will be glad to publish it.

SLUM CLEARANCE AND URBAN REDEVELOPMENT

Urban redevelopment has now become and will remain one of the major tasks of the latter half of this century. Slum clearance is only the first stage of it. The Minister of Housing and Local Government recently described how the slum clearance programme is getting under way. The emphasis so far, has been on slum clearance alone, divorced from the larger context of urban redevelopment. The Minister spoke of how 100,000—120,000 people may be rehoused from slums this year. Where these people are re-housed—on the peripheral rings, in areas of overspill development or on redeveloped sites—has not been made generally known.

While it is satisfactory that this country has even made a start on slum clearance, it is difficult to avoid the conclusion that this beginning has been largely governed by financial expediency. It should have been related to an overall general policy of urban redevelopment, based on an up-to-date assessment of ends and means.

Architects must inevitably have a central role in redevelopment. To pave the way for such an assessment we invited D. Rigby Childs and Jack Whittle to outline the issues raised by, not merely a slum clearance programme, but also by the greater concept of urban redevelopment.

In this issue of the JOURNAL they conclude their appraisal: they claim that the programme as at present conceived will in the long run fail; and they outline their proposals for establishing a new national system of guiding and stimulating redevelopment. In their survey they showed the size of the task, and some of its wide and often complicated ramifications. In this week's article, " A Basis for Future Policy," they put forward proposals—stemming from their suggestion for a National Clearance area to cover the heart of the task, the West Midlands and the North-west—for the foundation of a Development Council and special legislation to cover the heaviest programmes for redevelopment and improvement. These proposals, are bound to cause controversy. Their final conclusion is that action must be taken *now* to re-assess policy as a whole before it is too late. We hope that readers interested in this problem will send in their comments on our authors' diagnosis and proposals. It is mainly by such public criticism and appraisals of proposals that an *effective* national policy can be hammered out.

MR. SANDYS AND ST. PAUL'S

Most of us thought that Duncan Sandys had quietly withdrawn, in face of a generally hostile Press, from the Battle of St. Paul's, leaving Sir William Holford in possession of the field. This is not so. The Minister is, in fact, staging a come-back undistracted by Christ Church. The details of his new St. Paul's scheme are not generally known ; it is understood that the Choir School disappears and the surroundings of the cathedral are " opened up " in other ways, and that a formal piazza reaches from the West Front to the top of Ludgate Hill. If, as ASTRAGAL gathers, Mr. Sandys has " compiled " his scheme—and it is spoken of as " his "—with the help of a dozen experts he has certainly hit upon the historical recipe for disaster.

*

And, as a matter of correct professional behaviour, should he not have submitted his ideas first to Sir William Holford, instead of direct, as I believe he has done, to the Royal Fine Art Commission and to the City?

SAVING THE LANDSCAPE

It is a pity that Lionel Brett's talk last week to the ILA couldn't have had a bigger audience. His subject was " Architecture in relation to Landscape "—a subject, you may think, about which everything must already have been said. But Brett has a wonderful capacity for throwing fresh light on familiar problems and saying what needs to be said in a stimulating way.

*

The central thesis of his talk (extracts from which are, I believe, printed elsewhere in this issue) was a suggestion that the " housing estate " should no longer be our normal type of residential building. He defined " housing estate " as " the kind of housing that results when a builder or local authority buys a field, runs a road round it at a distance of 100 ft. or so from the hedge and fills it up with two-storey houses at 12 to the acre."

*

He named four alternatives: urban housing (mixed development of high density), recreated housing (a more imaginative reconditioning of Victorian streets and derelict country cottages), new-town housing and " village housing," recommending that we should concentrate on the last. By it he meant " houses for people prepared to put up with the inconveniences of country life for the sake of a big garden and the chance to build their own home in their own way "—which, of course, would have to be subject to essential safeguards (among which he gave special importance to the planting of trees) if it wasn't to further the spread of Subtopia.

*

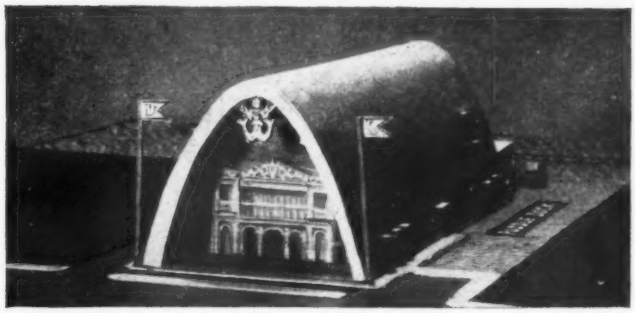
But Brett was convinced that most villages could absorb extra population in the right place without loss of identity and without spoiling the landscape, and that such a policy could help forward a more intelligent attitude to the location of industry. His is a thesis deserving serious thought.

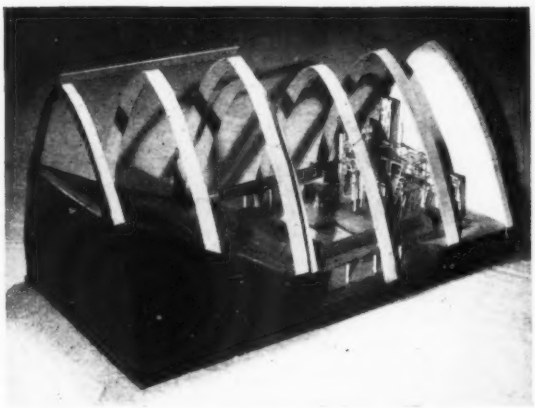
INTER-SCHOOL FORA

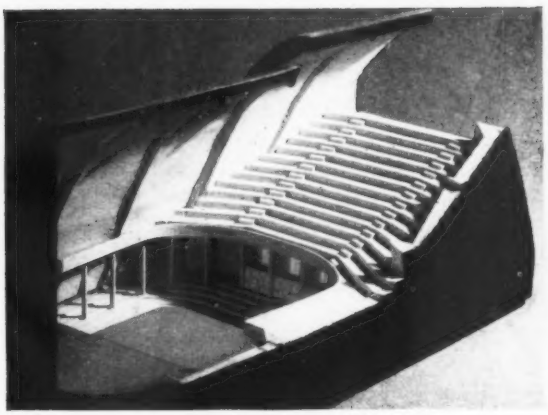
The student-organized get-together of the Bartlett, the AA and the Regent Street Polytechnic was quite a success, to judge from reports, in spite of the fact that the Poly, for reasons beyond their control, could only make a token representation of their work. The material exhibited for argument was, therefore, almost exclusively AA and Bartlett, and—as it had been decided to make it representative of the two schools' respective curricula—the result left the AA goggling at the Bartlett's first year neo-Georgianism, and the Bartlett maintaining a respectful distance from some Bedford Square eccentricities that had been sent along specially to shock. Discussions, apparently, were vigorous, with some fairly heated staff participation. This was intended, one hears, as a trial run for further inter-school fora (or forums) and collaborations which, it is hoped, will extend further than the length and breadth of Gower Street.

*

Other student activity to note: Glasgow School magazine *Vista* is now seemingly flourishing again, though







Elidir Davies, the architect who designed the Mermaid Theatre which was built (with such success) in the centre quadrangle of the Royal Exchange in 1953, has designed a more permanent Mermaid Theatre which will be opened in the City of London late next year. On the site at Puddle Dock (top left) a framed envelope—with main structural trusses of short metal members (none longer than 5 ft.)—will enclose the theatre, which will be formed of the walls of a bombed warehouse.

ASTRAGAL notes this with some pain, since a certain very distinguished British architect has used his contribution to *Vista* 2 to give a free puff to a certain rival architectural periodical. Old friend of ASTRAGAL'S, too; can't trust anybody these days.

DON'T LET THE BRICK DIE

ASTRAGAL came away from the Building Centre's second forum—on bricks and clay building blocks—feeling that rather more of the right questions had been asked than on the previous occasion. Everything, of course, was somebody else's fault. The brick manufacturers, it seems, would love to package more bricks, but the contractors were unwilling to pay the small extra cost because the time packaging would save them would be used by the bricklayers to have another cigarette. The brick manufacturers, one gathered, would love to use up more of the nation's pulverized fuel ash waste if the BEA had not raised the price. Also they would love to make larger and hollower blocks, only experience had shown that architects wouldn't use them. "The brick," said B. Butterworth of BRS, "must adapt itself or die out," and he instanced Germany, where clay bricks have lost half of the walling market to concrete.

*

Architects are a callous lot. They don't seem to care if a material dies or not, provided they get what they want. The sort of thing they worry about is the beautiful handmade brick for special occasions. What they do not seem to realise is that in the long run these luxuries have to be carried on the shoulders of the workaday product, and that architects will not be able to get them at all unless they encourage the manufacturers to turn out a truly competitive product for the main walling market. In other words, really good facing bricks are going to become more expensive and more difficult to get unless architects snap up the supplies of improved types of hollow clay blocks as and when they come on to the market.

*

It is a pity there were not more architects at the forum: let's have a better attendance next time.

THE ENGLISHMAN'S HOME—AND HIS CASTILE

A friend of mine, a distinguished architecture critic, was telling a group of Far Eastern British Council protegées about "the English Home"—whatever that may mean—when he was made aware of something that had been in the back of his mind for some time. We are citizens of a backward country that doesn't really wash. The showerless bath, my friend was told, is a filthy thing. Apparently three baths are necessary: one to get the dirt off, one to get the soap off and one to get really clean. It is no good our defending ourselves by saying that we invented bathrooms! Our ideas of hygiene are nothing in comparison with the thousand-year-old Japanese habit of washing in running water.

LAW = ALUMINIUM

ASTRAGAL has always understood that the Lord Mayor's trade has something to do with the theme of the Lord Mayor's Show. This year's Mayor is a solicitor, and the theme, as you have probably heard, is—inexplicably—aluminium. It is good news that the Show's organizers, British Aluminium,

have actually employed a *designer* (Ronald Dickens). At least the Show should have some coherence and unity, and not look as though it had been knocked up by the plant and maintenance squad in conjunction with Megalopolitan pictures.

GOAT ON THE ROOF

Want to buy a masterpiece of the modern movement? A well-backed rumour from Italy asserts that Terragni's famous *Casa del Fascio* in Como is up for sale. Apparently it is not quite such a public building as it looked, and actually belonged to a local ex-service men's association, and now they want to unload it on the market. ASTRAGAL, for one, hopes that a nice fat Milanese bank will acquire it, and put it back in good order, for it has become very squalid since the war. There was, it seems, a goat kept on the roof for some years.

BRUSH UP YOUR CONTROVERSIES

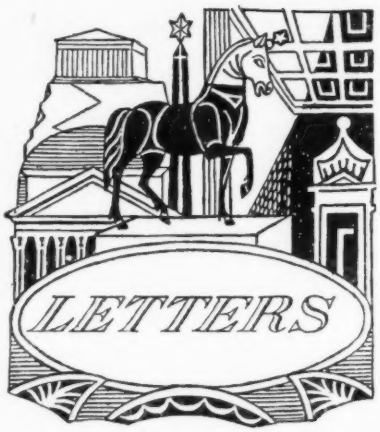
If there is anything you don't know—*if*, I say—you won't get far looking for it in the *New Outline of Modern Knowledge**, which seems to make a point of not outlining anything in particular that is worth knowing. If, on the other hand, you want a line on the state of *opinion* in a number of fields of mental dispute, then the distinguished contributors to this volume offer you everything from the calmly shattering, *viz.* "It is almost certainly a practicable proposition to send an unmanned multistage rocket to circumnavigate the moon, and return to earth." (J. G. Porter on space travel), via the massively obvious, "The meanings of most words and expressions in common use are not precisely and exhaustively fixed." (Dr. John Holloway on Analytical Philosophy) to the irretrievably dim (Harman Grisewood on the New Arts of the Twentieth Century—too painful to quote).

*

Stirred in with all this is a solidly sensible piece on architecture by J. M. Richards, which architects need not feel called upon to read for themselves, but which they might confidently refer enquiring aunts to, or their brainier clients. ASTRAGAL, for one, wishes that the other contributions had more often come up to this standard—or, in a few cases, down to it.

ASTRAGAL

*Gollancz, 18s.



D. M. Williams, A.R.I.C.S.
Derek Senior
A. E. Ward, Secretary, *R.I.B.A.*
G. R. Adams, A.R.I.B.A.
Mark Waghorn, Sales Director, *E. and F. Richardson Ltd.*
Sidney H. Tasker

What Is A Slum?

SIR,—Your enquiry into the cause and cure of slums and the information derived from questions put to experts provides a useful survey.

Nevertheless, I find myself still in doubt about what constitutes a slum, and one is led to believe from a study of the answers to the questions you put, that a slum may be so on one day, but not the next, *i.e.* when different tenants, unslummy ones, occupy the premises. I believe this to be a much too narrow approach and consider that examination should be rather on the lines of Eddington's well-known astronomical "frames of space." There could be three distinct such frames and if an area is adjudged to fail by examination under any one (or more) of them then it should be adjudged a slum. The broad frames I suggest are as follow:—

(*i*) Inspection of a selected area from a distance. This involves consideration of use zones and should elucidate whether or not the development was correctly sited in the first place.

(*ii*) Examination of the area from typical streets within the area and from the back gardens (if any).

(*iii*) A detailed examination of the insides of a number of typical dwellings.

Each of these broad enquiries is from a quite different point of view and action under (*i*) may be for the benefit of the general public who have to see the area without even ever going into it.

Examination under (*ii*) is largely defined in sections 5(3) and 119 of the Town and Country Planning Act, 1947—"area of bad layout or obsolete development."

The inspection under (*iii*) as well as bringing to light the inadequacy of the internal facilities and arrangements would also throw light on the influence for good or bad, of the tenants—after establishing how long they had been tenants. This is a matter for the sociologist and certainly when redevelopment takes place we must guard very carefully against perpetuating the conditions which give rise to slums, looked at from the point of view of the arrangement of the dwellings, the facilities that go into them and the tenants who occupy them.

One final point and surely the most difficult long-term pitfall in dealing with slum clearance or indeed with almost all kinds of large-scale development, and one which was mentioned epigrammatically by Mr. Bennett and Mr. Abbey—"Houses become obsolete because of the changing standards of life as well as by physical deterioration." These "changing" standards are changing more rapidly each day. An innovation today may be obsolete tomorrow. However much we may regret it the trend must be towards saving on capital depreciation by more impermanence in building (and other things) if we are to avoid the widespread incidence of "dated" development.

D. M. WILLIAMS.

Lancs.

[It is unfortunate that the word "slum" is used so loosely today. The ideal, surely, would be to refer generally to "sub-standard housing" and use "slum" to describe the result of abuse by the tenants or owners. Many relatively wealthy people, living in adequate houses, nevertheless create slum conditions. Unfortunately the phrase "sub-standard housing" has not the stigma of "slum."—The EDS.]

Figures Please, Mr. Nairn!

SIR,—Please (if you can bear it) print with this letter a pretty picture of a nice little detached house, preferably with children playing on the lawn. Now. Of course dispersal and open development have nothing to do with littering the countryside: the photograph below proves it. Or doesn't it? Of course it doesn't. Like Mr. Nairn's air-view of Los Angeles (AJ September 27) it proves exactly nothing; it merely creates prejudice.

I am all for creating prejudice against the littering of the countryside, because that is a Bad Thing, and the creation of prejudice against it is the only way to check it. I am against creating prejudice against dispersal, because dispersal is a Good Thing. In the Greater London region, admittedly, it can only be a relatively good thing—better, that is to say, than housing people on the Green Belt or overcrowding them within it—because Greater London is an irremediable mess anyway.

Do I think Mr. Nairn faked the "Outrage" photographs for the hell of it? Of course not. Do I think he collected them specially to hang pet theories on? Of course—if for "theories" one may read "aversions." And of course anyone could take a parallel series of photographs "proving" that Southampton to Carlisle was an Arcadian idyll. But argument is futile so long as Mr. Nairn refuses to speak except in terms of such superfactual and un-pin-downable generalities as "one vast mass of sprawl." It might usefully begin if he would commit himself to a reasoned, quantitative criticism of this proposition: that if all the people whom all the planning authorities propose

to house in dispersed open development over the next twenty years were instead to be flatted at the highest density he cares to contemplate, the area thus saved from "sprawl" could not amount to more than one half of one per cent of our cultivated countryside—leaving out the rough grazings and wild country.

DEREK SENIOR.

Manchester.

Beware Of The Wily

SIR,—Is it merely a seasonal rash or are there more wily customers than before evading the Registration Acts by calling themselves "Architectural Consultants" or "Consultants in Architectural Design"?

These clever people know they are beyond the reach of the Registration Council, but something can still be done in the districts where they operate. We know that, quite often, the public think these designations describe a superior type of architect and that local newspapers are a good medium for killing the misapprehension.

It has recently been necessary for us to inform the public in certain localities that those who give themselves these imposing titles are not, in fact or in law, qualified architects. On receipt of authenticated information we are prepared to do this any time, anywhere until the public know to whom they can safely entrust their architectural work.

A. E. WARD.

London.

Learning At Night

SIR,—In a letter published in the JOURNAL for September 27, an articled pupil described some of the difficulties which face a student taking the RIBA examinations externally.

Our Society, for the past six years, has organized an evening class in design to assist these students in this area. Several instructors attend voluntarily and give individual attention to each student. They advise on testimonies of study which are being prepared and set design problems which are criticised the following week. This scheme has assisted a number of students to complete both their intermediate and final examinations.

The RIBA has given us much sympathy and support, and I feel sure they would help in other cases. If there are a number of students in other areas who feel that a similar scheme might be useful, it would be possible for them to discuss the problem with their local allied society.

G. R. ADAMS.

Sheffield.

Priming Paint For Woodwork

SIR,—The sample specification of the Technical Section of the JOURNAL of August 30 and September 13, dealing with the priming of woodwork, is of interest but not entirely beyond criticism.

On page 306 you emphasise the importance of specifiying the type of priming paint with, quite rightly, some derogatory remarks concerning "pink primers". I am most surprised, however, that shortly afterwards you recommend the use of primers drawn from B.S.S.929, a war-time specification which I believe to be obsolescent if not obsolete and one which has been condemned by the architect and paint manufacturer alike.

Pink primers undoubtedly owe their origin somewhere in the distant past to pure red and white lead primers. The B.R.S. in their Digest Number 30 recommend such a primer, at that time under the M.O.S. specification C.S.1186, but now I am surprised you are not aware of its issue as B.S.S. 2521/1954, and there can be no doubt that this is the finest form of priming paint for exterior joinery work of non-problem soft woods.

Reference to page 377 of your sample specification under the heading "Knotting and Priming," you refer to the pro's and con's of priming joinery work at the factory or on site. It is my own experience that unless great care is taken, the primer used in joinery factories tend to be of the "P.P." variety. The cause of this is undoubtedly to a large extent economic but it is also dictated by the necessity for employing a quick drying primer. For this reason I recommend the use of an additional coat of priming paint over the factory primer on exterior surfaces, and the wording employed in our own model specification is as follows:—

"The purpose of a primer employed in the joinery factory, unless the material has been otherwise specified, is to protect the joinery whilst in transit or whilst stored on site. These primers should never be considered as a coat in any exterior painting system."

To summarize, I am strongly in favour of the use of transparent waterproof solutions applied to the joinery for its protection whilst in transit or whilst stored on site. I am strongly averse, on the other hand, to the acceptance of factory applied "P.P's" as a coat in the final exterior painting system and can quote numerous cases where the practice has been the sole cause of catastropic failures on exterior paint work after as little as seven months weathering.

MARK WAGHORN.

[The authors, John Eastwick-Field and John Stillman, reply: We are grateful to your correspondent for pointing out the error in our reference to the British Standard, which should read, as is suggested, 2521 *Lead Based Priming Paints*. We agree that "pink" primers are to be avoided and that they give little protection. Nevertheless, we think that work should be primed in the shop, but with a suitable primer, and in the second part of our article we stress that it is important to see that it should either be supplied by the same manufacturer as the remainder of the paint specified or be to an appropriate BS approved by the manufacturer. Most joinery firms are prepared to apply such primers, though they may require extra payment for departing from their usual specification.

Our own example clauses exclude "pink" primers, and it is up to the architect to ensure that they are not used if he has specified, as we do, the exact primer he wants. We would not have thought it of any advantage to put a better primer on top of a poor primer, as is suggested by your correspondent, since it is the quality of the initial coat which is of most significance.

In this country transparent sealers have not, as far as we know, been much used, but provided they live up to the claims made for them, we agree that they should be most valuable.]

Ploytime

SIR,—We will be much obliged if you will display the enclosed poster on a suitable page in your magazine. This show is being held in aid of the New Brutalist Benevolent Society and we are hoping readers will give us their support as the Brutalists' velvet jackets are wearing thin.

When we tell you that the script is the work of the distinguished Mr. Reyner Banham, representing his first serious break with farce and comedy since leaving the R.A.F. and that for this work his background reading and research alone took ten years, we feel sure you will be . . . well, we feel sure anyway.

SIDNEY H. TASKER.

Preston.

[We have reproduced Mr. Tasker's ploybill below, fully conscious that this correspondence must soon cease—The EDS.]

This ploybill is the work of Sidney Tasker, who writes about it under "Ploytime" on this page.

WE PRESENT FOR YOUR ENTERTAINMENT

"UNDER PLOY-WOOD"

starring

REYNER 'TEASY-WEASY' BANHAM (Jnr)

This is a daring production in which everything is exposed

It is a story about a bunch of characters who take themselves far too seriously. They are determined to force themselves upon the people (who do not really want them) and steadily they build up their influence. This they do by combining a facility for imitating the truly great Prophets (by now forgotten by many of the populace) with unceasing propaganda, using what they themselves term "gimmicks" and "ploys."

Their chief asset in this struggle for power is their self-educated scribe and trumpeteer, Lord Ha-Ha (played by Mr. Banham), known to the mob as "Liverache."

From time to time as the New Ostentationalists (for this is what they call themselves) emerge from a study seance. Lord Ha-Ha broadcasts the results of their findings. Typical of these are their "Third Moment of Nothingness" and, an even bigger riot, "Eight Important Discoveries in Void Space." By directing his shrill blast at the Giggle Thinkers he is able to mesmerise the populace and at one point in the film he even distributes the N.O. findings from a flight of Beaufighters which he had craftily hidden away.

This is a story which will grip you, we promise you will be prestressed in your seat. Do not miss the wonderful scenery of this colossal production—see the New Ostentationalist palaces built in superb gas works style, sand blasted till they are paper thin. Many of the palace roofs are decorated with wheels of all sizes and as a fresh wind blows up, these revolve as only wheels know how.

Here are only a few of the notices:

". . . You will weep as Liverache lashed to a grid and faithful to the end, delivers his greatest and most obscure oration. You will goggle at the spectacle as morons and T-"squares," urged on by the Second Magnitude Modular Ploymen, dance round. This is fantastic, these modular women knit as Banham Burns. . . ."

PLOYTIMES

"'ORRIBLE"

NORTHERN DAILY

NEWS IN BRIEF

The "Daily Mail's" house competition has been won by David W. Oliver, of Bath (£500); J. Taylor and John B. Crowther, of Truro (£250), and Geoffrey J. Cash, of Halifax (£100). The first prizewinner's house will be built at the Ideal Home Exhibition next March. The assessors, Arthur Kenyon, Clifford Culpin and L. Stoke-Roberts, selected three designers for honourable mention: Ian A. Goldsmid, of Chiswick; R. D. Ottewill and G. H. and G. P. Grima, of London, and G. P. Hutchinson and K. H. Murta, of Sunderland.

The 1958 Brussels exhibition is to have a Petroleum Hall, for which the architect will be Leon Stynen and the chief designer and co-ordinator, Basil Spence. The hall will cover an area of 3,000-3,600 square yards.

The British Architects Conference for 1957, which will be held in Oxford, may have as its subject "A General Preview of Maintenance Considerations." The RIBA Council has approved this suggestion. As this would duplicate a symposium on "The Effect of Maintenance Considerations on Design," proposed for January 17, 1957, the symposium has been cancelled.

Designing for Children in high-density housing is the subject of a symposium to be held at the RIBA early next year.

A Cost Research Committee is being set up at the RIBA. This follows discussions held between RIBA representatives and the cost research panel of the RICS. Arrangements are being made for liaison between the two groups.

More subjects for research by BRS have been suggested by the Science Committee of the RIBA. The Committee made these suggestions after studying the BRS draft programme for 1957.

Work tendered for without quantities has, until recently, been limited to £3,000. The limit has now been raised to £4,000 with the approval of the council of the NFBTE.

New Ideas in Old London is the title of a lecture to be given by Sir William Holford at the Anglo-Belgian Club on November 13. The club is at 6, Belgrave Square, S.W.1. The chairman will be Kenneth Cross, the RIBA president. Tickets: 10s. 6d., 7s. 6d. and 5s., from Miss U. Z. Pompei, 10, Lowndes Square, S.W.1, and Miss Lawrence Jones, 15, Richmond Court, Sloane Street, S.W.1.

Foreigners who are doing design work in this country without British qualifications will be interested in the case of Messrs. W. S. Meyer and J. W. Jakubowicz. These two gentlemen, who practice under the title of "Third Dimension," allowed the words "Dipl. Ing. Arch." to appear after their names on their writing paper. They were convicted at Marlborough Police Court, but made a successful appeal on the grounds that the abbreviation "Arch." represented the German word "Architekt," and not the similar English word "Architect."

Another architect has been asked for an explanation of his behaviour "in view of the terms of Principle VII Example (1) of the Code." His enquiry from ARCUK resulted from a complaint being made "of a newspaper report of an application by an architect for planning permission to develop on his own account 60 acres of land on which he proposes to build 375 houses."

William Morris and Architecture is the subject of a paper to be given to the RIBA, by Dr. Nikolaus Pevsner, on February 19. It was on this day that the late Michael Ventris would have spoken on "Information for the Architect."

CIAM X

An appraisal by Michael Laird

The main object of the tenth Congress has been to collate the material already assembled at La Sarraz, Aix and Sigtuna, together with the new "grilles" specially prepared for Dubrovnik, for publication in the forthcoming *Charte de l'Habitat*. (In case there is any doubt about the definition of *Habitat* we may quote the Oxford Dictionary which states that it is "The locality in which an animal naturally grows and lives.") In this task it can be said that CIAM X has been successful.

The daily schedule began at 8 a.m. so that as much as possible could be completed before the high heat around midday. The evening programme, usually an exchange of information and free discussion of points arising from the morning session, opened, after siesta (and often in the sea, where the temperature made sleeping easier than elsewhere) at about 5 p.m. For VIPs this session was often protracted into the small hours of the morning. And any fearsome thoughts about the future of CIAM must surely be confounded if the energy and enthusiasm of this Congress is any indication of its force.

The whole question of special responsibilities for the "new generation" is made amply clear in letters to the Congress from Walter Gropius and Le Corbusier. Gropius, who is now working on the US Embassy in Athens, a Civic Centre in Florida, and a large housing development in Berlin, apologized for being unable to attend CIAM X saying that, in these circumstances, "it would be like suicide to leave the office now." In his letter he says . . .

I should like to outline in a few words the present strategic situation of the CIAM as I see it, and what, in my opinion, should be the trend of the new CIAM:

Conditions around 1930 *when the CIAM started its activities were very different from those of today. After the revolution in architecture, which was conditioned by the rapid development in science and industry, had succeeded, CIAM revolutionized planning and established its theoretical basis for the future. Its comprehensive conception has no doubt influenced planning agencies throughout the civilized world, but this influence has been more indirect than direct, for the members of CIAM have—except in a very few isolated cases—not been called upon to translate the CIAM philosophy into planning* action. *Too many good planning schemes have remained just paper designs slumbering in the drawers of their designers.*

Here, now, I believe, is the big new task *of the new CIAM generation, namely, to study the means and possibilities to bring the architect and planner into the agencies of power within their respective communities. The time seems to be ripe for vigorous action to apply the comprehensive work of CIAM everywhere now in practice.*

I recommend that CIAM should make a special study of how its members must train themselves to know the democratic process in order to become eligible as professional members with voting power within the political power groups of their own towns or cities. This will probably suppose preparatory work in teams which would together design realistic suggestions for urban renewal and rehabilitation, have these supported by systematic propaganda to have the people on their side, and try to bring one of their members as a delegate into the City Commission or Council where decisions *are made. For the individual designer, or even the Planning Commissions, have no power to proceed.*

This suggested trend should not exclude, of course, that CIAM must also keep on refining and widening continuously the aspect of planning in all directions.

The old rule of the CIAM, that no member should stand aside, but should contribute actively, should be renewed as a basic obligation.

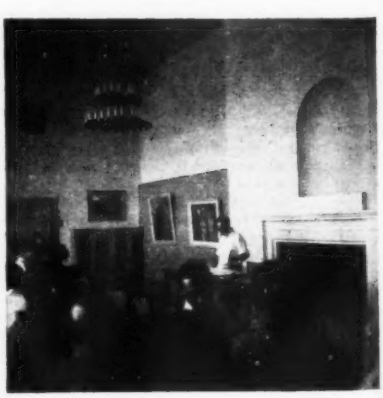
Please give my hearty greetings to the members of CIAM. I hope the meeting will be successful and give new vigour to the CIAM activities.

Yours,
WALTER GROPIUS

Le Corbusier's message emphasized this opinion that it is "the new generation" (those who are now about 40 years or less)

Sven Markelius (Stockholm) and S. Syrkus (Warsaw).

S. Giedion—He is wearing the felt fez which was almost uniform for CIAM members at Dubrovnik.



J. L. Sert addressing delegates

who must implement the programme of the founder members of CIAM, the CIAM "premiers." This task can only be achieved without selfish personal interests and he insisted that the "life and vitality of . . . positive aims . . . depends upon character and heart united in a common effort." There followed two Corb "graphiques" illustrating this metamorphosis within CIAM, and the resulting action towards a new study of natural conditions and the conservation of the home—related with basic human needs —and to the incontrovertible time factor. "Gentlemen, friends, watch out for the curve. . . . Yours, Le Corbusier."

It was difficult, due to overcrowding, for much official work to be done on the Jugoslav boat from Venice to Dubrovnik, but at least there were strong atmospherics and everyone from the barman to the captain was made fully aware of CIAM, if not clearly of its real significance. De Vries and other members of the Dutch OPBOUW group held apparently constant court in the bar. Their evident favours for low-density development were discussed—and sometimes opposed—by Laird (who shared their taste in wine if not in ideas), until a whistle-stop at Ralo, Korcula, or some other planning object-lesson provided a quite destructive distraction!

Of the many quite original "grilles" presented there were several demonstrating new and fundamentally important ideas for solving the problems related to *Habitat*. Among the most interesting were those which, with a closely-knit development, provided the opportunity for completely undercover pedestrian circulation between houses, shops, and other necessary facilities. In fact, the Finnish "grille" proposed a completely two-level system of segregation —between housing only on ground level and everything else (shops, industry, etc.) below ground. In Finland, apparently, communication problems over a multitude of small lakes and rivers make for an economically sensible solution in this way. At any rate a distance of 10 metres vertically to shop is surely better than a time of at least 10 minutes horizontally—or so it seems! Generally, perhaps the most interesting schemes were those which simply accepted the human being and his ordinary walking pace (*sans voiture, sans* helicopter, *sans tout*) as the first basis for future residential planning. Notable also was Van Eyck's study of the urban child's "lost identity" and "if childhood is a journey then let us see to it that the child does not travel by night."

There must now be enough material in Giedion's hands to publish a *Charte de l'Habitat* running to several volumes. But just one, one which reflects the calibre of CIAM thought on the matter, should be enough to provide that sharp recognition of truth—which is now, more than ever, so extremely hard to find.

DIARY

Should the Quantity Surveyor lead the Building Team in lieu of the Architect? Discussion at the IAAS, 29, Belgrave Square, S.W.1. 7 p.m. OCTOBER 25

AA Annual General Meeting. Address by the President, Gontran Goulden. At the AA, 34, Bedford Square, W.C.1. Dinner 7 p.m. Meeting 9 p.m. OCTOBER 31

Sanitary Fittings Building Centre Forum. Denis Clarke Hall, architect, and Alan Adams, manufacturer. Chairman, Gontran Goulden. At the BC, 26, Store Street, W.C.1. 6 p.m. NOVEMBER 1

Further Developments in High Flats. Talk by H. J. Whitfield Lewis, Principal Housing Architect, LCC. At the HC, 13, Suffolk Street, S.W.1. 6 p.m. NOVEMBER 6

In this paper, which he read last week to the Institute of Landscape Architects, Lionel Brett advocates the abolition of the "housing estate" as our normal form of residential building. There are, he says, four alternatives—urban housing, recreated housing, new towns and village housing. He discusses each of these and puts forward what he calls "a perfectly simple, perfectly revolutionary and I believe perfectly workable policy."

BUILDING IN THE ENGLISH LANDSCAPE

By Lionel Brett

When people, each in their generation, go out and get killed for England, it is not the sanctity of treaties, the defeat of aggression, the balance of power or the security of our trade routes that they are thinking of, except as means to the safeguarding of the landscapes and even townscapes that mean home to them. These landscapes and townscapes were created by people like yourselves, who were able to see the wood for the trees, and see it a century ahead.

There is no need to describe to you the popular vision of England that we inherit from their work. It is enshrined in *Times* photographs, *Country Life* covers and railway posters. If I had to isolate one characteristic, it would be that in English landscape the *architectural* elements are trees rather than buildings—trees, whether isolated like the monumental hedgerow elm, which when seen in series from a moderate height give a unique depth and recession to what is generally a comparatively modest view, or trees gathered into black clumps as on the Newmarket downs or Salisbury Plain or the Yorkshire dales.

If we think for a moment of other landscapes, we shall realize how unusual this is. Sub-tropical landscapes like the mediterranean, with their gentle fuzz of olives, scrub oaks or cord trees, are dominated by the hill-village, the campanile or the white fishing-port. In desert landscapes the architectural features, if they are not cubical mud buildings, are rock formations of extreme sculptural quality. And in the deep forests of the north or the equatorial rain forests the only incident is the farmstead or the village in its clearing. Of course there are parts of Virginia, Normandy and India that share what is generally called the park-like quality of English landscape, but generally, to my mind, in an inferior version.

While we are dealing in exceptions, perhaps I should admit that there are wild landscapes, as in Cornwall or the Cleveland Hills, where the isolated farm with its granite or limestone walls and slate or red pantile roof has great landscape value, and of course there is Salisbury spire pointing the junction of I don't know how many valleys and Ely and Boston stump riding over the fenlands. But mostly even the great houses lie in saucers of turf guarded by enormous hanging woods, and the cedars on the lawn are greater than the house itself.

Country building of the last half-century has quite failed to grasp this fact of scale. To begin with, we had the tea-cosy rusticity of the 1900s, the Kate Greenaway dreamland of bonnet hips, collapsed ridge lines, and tiny bottle-glass windows. Trees like clouds loomed vaguely in the background, natural features which nobody thought of as having to be planted by the hand of man. New planting, when indicated on housing layouts, took the form of Frenchified pleached limes or minor "ornamental" subjects, never visualised as overtopping the roof lines, and all the thought went into these same roof lines, with their romantic silhouettes and monumental chimneys, from which the smoke rose vertically into rooky skies. Nor was this romanticism confined to rural buildings. The best LCC housing of the time, as well as Hampstead and Letchworth, were built on the same principles.

The fallacy, of course, lay in taking, against all evidence, a certain style of building (in this case Queen Anne) as eternally right in the English landscape and in forgetting that what matters is the landscape itself, or in other words in mistaking the part for the whole. This was only a recent example of that same literary attitude which produced the "cottage ornée" of the eighteenth century and the baby railway station of the nineteenth.

Contemporary Romanticism

We may regard these townman's rusticities of the past with amusement or affection. We are much more serious about our own romanticisms, such as the pedestrian piazza, with its bollards, plane trees, cobbles and sets, its *Architectural Review* pub and vertical features, which you will find languishing (for lack of popular support) on a thousand contemporary drawing boards. When at the start of this paper I complained that we had no consistent, agreed and functional attitude to the situation that confronts us, I meant this: that we architects have a picture of the kind of compact, urbane, sociable, centripetal development that we want to see, and have indeed struggled to build, that is quite unrelated to what happens when Englishmen get a free hand. We see the English landscape as the perfect backcloth, given, external, the heaven-sent green-belt, the corn "orient and immortal wheat," the elms as solid as the Matterhorn —against which we shall set our own jewel of formality. Yet every popular pressure

and economic fact seems to lead to a linear Subtopia stretching from London to Lancashire, with offshoots in other directions. The central question I want to answer is whether there can be any reconciliation, or whether we have to fight a sort of war to save England from the English.

At this stage we bump into two closely related problems. The first is a familiar one, to which each generation gives its own names and has to take up its own position. I quote as a recent example an article in the *Journal* of the AA by Mr. Lawrence Alloway, in which he takes Sir Herbert Read and Charles Eames, the American designer, as the opposite poles.

"Sir Herbert Read, laying down the law for art, explains the unity of effect of Gothic cathedrals as usually 'due to a single controlling mind, that of the master builder, a man who was capable of conceiving the monument, not as a shell to be adorned (or as a Christmas tree to be "decorated") but as an organism, every particular cell of which is morphologically and functionally related to the whole.' This kind of talk belongs to philosophers who can by means of it strip artistic phenomena down to a few perfect cases, or possible none at all, leaving the world full of flawed objects that don't reach up to the philosopher's fictions. Probably, Charles Eames would be more interested in the Christmas tree because its decorations can be organised in ways that approximate to the facts of life—seasonal, untidy, changeable, non-ideal. Eames has managed to re-think the problem which continually exasperates architects—the existence of people, whose circulation patterns and changeable or obstinate usages often constitute a system inimical to the architect's design. By leaving the use of his designs to the spectator Eames opposes the kind of thinking revealed by Sir Herbert and by architects interested in ideal situations."

Alternative to Subtopia?

I must tell you that my own sympathies, in what may for all I know be an unfair statement about these two particular people, are on the side of Charles Eames. I have always been more interested in the unauthorized tracks that air photographs reveal criss-crossing the fine axes of Washington, New Delhi and Welwyn Garden City than in the fine axes themselves, and when people ask me to "improve" their houses or their gardens my first reaction is generally that I like them very well as they are. On the other hand we must never forget that the responsibility of the artist is to give the public what it doesn't know it wants. And it is because I believe that the English, having created Subtopia, don't like it and would be glad of an alternative, that I thought this paper worth writing, so long as we remember that any alternative must stand the racket of twentieth-century life. Which brings me to the second problem, which we must not ignore, though I think most people do. This is a problem of scale. You will have noticed that I have taken England as a unit, and I shall continue to do so. But there are, of course, Scotland and Wales, and just as Londoners used once to take their Sunday walks in the quiet country lanes around Paddington, and now take them in the public rights of way around Chalfont St. Giles, so, it can be said, they (and the rest of the 200-mile English conurbation) will soon be taking them in the Highlands. And of course there is abroad, which some English people already regard as the only thing that keeps them going. On this argument, communications can be left to dictate the scale of man-made landscape in Europe, as in America. Assuming that the economics of this make sense, we are here again, as designers, thrown back on a value judgement, and can only say, as I hope we do, that there is something about the *multum-in-parvo* variety of windy England as it still is that is worth cherishing, even in face of the economic facts. Even a backgarden gets its character from multiple use (including the growing of uneconomic vegetables) and is no fun if it is all grass, or all paving, or all potatoes.

Abandon the Housing Estate

You may think all this an absurdly elaborate philosophical foundation for the simple proposal I am now going to make. I can only say that I think it needs it. The proposal is that we should now abandon the "housing estate" as our typical residential development. By "housing estate" I mean the kind of housing that results when a builder or a local authority buys a field, runs a road round it at a distance of 100 feet or so from the hedge, and fills it up with two-storey houses at a rate of ten or twelve to the acre. This kind of thing has had a long run for its money—over half a century if we include pioneer examples—and in the process has gone a long way towards destroying English landscape. Without taking you through the whole argument, which we all know, I think I can sum it up by saying that this type of housing can never look right in England, because it is too repetitive and standardized to have anything remotely like a village character, yet too fiddling in scale and thin on the ground to deserve the name of a town. Even our best architects, in the new towns and elsewhere, have quite failed to make a success of it.

What are the alternatives? There are four of them, and I shall concentrate on the last because it alone has some pretension to being a new idea, on which I hope that you will comment. But at the start we must be quite clear that all four of them in combination will be needed to fill the gap. They are:

urban housing
recreated housing
new towns
village housing.

You will notice that I don't include suburban housing at all, because though at its best it can have great charm, I think we have more than enough of it to be going on with. As to urban housing, it would be irrelevant this evening for me to do more than define what I mean by it. I mean what we nowadays call "mixed development," either in what you might call the LCC form of high flats or maisonettes mixed with terrace houses of a density of something over 100 people to the acre, or in a form which I would like to see tried much more because it is much cheaper, namely a uniform three-storey development of houses, with flats at external and internal angles, which with building lines forty-five feet apart and 30-ft. walled gardens gives a density of a little under 100 people to the acre. Either way, and of course preferably with both, you would get towns that would be really fun to live in, for those who like towns, as well as cosy and compact, qualities worth having in a wet and windy climate. New housing added to any town that is a real town rather than a village, to any town of more than say 4,000 people, should invariably take this form.

"Recreated" housing is a pretentious word to indicate something a good deal more imaginative than reconditioning. "Operation Rescue" failed I think mainly because when it was launched it was still much less bother to build new houses than survey and work out ways of reviving old ones. Soon that may not be so. An era in which we have more brains than money may at long last bring new life to our dreary Victorian streets and derelict country cottages.

Urban Housing for New Towns

On the subject of building more towns, which is economically a highly controversial one, I would only say two things this evening, neither of which have anything to do with economics. One is that if we do build more new towns, they must consist in the main of what I have defined as urban housing. I say "in the main" because we must allow on the perimeter for some houses with large gardens for those who can afford the high rents they should command, or for the exceptionally large family. But unless they are mainly urban they will not be towns and should not be so described. The second point follows from the first. The typical post-war master plan, loose, organic, shaped by local landscape forms, only makes visual sense on the site if the "solid" elements of the plan (i.e., the neighbourhoods) are twice as dense as they have been, or if you like half as green. The main trouble with the present new towns is that right inside the neighbourhoods the layouts are so loose and the forms so ungeometrical that all edges are blurred, nature wins everywhere, and even the odd point blocks barely compete with elms as landmarks; when the new planting has matured we shall once again have all garden and no city. We really must get back to the right angle and not allow our little hills to push us all over the place.

Village Housing

I come now to my fourth category, which I call "village housing." There are something like 25,000 villages in England, so that if we could on the average house even another dozen families in each of them we should be housing a lot of people.

Now I am well aware that if one is to discuss village housing realistically one has to make certain assumptions about the location of industry. In the ten years since the war industrial decentralisation worked admirably as far as the development areas

such as South Wales and Teeside were concerned. It also worked adequately in regard to the new towns. But it failed entirely to lighten the industrial load on the conurbations, and failed almost entirely to get industry out into the country towns.

Regional Industry

The assumptions I am making here are that we don't lose sight of these objectives, and that we learn to think of industry regionally, and not in relation to the particular town it happens to be attached to. Thus, to take a concrete example, the existing Nuffield industries at Oxford and the new atomic developments at Harwell justify a limited urban extension of Oxford and possibly a small new town in Berkshire (not forgetting what we may mean by "town" and "urban"). They also justify village housing within reasonable motor-cycling range (say twenty miles) of both centres of employment. If we draw similar circles of twenty-mile radius round existing or potential employment centres in rural England we shall find that about half our villages are suitably placed to house more people, *if* it can be done without spoiling them—and that is the question we must now consider.

What do I mean by village housing? I mean houses for people who are prepared to put up with the inconveniences of country life for the sake of a big garden and the chance to build their own home in their own way; houses for large families, or for old people or for people scared of noise and heights, houses, if you like, for the lunatic fringe. Council housing, of course, would have to play its part, though in a very different spirit, for rural workers who need it. But the accent would be on the owner-occupier.

Safeguarding the Village

You will be imagining a subtopian invasion of our innocent villages, so I must quickly pass to three essential safeguards.

The first is that the planning controls in our villages and country towns must be in the hands of people with a real sense of place. These controls have been so ill-used since the war that many of us have felt that they might as well be scrapped. But I have come to realise that most small private developers positively want guidance, if it is tactful and broadminded, and that if we could get these controls into the hands of the right people we need not fear for rural England.

The second safeguard is the existence of a wide choice of ready-made rural house designs by the best architects. You probably know that the RIBA has for some time been working on this idea. The only trouble about the scheme is that it takes such an unconscionable time being born.

The third safeguard brings us right back to where we started: tree-planting. Trees are the real architecture of our countryside, and if they are well-chosen and well-sited the design of the houses among which they stand has very little landscape significance. The planting of forest trees among small houses has not had the research it deserves. Summer and winter angles of sun, thickness of summer foliage and winter tracery, root habits, form in relation to landscape form are all aspects on which more work is needed if we are to re-establish the perfect relationship between a village and its tree groups that seems to have been instinctive long before the eighteenth century made it conscious. On the face of it, one would think that full-sized trees should either stand close to the walls of buildings, as one so often sees them in Scandinavia and in New England, or at a distance which will bring the noonday sun above their tops in summer and below their tops in winter. But of course only certain kinds will be suitable for each of these positions, such as the birch and acacia close to buildings, and the oak and sycamore at a distance. Intermediate could come more transparent trees such as the ash and London plane. The essential point is that the houses should look through the trees and not expect to see over the top of them.

Conditional Approval

Approval to the building of new houses in villages would, of course, have to be made conditional upon the planting and maintenance of the right trees in the right places—an insignificant addition to the cost of a house and another reason for having a landscape specialist inside every county planning department.

I am not suggesting that all other sins can be compounded for half a dozen turkey oaks. All the rules for country building must apply, such as the long horizontal, the relaxed or dramatic use of contours, and the eschewing of urban paraphernalia such as concrete trim, unnecessary sign posts, seats and litter baskets. My emphasis on tree planting is because without it none of the other virtues has much landscape value. And I need hardly add that very many existing examples illustrate this point, where very decent rural district housing sticks out like a sore thumb for lack of trees. There is a formidable leeway to make up.

Build on Village Waste Land

Given the safeguards I have mentioned, I believe from my own observations that most English villages could take a fifty per cent. increase of population without loss of identity or character or noticeable effect on the surrounding landscape. The vital thing is to get hold of the right sites—sites, that is to say, inside the village compound, rather than in the fields outside. The amount of semi-waste land in existing villages—half-used allotments, derelict orchards, odd corners under brambles or nettles—is quite surprising, but to get it for house sites would often need compulsory powers, which would seem as appropriate in these cases as in the case of agricultural land outside, and often less damaging to the local and the national economy. I don't say that we should never go outside the present perimeter. Many villages need to be larger for social or educational reasons, and all would gain from the admixture of non-agricultural workers. The great thing is that the final decisions on infilling, on expansion, or on both, should be taken on the advice of an expert in landscape, and that we should learn to take our landscape as seriously as we take our coal reserves, our electrical generating capacity, or our scientific know-how—national investments of incalculable value.

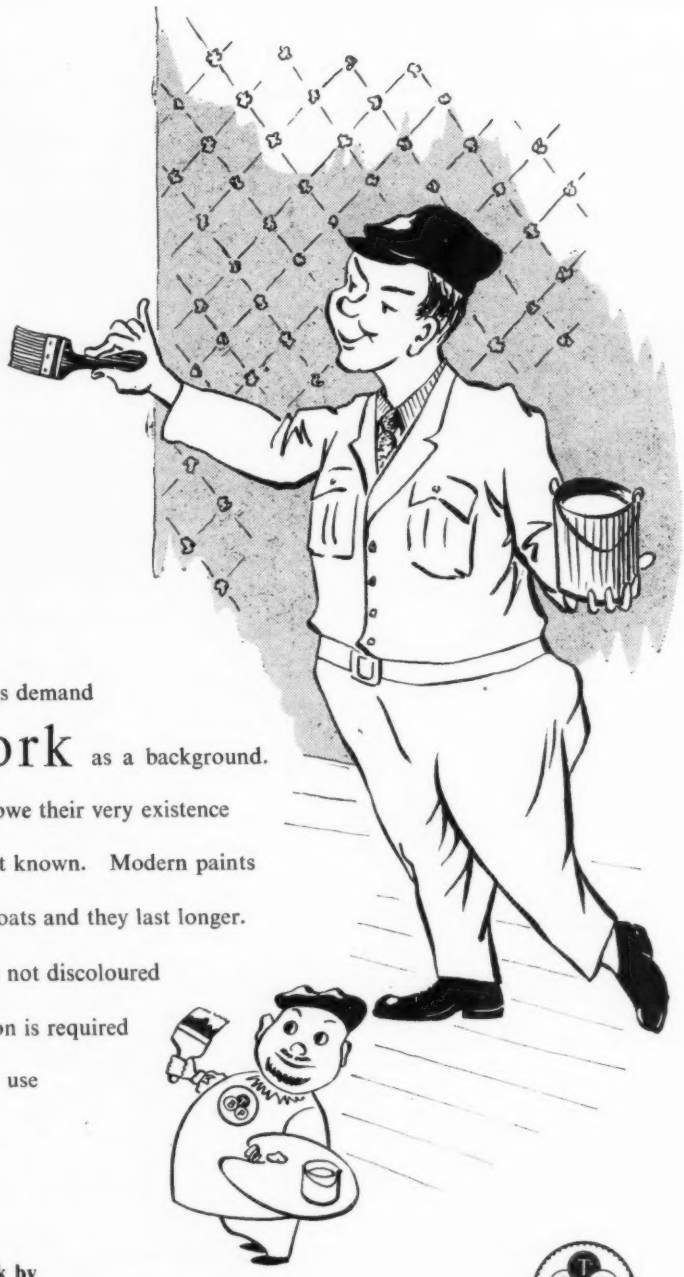
I have not tried this evening to put things statistically, nor to suggest ways and means of improving our planning machine or its operators, which we have lately heard admirably discussed by Sir Patrick Abercrombie. "Building in the English landscape" is in the individual case a matter of training and intuition, and in generality a question of how and where to house our people. Because I have nothing new to say about the first, I have thought it best to concentrate on the second, and to put to you a perfectly simple, perfectly revolutionary and I believe perfectly workable policy.

New Cities "Riding" the Fields

The picture of England I would like to leave you with is of an Atlantic swell of farmland, islanded with villages in which ancient cottages newly reconditioned and boxy little twentieth-century dwellings are jumbled together. These villages would be "bossom'd high in tufted trees," compensating for the gradual disappearance of the hedgerow elm. Out of this countryside new cities would eventually rise, "riding" (and here I quote again) "above the rolling fields and woodlands like cathedrals, like full-rigged ships." And for a start, to get back to earth, we must give a terrific push to tree-planting, except that in the age we live in, instead of John Evelyn writing a book for the squire, local authorities will have to know as much about trees as they do about drains, and have as much power to get them. And they will have to take their new responsibilities not in a restrictive but in a creative spirit, as people not bolstering up an old landscape but building a new one.

The Country's Only Hope

I think its essence is the abolition of the age-old antagonism between town and country, in which the Town, the male principle, expansive, modern, scientific, noisy, intellectual, was visualized as eternally making inroads upon the virtue of the Country, the female principle, with its ancient wisdom, fertility, conservatism and, of course, beauty. The word "rape," you will remember, was the key word. All that is out of date, killed stone dead by the potentialities of the motor-car. A modern transport network, when we get it, will make England one place, one estate, and it is for us to see that the network is a good one, that all the nuclei it nourishes, large and small, mostly ancient but some new, are healthy and properly inter-related, and that no elephantiasis attacks one organ at the expense of others. Looked at this way, there is plenty of room for everything we want to do, including nothing at all. Of course it will have to be paid for. It will be more expensive than Subtopia, but I honestly believe it is the only hope if this country is to be worth living in.



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SITE ORGANIZATION

The Programming of House Building. **BRS** Digest No. 91 (HMSO 3d.) Describes the planning method used by **BRS**, in collaboration with contractors, over the past two or three years. The aims of programming are loftily catalogued: it can show the quickest method, ensure continuous productive work, provide a measure of productivity, determine sub-contractors and material delivery dates and afford an indication of progress.

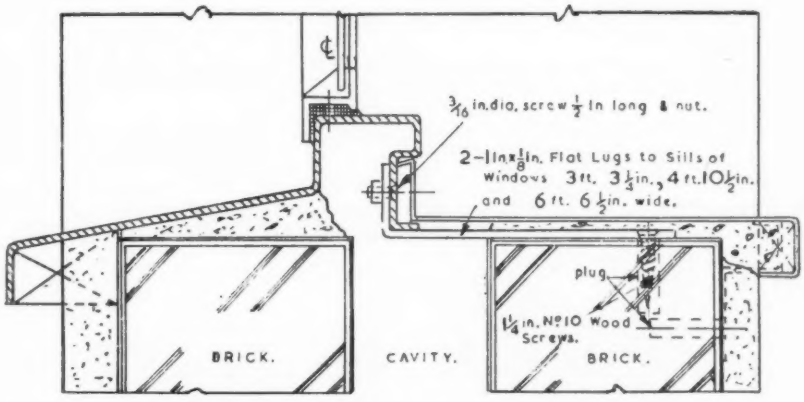
Another page tells you how these aims can be realised. You divide the work into sections: work below ground, Shell and roof, Finishings, Services and equipment, Site works, etc. Then in each section you find the (key) operation that will take longest. In finishings it will be plastering; in Shell it will be bricklaying, and so forth. The longest key operation of all the sections is the "master" (bricklaying) and this you try to reduce in time while increasing the others so that all main trade operations take as nearly as possible—the same time. "Otherwise," says the Digest, "one or other of these trades must be idle." Operational times are increased or decreased by adjusting the number of tradesmen. Three charts are shown. One gives total man hours for each operation; another, the actual hours with "haphazard" sizes of work gang; and a third, balanced gangs in which bricklaying (the master operation) comes down from 220 to 110 hours and unproductive time is fractional. This is done by doubling the number of bricklayers, adding a carpenter, and taking away one general labourer and one painter. The Digest continues with brief particulars of the programming of a 24-house contract. It shows a schedule of men and man hours for each stage and for each operation within each stage (total man hours 1,522) and (almost unreadable) charts expressing the distribution of labour.

The Digest is rather unsatisfactory on the threats to programming (weather, default of sub-contractors, merchants, men or architect). It merely says: "According to the extent of these delays the overlap or interval between stages can be adjusted as required on site." It says nothing about the preparation of ordering schedules or the calculation of outputs (vide: MOE Bulletin 12—"Site Labour Studies"). But the oddest omission is that there is no direct indication of what man hours have been saved. **BRS** are, of course, in a curious position in addressing architects on this subject. Architects have no obligation to direct the conduct of operations, nor does their training dispose them to be interested in it. It is disappointing, therefore, that the Digest does not discuss either ways in which Architects can aid programming ("operational" drawings, schedules, site meetings, etc.) or the close and fascinating connection between constructional design and labour content. Perhaps this will come in later (and brighter ?) Digests.

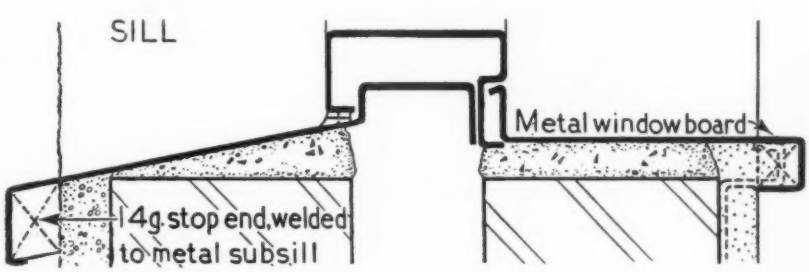
19.198 construction: details
METAL WINDOWS

Steel Subframes, Sills and Window Boards for Metal Windows. BS. 1422:1956. (BSI, 4s.)

The main point of this revision of the old Standard (1948) is to introduce a sill with a new profile which is easier both to make and to fix. The difference may be judged from the illustrations below: the top one is taken from the old Standard and shows the sill and the subframe made from one, rather complicated pressing; while the lower drawing, taken from the new Standard, shows the sill (here called the "sub-sill") and the subframe made from two pressings.



Diagrams showing the standard steel sill and subframe for an 11. in. cavity wall as shown (above) in the old (1948) Standard and (below) in the new Standard.



technical section

The only other difference in the Standard is that the finish requirements have been brought into line with the Standards for window and door frames (BS. 990 and 1245).

20.229 construction: complete structures
STEEL TUBULAR CONSTRUCTION

Tubular Footbridge. (Architecture and Building, June 1956. pp. 233-234).

This spectators' footbridge links the Queen's Building with the South East Face Building at London Airport (see below).

The structure consists basically of three warren trusses of 87-ft. span. The centre truss has top and bottom booms of $8\frac{5}{8}$-in. tube $\frac{1}{4}$ in. thick and web members of $6\frac{5}{8}$-in. tube. Corresponding dimensions for the outer trusses are $7\frac{5}{8}$-in. tube $\frac{1}{2}$ in. thick and $4\frac{1}{2}$-in. tube.

Double outriggers at approximately 12-ft. centres of 3-in. tube are used to stabilise the top boom and are made a feature of the bridge.

Ledge angles are provided at mid-height of the trusses on to which 12-ft. span precast concrete beams are laid. The bridge was assembled on the ground and lifted by two masts to the final position in about two hours.

24.199 lighting
COLOUR

Colour and lighting in Factories and Offices. British Colour Council, 13, Portman Square, W.1.

This booklet is addressed primarily to office and factory managers—an important and hard-pressed body of people, liable nowadays to be faced with the problem of obtaining the best possible advice on colour. What they will be looking for is not a wordy dissertation but reliable guidance in straightforward terms. It is disappointing to find that the text of this booklet seems to be designed to impress the layman rather than to inform him. If managers hope for detailed and explicit advice, they will find instead, that for the most part, they are given generalities. Only the Lighting Service Bureau in a short insert on artificial lighting makes a serious attempt to be factual and explicit.

The Council includes with the booklet a range of 25 colours, alternative groups from which are given for factories, offices, entrance halls, lavatories, etc. These suggested schemes have the merit of coming to the point but again the result is disappointing and shows the Council to be capable of recommending unfortunate colour combinations. This is the inevitable result of faults in the choice of the 25-colour range, the most obvious of which is that it does not observe the simple principle that for a range to answer its function as a source of small and agreeable groups of colours it must itself possess unity and harmony.

Both architects and managers have a right to ask why the range takes no account whatever of the new British Standard range of paint colours (BS 2660:1955) which, as the British Colour Council very well knows, was based on a careful and well-informed estimate of the needs and was the result of a new and encouraging measure of co-operation between the RIBA, Government Departments and the Paint Industry. The Council does itself no credit by persistently ignoring British Standards, a practice which is bound to lead to unnecessary waste and confusion.

But apart from the shortcomings of the Council's range as such, more serious still is the disastrous effects which will result if factory or office managements adopt the recommendation for dark colours among those given as "alternatives for woodwork." The alternatives as a whole are disposed under the headings of "ceilings," "walls," "dadoes" and "woodwork," and with one minor exception no separate mention is made of window-frames. It is well known among architects that dark colours on window-frames will considerably increase the risk of glare whenever a window is backed by bright sky. In any case dark colours on "trim" or framework should be the exception; white or light grey used to separate the main wall and door colours is much more often the right answer.

The footbridge which links the Queen's Building with the South East Face Building at London Airport. See "Steel Tubular Construction," above.

25.123 water supply and sanitation
SINKS

Metal sinks for domestic purposes. BS 1244:1956. The British Standards Institution, 2, Park Street, W.1. (Price 3s.)

This Standard was first issued in 1945 and has now been revised. It covers enamelled cast iron and pressed steel and stainless steel units of sizes: 42 in. × 18 in. and 42 in. × 21 in. (one drainer), 63 in. × 18 in. and 63 in. × 21 in. (two drainer). The width differences quoted representing units with or without tap holes. The standard specifies quality of material and finish, dimensions, tolerances and ease of cleaning. Outline drawings are shown. Circular bowl units are not mentioned.

As with most British Standards this one appears mainly to codify existing practice and as usual one longs for the day when the *idea* of standardization will be sufficiently accepted for British Standards to lead rather than follow the manufacturers.

25.124 water supply and sanitation
LAVATORY BASINS

Metal lavatory basins. BS 1329:1956. The British Standards Institution, 2, Park Street, W.1. (Price 3s.)

This standard was first issued in 1946 and has been revised. It covers enamelled cast iron and pressed steel and stainless steel basins 25 in. × 15 in. and 22 in. × 16 in. Qualities of material, finish, dimensions and so forth are specified and an outline drawing is shown, which " . . . does not purport to fix the details of the design . . . "

But the compilers of the standard make quite sure that metal basins will appear as imitations of the fireclay ones, by making a specific requirement that the edge scroll is to be not less than $2\frac{1}{2}$ in. deep. This will effectively prevent a functionalist basin-designer from letting the material speak for itself. Manufacturers, if they want to sell their products to architects, are recommended to ignore BS 1329:1956.

25.125 water supply and sanitation
W.C. CISTERNS

W.C. Flushing Cisterns (including flush pipes). BS.1125:1956. (BSI. 5s.)

Revision of a Standard first published in 1943. Dimensions are now measured *internally* and provision is made for bottom entry cisterns. Three types of resistance to corrosion are now distinguished: materials which are in themselves non-corroding, those which can corrode but are effectively protected against it, and those which corrode so slowly that this does not affect the durability of the cistern. A useful reference for architects.

technical section

9 DESIGN: GENERAL

cost study: part one, domestic construction

Cost Analyses can be used to provide the architect with a target price for each main *function* of his design: £*x* for vertical access (stairs, lifts), £*y* for keeping the weather out and the heat in (external walls), £*z* for support (work below ground), and so forth.

With target prices set, the architect has next to choose constructional methods and equipment that will discharge the function and conform to the price, but while *technical* information about various alternatives is usually available, *prices*—especially detailed prices in a properly comparable form—are not so easy to get. Cost Analysis allows a comparison of major elements between one building and another, but we have yet to develop a systematic approach to such questions as: What factors make clinker block inner skins cheaper than brick? What circumstances will make precast unit floors cheaper than in-situ? When are wood windows likely to be cheaper than steel? In the past, economics has not figured in architectural theory; thus there has been no demand upon builders or quantity surveyors to produce cost information of this kind in a comparative form. In practice the advice they give and the prices they quote (!) are sometimes contradictory, but this is partly an expression of all the variables: of site, size of job, labour, detailed design, builder's experience, or even the method of pricing. What is the architect to do for detailed cost guidance to fill in the framework of his cost plan? In the future, analytical investigation of many cost records may reveal the possibility of a special technique, but for the present our task is to collect basic information. Thus we present a small building of traditional construction, priced by elements; and giving a number of alternative materials or methods for each element which are shown as increases or decreases on the basic scheme. The result, printed on the following pages, yields some surprises: TDA trusses save only about 7 per cent. of the cost of kingpost trusses, a distempered fibreboard ceiling is less than 3 per cent. cheaper than skim coat and plaster board, emulsion painted; galvanised steel tube, for the hot and cold water installation, saves only £5 compared with copper. Clearly these findings cannot be conclusive for all jobs and all builders. It is also probable that few clients would pay for comprehensive comparisons of this kind, although the guidance provided could in many cases allow savings exceeding the extra fees. In this study, use of *all* cheaper alternatives would reduce the total price by over 11 per cent.

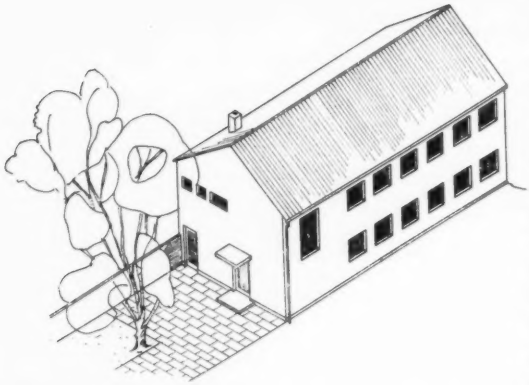
Further studies based on this building are in preparation for future publication. The JOURNAL would be glad to publish similar work by other architects and quantity surveyors.

See editorial on page 579.

STILLMAN and EASTWICK-FIELD, architects
HARRY TRINICK and PARTNERS, quantity surveyors

The intention is to show in a simple two-storey building of 2,000 sq. ft. floor area the actual costs of the alternative forms of construction which would be reasonably practical for a building of this scale. The building is based on a design for a small office in a country town in the Home Counties, which would have to be built fairly economically by a local builder. It is similar in scale to many private houses, although

technical section



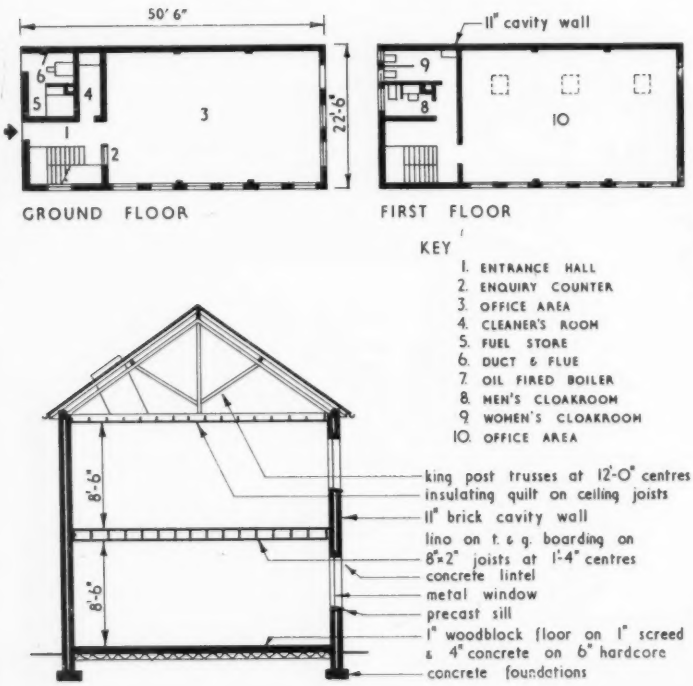
The hypothetical office block in the Home Counties designed by Stillman and Eastwick-Field and priced by Harry Trinick and Partners (quantity surveyors).

with less complications. The study we have made is an extension of the study which an architect often makes in consultation with his quantity surveyor when designing any building within a limited range of cost. Thus it shows the actual differences of cost for example between flat roofs and pitched roofs of various kinds, wood windows and metal windows both standard and purpose made and indeed how the cost of windows compares with the cost of walls. It should also show whether bigger margins of cost lie between the alternative basic constructions or between the different standards of finish.

We hope that the results will be of interest to those whose knowledge of the costs of buildings is like our own—elementary: to those architects who may be able to tell you the cost of ten different floor finishes (because they have to deal with them in nominating subcontractors) but do not know the cost of a square yard of cavity wall or whether there is a worth while saving in having a breeze block partition instead of a 4½-in. brick wall.

To take a building to pieces so to speak, and to compare the cost of each part with alternatives can only be made readable if certain assumptions are made:

1. Where not stated in the brief specification notes, the construction is assumed to be of good standard practice.
2. The comparisons relating to the basic construction are applicable only to a building of roughly the shape and size shown. Much bigger spans for example would rule out a timber-framed roof altogether, and different considerations arise with multi-storey buildings.
3. The cost of maintenance should be taken into account by the reader, since each alternative form of construction will vary the cost of maintaining the building. It is obvious, for instance, that painted rendering creates a much greater maintenance liability than facing bricks: similarly that a built-up felt roof has a shorter life than a slate roof. It would, however, be too complicated to include here estimated maintenance costs with each item, but this could well form the subject of another cost study.
4. It will be appreciated that all the variations will not give the elements the same standard of performance, although only in one or two instances, such as 9 in. external walls, is the standard below that usually accepted.
5. The application of byelaws and other regulations might in certain cases prohibit the use of some of the alternative materials considered.



Left: plans and section of the basic scheme for which element prices are worked out. In the following pages, prices of alternative methods or materials for each element are shown as additions to, or deductions from, the basic prices.

Floor area: 2000 *sq. ft.*

Ratios:			
	Enclosing wall / *Floor area*	=	1·295 / 1
	Solid wall / *Floor area*	=	1·155 / 1
	Windows and external doors / *Floor area*	=	0·142 / 1
	Roof / *Floor area*	=	0·5 / 1

Cost of basic scheme: £5186.

Cost per sq. ft. of floor area: 51*s.* 10*d.*

Prices based on wages and materials at September, 1956.

technical section

Cost comparisons of alternative methods of construction

The first item in each element is the basic scheme, to which alternatives relate, independently of each other. Materials and labour prices are those ruling at September, 1956.

Element	Price in £s
1 Foundations (flat site assumed)	**178**
Work up to ground floor level (excluding ground floor construction) based on bottom of foundations 2 ft. 6 in. below ground floor level and ground floor level 6 in. above existing ground.	
(*a*) Bottom of foundation 3 ft. 6 in. below ground floor level.	+ 63
(*b*) Ground floor level 1 ft. 6 in. above existing ground for using timber floor see 2 (*e*).	+ 41
(*c*) Lead cored damp proof course instead of bitumen.	+ 6
2 Ground floor construction and finishings	**358**
4 in concrete bed on 6 in. hardcore bed, 1-in. screed and 1-in. wood blocks to office area, 1½-in. screed and quarry tile paving to remainder.	
(*a*) 6-in. concrete bed.	+ 25
(*b*) ½-in. additional screed thickness.	+ 6
(*c*) ⅛-in. damp proof membrane and 1-in. additional screed thickness.	+ 36
(*d*) ⅛-in. thermoplastic tiles to office area instead of wood block.	− 97
(*e*) Timber ground floor construction to office area only of 6-in. hardcore, 4-in. concrete bed, sleeper walls, timber joists, aluminium foil, 1-in. tongued and grooved boarding instead of solid floor with wood blocks. (see also 1 (*b*).)	− 19
3 External walls and facings	**925**
11-in. cavity walls in Fletton bricks faced externally in hand-made facing bricks (*P.C.*320*s.* per thousand) and plaster and two coats of emulsion paint internally.	
(*a*) Two coats distemper internally.	− 11
(*b*) Fair faced common brickwork internally instead of plaster.	− 38
(*c*) Inner skin in 4-in. clinker blocks.	− 24
(*d*) Sandfaced Flettons in lieu of hand-made facing bricks.	− 127
(*e*) Fair faced common brickwork painted two coats cement paint externally.	− 177
(*f*) 9-in. walls finished externally with self-colcured waterproofed rendering in lieu of 11-in cavity walls.	− 165
(*g*) 9-in. walls finished externally with gauged rendering 1:1:6 and painted two coats cement paint in lieu of 11-in. cavity walls.	− 218
4 First floor construction and finishings	**404**
8 in. × 2 in. joists at 16-in. centres. No. 2. 10 in. × 6 in. steel joists, 1 in. tongued and grooved boarding and linoleum.	
(*a*) All structural timbers pressure treated.	+ 12
(*b*) ¼-in. chipboard instead of 1 in. tongued and grooved boarding.	− 2
(*c*) Floor boarding on battens insulated by fibre-glass quilt and with slag wool pugging to office area only.	+ 48
5 Staircase	**122**
Traditional construction in softwood with open balustrade and mahogany handrail with No. 2 wreathed junctions. Treads and risers finished with linoleum with rubber nosings.	
(*a*) Newels carried above handrail instead of wreathed junctions.	− 4
(*b*) Oak treads and risers instead of softwood and linoleum.	+ 19
(*c*) Entire staircase in oak, wax polished, without linoleum and rubber nosings.	+ 77
(*d*) Modern construction with open risers, mahogany wax polished treads and wrought iron balustrades.	+ 25

technical section

Element (continued)	Price in £s
6 Roof construction	**475**
Traditional construction with No. 2 king post trusses 35 degree pitch, 9 in. × 3 in. purlins, 3 in. × 2 in. rafters, 7 in. × 2 in. ridge, 4 in. × 3 in. plate, 5 in. × 2 in. ceiling joists covered with 1-in. fibre-glass. Roof covered with hand-made sand faced pantiles on battens and felt, with 9-in. projecting eaves, boarded on soffit.	
(*a*) TDA roof trusses at 6-ft. centres instead of king post roof trusses.	− 36
(*b*) Machine-made pantiles.	− 33
(*c*) Concrete pantiles.	− 81
(*d*) Asbestos slates.	− 54
(*e*) Concrete slates.	+ 25
(*f*) Welsh slates.	+ 152
(*g*) Westmorland slates.	+ 320
(*h*) Pitch increased to 40 degrees and covered with hand-made plain tiles.	+ 103
(*j*) Substitute TDA roof trusses to 20 degrees pitch at 2 ft. centres covered with three layer built up bituminous roofing on 2-in. straw slabs, in lieu of basic traditional construction.	+ 38
(*k*) Substitute roof trusses to 20 degrees pitch at 6 ft. centres, rafters, purlins, 1-in. boarding covered with 24 gauge copper roofing and with 1-in. fibreglass over ceiling joists instead of basic traditional construction.	+ 292
(*l*) As item (*k*) but 14 gauge zinc roofing instead of copper.	+ 125
(*m*) As item (*k*) but 22 gauge patent aluminium roofing and battens instead of boarding and copper.	+ 97
7 Roof-lights	**77**
No. 7 timber-framed opening roof lights 3 ft. × 2 ft.	
8 Windows and casement door	**304**
Standard galvanized casements painted three coats of oil colour, with precast concrete sill and tile window boards.	
(*a*) Omit one coat of paint.	− 7
(*b*) 1½-in. × 14-in. slate combined sills and window boards.	+ 39
(*c*) Casements in aluminium instead of galvanized steel.	+ 188
(*d*) Softwood sub-frames to metal casements and oak sill projecting and omitting precast concrete sills.	+ 56
(*e*) Standard softwood casements with BMA furniture and projecting oak sill instead of metal casements with precast concrete sills.	+ 6
9 External doors	**57**
Softwood doors and frames, front door glazed in Georgian wired cast glass with BMA furniture. Boilerhouse door with louvres. Painted three coats of oil colour.	
(*a*) Omit one coat of paint.	− 1
(*b*) Three coats of varnish instead of three coats of oil colour.	− 3
(*c*) Front door and frame in teak in lieu of softwood.	+ 25
10 Canopy over front door	**13**
Two layers bituminous roofing on ¾-in. boarding, 4-in. × 3-in. bearers and 1-in. × 3-in. fascia.	
11 Internal partitions	**161**
4½-in. Fletton brick walls (except stud partition between W.C's), plaster and two coats of emulsion paint both sides.	
(*a*) Two coats of distemper instead of emulsion paint.	− 8
(*b*) 4-in. clinker blocks to first floor instead of 4½-in. bricks.	− 5
12 Internal doors	**80**
1⅜-in. standard softwood flush doors with BMA furniture. Three coat oil paint.	
(*a*) Aluminium alloy furniture.	− 3
(*b*) Omit one coat of paint.	− 4
13 Ceiling finishing	**140**
Plasterboard and skim coat plaster and two coats of emulsion paint.	

technical section

Element (continued)	Price in £s
(*a*) Distemper instead of emulsion paint.	−11
(*b*) ½-in. fibreboard generally in 4 ft. squares and two coats of distemper instead of basic.	− 4
14 Soil drainage	**73**
40 ft. of 4-in. stoneware drain, manhole and intercepting chamber and connection to sewer.	
15 Rainwater goods and drainage	**71**
4-in. gutters and 3½-in. downpipes in cast iron painted three coats of oil colour with 4-in. drain to No. 1 soakaway.	
(*a*) Stove enamelled pressed steel rainwater goods in lieu of painted cast iron.	− 4
(*b*) Aluminium alloy rainwater goods instead of cast iron.	+ 4
16 Plumbing	**270**
Complete sanitary installation using one pipe system internally. Hot and cold water services in copper with capillary fittings.	
(*a*) Hot and cold water services in galvanized steel with short lead connections to fittings.	− 5
(*b*) Two pipe system externally.	− 14
17 Electrical installation	**197**
Wiring in PVC with conduit in vertical wall chases only and with surface fittings.	
(*a*) All fittings recessed.	+ 39
(*b*) Whole installation in screwed conduit.	+ 42
18 Heating and hot water installation	**516**
Complete heating installation by low pressure hot water cast iron hospital radiators to provide 60 degrees F. with two air changes (external temperature 32 degrees F.). Boiler with vaporising type oil burner and 250-gallon oil storage tank. Electric hot water heater for lavatory basins. All builders work in connection with installations.	
(*a*) Automatic magazine anthracite boiler.	− 51
(*b*) Hand-fired solid fuel boiler.	− 128
(*c*) Floor heating to ground floor and forced warm air convectors to first floor instead of radiators.	+ 184
19 External pavings	**56**
Paved area in 2-in. precast concrete slabs on hardcore and ashes with granolithic finished concrete step to front door.	
(*a*) Paved area in 2-in. in situ concrete instead of 2-in. precast slabs.	− 20
(*b*) Paved area in 2-in. tarmacadam paving instead of 2-in. precast slabs.	− 14
(*c*) Substitute paved area and step to front door in York stone instead of basic.	+ 182
(*d*) As item (*c*) but using second-hand stone paving.	+ 76
ADD	
Contingency provision.	**150**
Foreman, plant, water, insurances, etc. (usually priced in preliminary Bill or on Summary). Say 12½% on £4,447.	**559**

Total estimated cost of basic scheme	**£5,186**	**0s.**	**0d.**
price per foot cube		**3s.**	**9d.**
Price per foot super floor area		**51s.**	**10d.**

One of the great modern inventions which this country has not yet incorporated into social and business life as one of the normal amenities of contemporary urban living is the helicopter. However, in the last year or two several projects have been put forward for building helicopter stations in the centre of London. As recently as last month a 100 yards square, six-storey building, part car-park and part helicopter landing ground was proposed for a site on the boundary between the City and Stepney. In the article below a type of helicopter station is put forward which would fit rather more readily into the urban pattern of building. The landing platform conforms with more normal building sizes, and, if placed on top of a point block, of which several have been mooted by the LCC, no undue restrictions on development would be inflicted on neighbouring sites. The writer of this provocative and stimulating proposal is J. S. Shapiro, a consulting engineer and designer of helicopters and helicopter equipment, and author of: "Principles of Helicopter Engineering." The article has been prepared in collaboration with the architect, Colin St. John Wilson.

HELICOPTER STATIONS FOR CITY CENTRES

by J. S. Shapiro

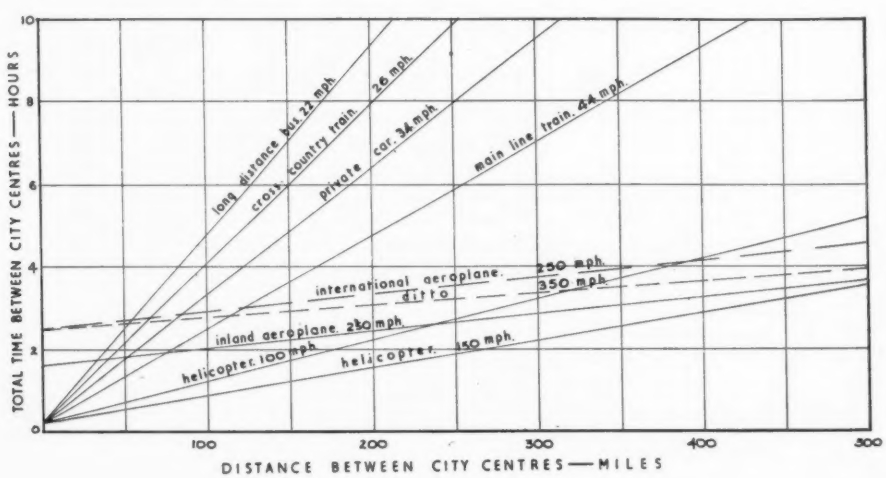
Many architects have noticed the helicopter above other forms of transport because they instinctively feel that it may change the mode of living, the design of buildings, and the disposition of towns. It is natural for an architect to ask what the helicopter is like, and what it does. Armed with the answers, the architect can incorporate plans for this vehicle in architectural design. Such information can be easily supplied. Briefly, there are several types of helicopter in existence, carrying 2-8 persons. All have in common the unique capacity to accomplish missions in which hovering is essential, cost is secondary, and noise is ignored.

The sizes and shapes of existing helicopters and, in broad terms, the manner of their operation have been described on many occasions in publications accessible to all. In this article, we discuss the public transport helicopter and its future prospects.

The case for the public transport helicopter has often been presented. It rests on the use of the air for travel without the waste of time due to surface journeys to and from the airport. In its disregard of obstacles and traffic congestion the air gives a new order of effective speed even when the highest cruising speed of the aircraft is not much more than that of surface vehicles.

The case for the helicopter is repeated here in the shape of a graph (Fig. 1) showing the time required for the journey between city centres by various surface vehicles, by airplanes (taking into account the delay due to remoteness of the airfield from the centre of the city) and, finally, by helicopters of various cruising speeds. It is seen that in the communication between city centres, separated by distances in the range of 50-250 miles, the helicopter, even when cruising at no more than 100 m.p.h., is faster than any other existing means of transport. A maximum saving of about 1 hour over its nearest competitor for a distance of around 120

Fig. 1. A graph showing the duration of journeys made by different means of transport between city centres.



miles is possible today by means of the transport helicopter. Faster helicopters save more.

Even today the helicopter can be, and is, used for public transport between cities, provided: (*a*) about five acres of ground can be made available for the helicopter station in the city centre and the building of another twenty acres can be restricted; (*b*) the cost (about 4 times first-class rail fare) is no object; and (*c*) the citizens accept the noise.

The study of existing helicopters and those promised in the near future has led many to the conclusion that the benefit derived from the helicopter is only in exceptional circumstances worth the cost, the interference with city buildings and the noise.

The authors of this article believe that the helicopter (or one of its derivatives) is destined to revolutionize the transport of passengers and express goods between cities in this country and in north-western Europe. To do so, the helicopter must be conceived as part of a comprehensive system of equipment and facilities. Most components of this system are not really new conceptions, but the system as a whole requires fresh thinking. Such re-modelling can only be justified by fundamental reasoning, and not because we have discovered something in sales catalogues. We dwell no further on helicopters as they are, but look into the future.

In the long history of transport facilities, a repeated pattern is visible which is best presented in graphical form as a plot (Fig. 2) of transport cost against speed of travel. On this plot we see in full lines one curve applicable to various means of surface transport and another applicable to air transport. Each curve has a minimum characteristic of its own natural conditions. It is believed that the helicopter fits into this pattern and is represented by its own curve shown by a broken line. The helicopter is expected to emerge not as an expensive luxury, but as a vehicle within its own natural habitat, belonging to the same world of everyday life as surface transport and the airlines of today. It will so emerge if the modest demands on terminal facilities can be translated into the low cost of terminal turn-round operations. It is in this way that vertical flight more than makes up for the cost of helicopter cruising.

The prospects of this future role of the helicopter are neither far nor near. They do not depend on something which will come of itself, but on purposeful, comprehensive and specific planning. Military and other development of helicopters will help to make it prominent in the eyes of the public and of the authorities. It will increase the facility of engineers to solve helicopter problems. The project of the helicopter transport system is a separate creation.

Proceeding from the conviction that the helicopter is more than an expensive fashion, we examine in this article the essential human and social facts into which the organization of helicopter services must fit. From these, the pattern of helicopter operations is logically derived. Those properties and facilities of the future helicopter transport system as envisaged here, which are of concern to the architect, are briefly stated.

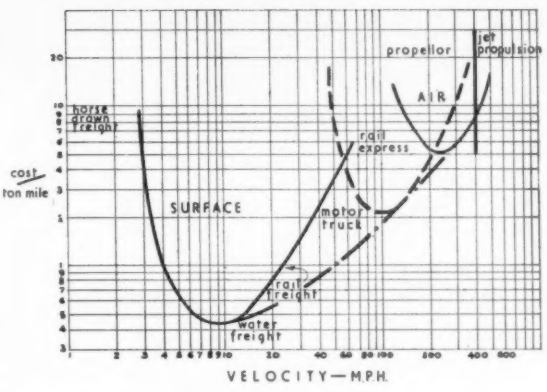


Fig. 2. A graph showing the basic transport cost in ton/miles against the speed of travel for surface and air vehicles. The broken line indicates the helicopter.

Based on this knowledge a description, in somewhat greater detail, of a helicopter operating site is given. This design represents original thinking. Its prominent place as a type of helicopter station among other typical projects is explained.

Our point of view is architectural. The physical principle of the flying machine is of little significance so long as it has the size, performance, and handling qualities which we can today expect of a helicopter especially built for transport.

Our point of view is utilitarian. Helicopter transport facilities are designed for economic, reasonable citizens, living together in cities. The facilities and architectural design discussed here should be judged by the improvement in communications they provide, by the cost they impose without open or hidden subsidy, by the non-interference with outsiders and by blending into the other amenities of the city. We do not believe that helicopter stations are in a line of succession which includes the Pyramids, the Parthenon, Westminster Abbey and Milan Railway Station!

Foundation of planning

The proper point of departure for our chain of reasoning is the statement, as obvious as it is significant, that cities are areas of intensive land utilization. It is the reason for which they exist, and any improvement in the amenities of a city must be conceived primarily with the object of making the utilization of its land more intensive and better co-ordinated, and not add another burden to the already considerable list of amenities, all of which require extra land. The destiny of the helicopter is based on the very fact that it can provide a great improvement in transport without adding to the land requirements of the city. Therefore, the roof helicopter station is the only heliport worthy of future consideration.

The second point is that the purpose of the helicopter is to provide transport into the centre of the city. Any deviation from the centre in the truest sense of the word is a great sacrifice in the utility of the helicopter. On the other hand, any gain which can be achieved as a result of a compromise with the truly central location of the heliport is quite marginal.

Third, there is no room in the traffic centre of a city for buildings other than those for commercial, administrative, or dwelling purposes, all of which require natural light. For this reason, the width of landing strips must not exceed the width which can be accepted for such buildings. Whilst the width of the building itself cannot exceed about 60 ft., the width of a landing platform on top of the building may, without excessive cost, reach 70 ft. by the creation of an overhung terrace. This situation should be accepted as a fundamental limitation in the same way that we have maximum widths of road and rail tracks. The overall planning of the example illustrated on page 602 corroborates this.

Fourth, high frequency of operation forms an inherent part of the improvement in communications which we expect of the helicopter. Our aim should be so to plan our facilities that the cost of a turn-round is genuinely reduced rather than assume a high cost of turn-round only to be driven to giant machines and low frequencies.

Fifth, the network of services which it is our aim to establish, is conceived to include sea crossings of such length that any scheduled operation must be subject to the following condition. If one independent power unit fails, completion of the flight or return to base must be possible. This condition requires the ability of the helicopter to maintain level flight at the maximum continuous rating of the remaining power units under the worst climatic conditions.

Sixth, all forms of transport will, in the course of the coming years, experience an increasing scale of staff salaries. The saving of staff will, therefore, become of increasing importance compared with the saving of investment.

Seventh, helicopter services must be envisaged to provide a degree of reliability as good as, or better than, surface transport, but it would be quite legitimate if, under extreme conditions, the number, regularity and punctuality are allowed to deteriorate. It is sensible to educate the public to a somewhat higher degree of weather consciousness than they now have, so long as a skeleton service can always be maintained. It would be uneconomical to plan helicopter operational facilities only on the basis of those which can be provided under the absolutely worst weather conditions.

Eighth, helicopter services are essentially "through services," and the changing of passengers from one helicopter service to another is a secondary consideration.

Flying stock, equipment, and pattern of services

From these postulates, certain requirements arise which must be met by the designers of the facilities required. We must confine ourselves to those requirements which distinguish the transport helicopter of the future, and its various facilities from their nearest counterpart existing at present. Only those aspects which are of interest to architects and town planners will be discussed in some detail. These aspects are: the noise of the helicopter, the geography of the rotorways, the planning of heliports in city centres and the architecture of the heliport. The noise of the helicopter must be treated in the same way as its safety. Helicopter services for public transport can only be operated provided helicopters achieve a satisfactory standard of silence. The achievement of the standard of safety is a statutory requirement supervised by existing administrative machinery. It is this standard of safety which leads to the demand for multi-engined helicopters to operate over and into built-up areas. Beyond this statement we must take the safety of the helicopter for granted and rely on the appropriate authority to interpret this standard severely but wisely.

Opinions on the noise of existing helicopters differ widely. In the Low Countries it has been stated that thousands of helicopter operations have been accomplished in cities without a single complaint. On the other hand, even the very limited number of helicopter operations in the London area have led to numerous complaints. The subjective element in assessing noise disturbance has a fairly wide range and the noise of existing helicopters appears to be within that range. Since the community at large is involved we are once more faced with the need to determine statutory standards. These statutory standards must take account of the range of subjective response, but must formulate requirements in terms of the physical reality of noise. The intensity of noise is measured in decibels, a unit of sound power impinging on a unit area.

Before the range of subjective perception of sound is fully evaluated, it is necessary to take account of the actual conditions in which helicopter noise is experienced. The future public transport helicopter services, operated on a large scale, and which are advocated here, will alter these conditions in several respects. Familiarity will allay the anxiety associated with a new and uncertain source of noise. Helicopters will operate mainly into and from the centres of cities. On the other hand, the operations of helicopters from roof sites will put those nearest to the arriving and departing helicopters in positions generally remote enough from the noise of surface traffic to distinguish the noise of a helicopter. Most important of all, the helicopter will be taken for granted by the general public and the bias will work in favour of adaptation rather than rejection. Presumably, it is already this last point which is operative in the Low Countries and so accounts for much of the difference in response between Brussels and London.

The physical noise specification, having been reasonably extracted from information on public response, as it may be visualised in a new situation, can be rather complex if all the physical features of noise are taken into account. With certain qualifications, important in our context only in specific cases, this specification may be simplified into a map of total sound power contours surrounding the helicopter. It may be said at once that whatever the contours specified, they can be technically satisfied by helicopter constructors.

The main sources of noise in a helicopter are the rotors and power units. In all existing helicopters, engine noise predominates. Engine noise can be reduced by the fitting of silencers of adequate performance. Rotor noise can be kept down by the simple expedient of reducing the rotational speed of the rotor. Both methods may or may not be economically feasible, and so a noise specification of excessive severity can ruin the economic prospects of helicopter operations. The engine which powers most helicopters is not different in principle from that which drives a luxury car or a petrol 'bus and the question is not how silent or noisy helicopters are, but what standard of silence is communally necessary and what standard is economically permissible. Finally, is there a common range between the two standards?

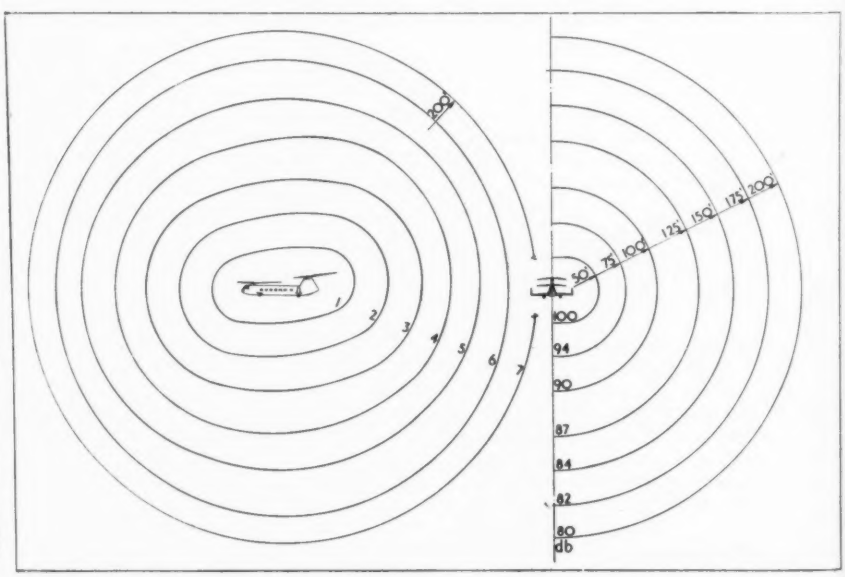
No agreed standards have been established in either sense. Each would require a great deal of correlation of experience. There are few subjects wherein limited knowledge is as dangerous as it is in a branch of engineering dealing with subjective responses. Nevertheless, most experts agree that the necessary and the possible standards of noise in helicopters need not conflict provided the necessary stops short of the ideal. Without going into technical details a tentative standard is attempted here in the form of a map of decibel contours, around the helicopter. These are shown in the illustration (Fig. 3). It is believed that such contours can be attained without reducing rotor speed below a level uneconomical for reasons of structural and/or power efficiency. Moreover, it is believed that these contours can be achieved on the power unit side without actual loss of power, but with a silencer taking up roughly the weight of one passenger in twenty on helicopters of 'bus size. This estimate gives a rough idea of the cost of silence. There is no reason why helicopter engines should not be as silent as those of a luxury car, but the cost of silence in the air is considerable, and may become prohibitive.

There are power units in the project stage, stage, or under consideration, about whose silencing to the required contours we cannot today speak with any assurance. It must be concluded that unless and until such a power unit is capable of being silenced it cannot be accepted for public transport helicopters. In short, the argument about the helicopter as a noise nuisance is idle when applied to the running of future helicopter services. It is a question of economics only, as to whether the helicopter can fulfil the required standards of silence.

The network of helicopter services which can be foreseen is a reasonable application of the foundations of planning discussed earlier. Those foundations which matter most in organising a network of services are the range of distances for which the helicopter is suitable, the extent of the traffic and the size of the helicopter.

An example of such a network, put forward by P. G. Masefield (lately Chief Executive of British European Airways) is shown in Fig. 4. This network is undoubtedly coloured by the prospects of the most promising routes on which luxury services can be sold. The introduction of non-luxury helicopter services would require the organisation on quite a different scale and with greater emphasis on direct "cross-country" or "as the crow flies" services. It is obvious that the ability of the helicopter to ignore the pattern of the existing road and rail network will be one of its

Fig. 3. A map showing the sound energy contours around the helicopter.



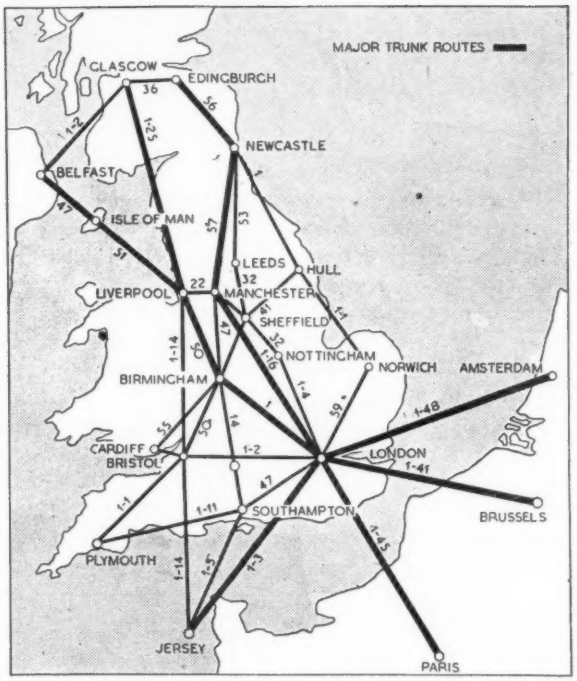
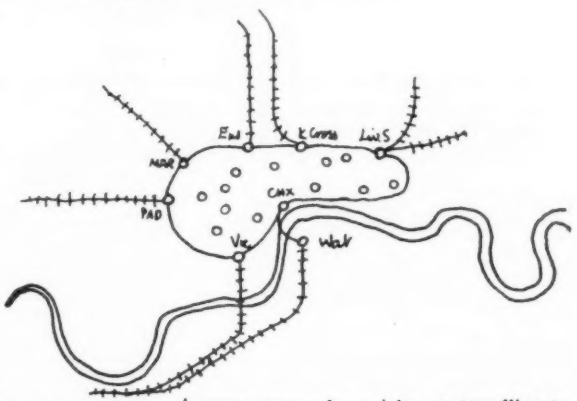


Fig. 4 (above). A projected network of helicopter services for Great Britain put forward by Peter Masefield (reproduced from Flight). *Fig. 5 (below). A diagrammatic distribution of roof stations envisaged in the inner London area.*



valuable qualities, and in the non-luxury stage of helicopter transport will be found increasingly useful. Indeed, this ability of the helicopter may be the most important effect by which it will initially win friends and finally influence society.

The very fact that our conception of a rotor station is that of a single turn-round facility which can be put anywhere makes the disposition of stations within a large city into a problem whose solution is dictated almost entirely by city surface communications and hardly at all by existing architectural features. In making comparisons with other plans, it should always be remembered that we are discussing here an improvement in communications which makes it possible to have regular, frequent, non-luxury services between, say, London and Birmingham, taking at most 40 minutes for the journey. This possibility will arise at a time when rail services will take 90 minutes. No one is going to choose the helicopter if the difference of 50 minutes is spent in walking through long corridors finding out how many ounces he weighs, or travelling to a helicopter station anywhere outside the real business centre. To illustrate the kind of disposition of helicopter stations envisaged, Fig 5 gives, diagrammatically, the proposed siting in the inner London area.

The transport helicopter must be multi-engined, have a cruising speed of 150 m.p.h. and a capacity of about 30 seats for a 200-mile range. The track and wheel base of the transport helicopter when on the deck should be about 35 ft. and 50 ft. respectively.

We are not concerned here with the configuration of the helicopter, its lay-out or the principle of its power unit, but certain basic requirements applicable to the turn-round of its passengers will appear later in the discussion of traffic arrangements at the roof-top station.

The ability to operate the pattern of traffic envisaged here hinges on certain flying properties of the transport helicopter which present day helicopters do not possess, namely:—

(*a*) Adequate and safe performance in vertical take-off and landing (including performance after failure of any single power unit).

(*b*) Ability to operate in any direction against the wind.

(*c*) "Hands off" stability, irrespective of air speed, air turbulence and visibility.

(*d*) Acceptable noise level outside the helicopter.

A transport helicopter with these flying qualities can fulfil the demand of a pattern of flying characterized by the following procedure in scheduled operations. The helicopter flies in along a lane determined by the traffic network and guided solely by a navigational aid and by voice communication with a central traffic control in command of an area. The framework of lanes is as direct as possible having regard to the intersections of routes. The helicopter flies at a height between 500 and 2,000 feet above the ground, which is reserved entirely for transport helicopters. Whatever the visibility, the helicopter finds, still solely by means of the navigation aid, the "final approach space." This is a cone with its apex on the landing site and its base of not more than 1,000 feet diameter at 2,000 feet height above the site. Once inside the "final approach space," the helicopter descends unless it has been instructed to orbit around the final approach space at a given height. This descent is guided by a device working automatically and independently of visibility and wind. The guidance is independent of the precise position within the final approach space at which the landing aid device has been picked up. In this sense the helicopter descends vertically.

This whole pattern of operations and facilities depends on the existence, reliability, and accuracy of (*a*) navigational aids and (*b*) approach aids. Both must operate on radio or radar principles, and so be completely independent of visibility. Such a navigation aid already exists. Minor supplementary ground facilities may be needed to achieve everywhere the desired accuracy of navigational information without additional airborne equipment in the helicopter. Some further development is necessary to achieve the required degree of reliability without the weight of a complete duplication of airborne instruments.

Once its accuracy and reliability can be taken for granted, the navigational system can be used as the sole source of information for the central traffic control. This is possible, because the helicopter can fly at any speed below 150 m.p.h. however slow. Consequently, all helicopters within the traffic control zone can, under instructions of a traffic control authority, maintain a given path and a given progress along it. Preliminary design work indicates that an approach aid equal in reliability to any engineering structure and providing at touch-down an accuracy of plus/minus 5 feet irrespective of visibility is a fairly straightforward engineering development task. In fact, such an approach aid is an immeasurably easier aim to achieve than any of the approach aids now under development for the landing of airliners at 100 m.p.h. on the apron of a modern airport.

Comparison with other projects

The roof station described here in its merest outline (Figs. 6, 7, 8) forms part of a comprehensive system of operation. The system chosen here for presentation with some of its details is one of several put forward but is one most thoroughly thought out in all its economic and physical consequences. This system can be identified by two of its features, namely its basic principle of approach guidance and its type of operating roof-site. The principle of approach guidance insists on never containing more than one helicopter at a time inside the lower part of the final approach space; whether the helicopter is arriving, departing, or standing on the roof. In this way, the frequency of movements making use of a single site, and its approach guidance aids, is limited to about one in every five minutes. This time is made up of a descent through the last 500 ft. at the rate of 400 ft. per minute, a turn-round period of two minutes standing on the roof, a climb out of the final approach space at the rate of 1,000 ft. per minute, and finally a one-minute interval between successive movements. The limitation of the elementary single turn-round cycle is quite as basic in the design of helicopter operating systems as the limitation of movements from a single platform in the design of railway systems. It follows that the number of turn-round facilities on the ground or roof which can be usefully combined within the same final approach space is strictly limited to *three*, so long as the principle of approach guidance remains as defined here.

The particular type of roof station chosen is characterized by a *single* turn-round facility. This has the advantage, as shown above, of fitting in with *any* type of building, even when its width is limited by natural light. Up to three turn-round facilities can be combined within the same final approach space without necessarily interfering with each other's maximum frequency of movements.

Such a small cluster of turn-round facilities can be accommodated on some types of building, but generally already demands special structures. This class could be embodied, for example, in the construction of platforms above the normally planned height of buildings, so high or so transparent as not to interfere with natural light. A fascinating challenge is open to the structural engineer, but the outcome of his ingenuity must economically compete with the excellent standard which can so easily be achieved by traditional methods of building, once we adopt the single turn-round facility as illustrated here.

Any form of rooftop site with more than one turn-round facility, making use of structures built or existing for other purposes will, in general, either fail to give sufficient freedom to put the helicopter station exactly where it is wanted, or fail to provide economically-supported space below the roof.

Yet another school of thought seeks to concentrate a large number of turn-round facilities into a single central station unit.

(*Continued on page* 603)

A HIGH LEVEL, SINGLE TURN-ROUND ROOF STATION

designed to helicopter requirements set out by J. S. SHAPIRO

architects COLIN ST. JOHN WILSON, PETER CARTER

structural engineer FRANK NEWBY

In general terms it was discovered that the operational parameters of flight-deck size and passenger circulation areas accorded very closely with each other and, in turn, with the dimensions and structural configuration of a normal office or hotel building. This characteristic (deriving from the adoption of advanced standards of operational facility) radically distinguishes this solution from all previous proposals in which the very large dimensions required for landing area have implied the use of ground sites and thereby contradicted (in terms both of amenity and finance) the case for central location.

Further objections encountered by previous solutions are downdraughts and excessive noise at street level. The roof-top location automatically eliminates the first and reduces the second.

At the level of the helicopter station itself, noise reduction will be achieved by heavy insulation in the deck slab itself and by double glazing of the Reception Areas. The number of office floors that will require extra glazing would be established empirically*.

The desirable height above street level of the helicopter station is probably a minimum of 150 feet: though the actual datum will be fixed by considerations relevant to the sub-building itself.

SCHEDULE OF OPERATIONS: The arrival of embarking passengers necessitates a direct link with underground and surface transport and is achieved by means of two fifteen-person lifts operating from ground level, each with automatic door action, one such lift leaving every 2½ minutes and delivering direct to the:

Main Circulation Area: This space (of approximately 5,000 sq. ft.) is at "normal" roof level. It forms the Flight Reception Level and lies immediately under the flight deck. The usual passenger facilities: time-tables, route-charts, refreshment and newspaper kiosks, etc.—are provided. From this area the passenger proceeds to:

The Ticket Kiosk. Two lanes for ticket buyers are provided although in most cases one will be sufficient.

After passing through a turnstile the passenger automatically stands on a weighing platform while buying his ticket, "normal" weight being fixed at 200 lb. inclusive. In any one flight, one third of the passengers may be excess weight, to a total of 250 lbs. and these will carry a different coloured ticket. The turnstiles are the only route from the Circulation Area to the:

Flight Waiting Area of 2,500 sq. ft.—adequate space for three "flights" of thirty passengers to wait at peak periods. From this area access to the flight-deck is by means of:

Hydraulic Lift, accommodating 30 people, plus the attendant and helicopter mechanic. (A lift was chosen, rather than a stair or escalator, as the most convenient means of controlling flight numbers. At the same time it automatically re-forms the flat roof when in the "down" position.) Immediately after the touch-down of an incoming helicopter (at peak periods this will mean at 5 minute intervals) the lift will rise to: *The Flight Deck.* Out-passengers, moving across to the exit door, permit in-passengers (leaving the helicopter by ramp at the rear of the machine, which is facing the lift) to enter the entrance door of the lift. Out-passengers enter the helicopter for'ard on the port side. The mechanic refuels the craft from a 4 in. pressure pipe at the rate of 6,000 gallons per minute from two 1,200 gallon tanks of fuel at sub-deck level, which, in turn, are fed by a 50,000 gallon basement store through a 2-in. pipe at the rate of 125 gallons per minute (pumps of 12 and 6 h.p. respectively.)

When the in-passengers, mechanic and lift-man have entered the lift and descended, the helicopter takes off again.

*From Fig. 3 it will be seen that the degree of noise from a helicopter is expected to vary from 80 to 100 decibels over a distance of 200 to 50 feet. The level of noise in an office is in the region of 40 decibels. Noise from helicopters would mainly enter through window openings. The level of external noise entering through windows could be reduced at the rate shown below:

Construction	*Average sound reduction in decibels*
24 oz. glass	21 decibels
Double 24 oz. glass at 7½ in. spacing (space lined with absorbent)	42 "
Double ½ in. plate glass (space lined with absorbent)	44 "

Fig. 6. The proposals for a helicopter roof station, described in the accompanying article, were studied by Peter Carter and Colin St. J. Wilson as part of a project for multi-level communication for city development. The project formed the basis of a Habitat study for CIAM X. The sketch above shows their design for a city centre with low-level motor traffic, pedestrians at ground level, and a helicopter roof station, details of which appear overleaf, at the top of the tall office block in the centre background. The extreme centralization, and the multiple use of sites envisaged here provide an obvious opportunity for the adoption of centre-to-centre inter-city communications. The general principles laid down may be considered constant for all large cities.

The time-schedule is thus:

(A) Helicopter descent from 500 ft. ceiling above flight-deck—1-1¼ minutes.

(B) Lift ascent, passenger turn-round, re-fuel and lift descent—2 minutes.

(C) Helicopter ascending clear of landing cone ceiling—¾ minute

(D) Lift empties and refills again at Flight Reception Level (contemporaneously with (C) and then (A))—1¾-2 minutes. This schedule allows a 1¼ minute margin to maintain a 5 minute turn-round at peak periods.

CONTROL: A Station-Master in the control room (with observation dome) controls helicopter arrival and departure by wireless and also relays necessary instructions (such as number of vacant seats if a " through flight " is in operation) to the Flight Lift-Man.

A woman Flight Announcer can act as attendant in cases of sickness, etc.

FLIGHT-DECK EMERGENCY PRECAUTIONS: Foam extinguisher jets operated from the control room are built in at 20 ft. centres on either side of the deck. There are two permanent escape staircases at each end of the deck. There is a passenger guard-rail surrounding the perimeter of the deck which is capable of withstanding a horizontal impact of 250 lbs. but which falls flat at any greater impact (such as by the helicopter).

FLIGHT DECK DETAILS: Dimensions: Overall: 258 ft. by 78 ft. of which 243 ft. by 60 ft. is clear for the landing and the emergency parking of the helicopter, except for stairheads which are 186 ft. apart. The surface is anti-skid tarmac, draining to falls sufficient to obviate reflections from storm-water. Snow would be dispersed by salt. The full width of the overhang round the perimeter is painted white as a visual aid. Similarly, the set-down spot is marked by a white cross. Ground stability, ranging, and set-down transmitters are built in along the fore and aft line of this cross. The perimeter would also be marked with lights.

TURBULENCE: The anti-turbulence section to the deck overhang, as shown, is cut to permit a continuous viewing strip from the reception area. The curved roofs to escape stairs are permanent excrescences and are assumed to be permissible, although hatches are a possible alternative.

A HIGH LEVEL, SINGLE TURN-ROUND ROOF STATION (continued)

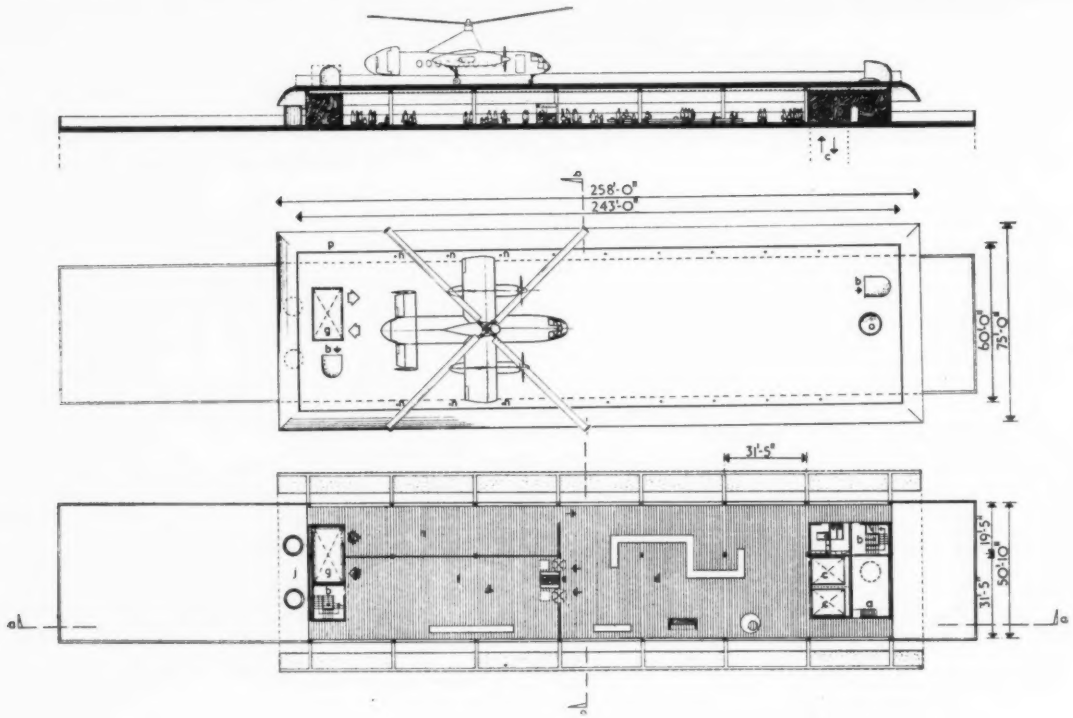
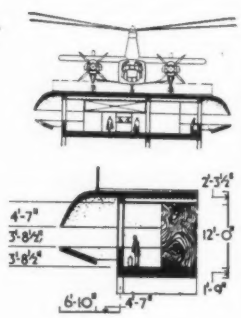


Fig. 7. The proposed design for a helicopter roof station. The two plans show, top, the Flight Deck, and above, the floor at Reception Level. Key: Reception level: a, *station master and offices;* b, *escape stair;* c, *main lifts;* d, *circulation area;* e, *tickets and weighing;* f, *pre-flight waiting;* g, *flight lift for* 30 *persons;* h, *exit lane;* j, *petrol storage:* 2 × 1200 *gals.* Flight Deck: n, *fire-extinguisher jets;* o, *observation dome;* p, *guard rail. Above the plan is the longitudinal section. Right, the cross-section B-B, and a detail section of the Reception Level, showing the curved edge to the flight deck, and the concrete baffle below, to prevent air turbulence on the flight deck.*



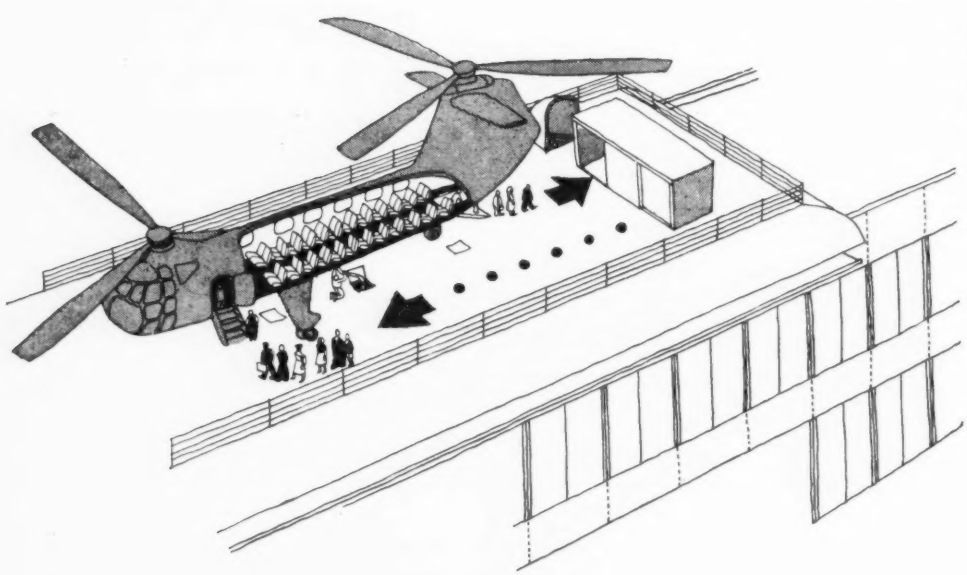


Fig. 8. An aerial view of the flight deck, with passengers embarking and the helicopter being refuelled.

STRUCTURE: Loading at 4G would take the form of a maximum load of 15 tons on each of 4 wheels, set on a 35 ft. square. This loading, with columns at 35 ft. centres does not exceed normal office floor loading; so that in the case of the adaptation of an existing structure, the addition of such a flight deck would (together with its self-weight) be roughly equivalent to two floors. In the example illustrated, the structure is as follows: 7 bays of three 12 in. square columns on a longitudinal grid of 31 ft. 5 in. centres and a cross-grid of 31 ft. 5 in. by 19 ft. 5 in. centres with 2 ft. 3½ in. beams and a structural slab of 12 in.

COSTS: An approximate assessment of the cost involved in the erection of this helicopter station, above the roof level of an office building is as follows:

A. INITIAL OUTLAY

Mechanical Equipment

	£
Lifts	10,000
Transmitters	12,000
Fire extinguishing	2,000
Petrol and pumps	2,500
Total	26,500
Building of 234,500 cu. ft.	
Structure at 1s. 3d. cu. ft.	12,000
Finishes and general services	40,000
15 per cent. for all fees, etc.	7,800
Total	£59,800
Grand total	£86,300

B. RUNNING COSTS

Renewal, maintenance, insurance interest	
Building at 10 per cent.	7,800
Equipment at 25 per cent.	6,500
Staff	8,000
Power, light, rates	2,700
Contribution traffic control	2,000
Total	£27,000

From these figures it is computed that the running and maintenance costs of the station will account for only 2s. od. of the price of each journey assuming about 300,000 passenger-journeys per year per station.

(*continued from page* 600.)

Comparison with other projects

The operation of services in central station fashion demands a totally different form of approach guidance control from that so far mentioned in this context. To make use effectively of four and more turn-round facilities several helicopters simultaneously must be under the guidance of final approach control. The guidance is no longer conceived simply as a form of homing into a funnel. It is this descent into a funnel, ensured by a separate electronic aid for every descent facility, which makes a truly accurate aid possible. Other approach guidance means are bound to have a much larger error than 5 feet, so that the turn-round facility becomes considerably larger in itself. Since the site grows in two dimensions, the rise in cost, determined by the area of the site, is very fast.

In this way we are led to roof stations such as shown in Fig. 9 over a multi-storey parking garage. This type of station had been originally conceived on the assumption that flying operations will veer round with the wind, an assumption totally unwarranted in the era of vertical flight with which we are dealing in this context. Nevertheless, even allowing only for the space dictated by the requirements of each turn-round facility, a station permitting, say, 100 instead of 12 movements per hour would be of the size shown. Clearly, such a station is an expensive building and, unless good utilization is made of the space underneath, the charge per helicopter movement would be a large multiple of that which is shown here to be the consequence of the adoption of the single turn-round site. Whether good use can, or cannot, be made of a large and solid building is a question of town planning and economics. In the planning postulates preceding this section, this question has been answered in the negative.

A somewhat different situation arises, however, if this conception is embodied with the help of a structure which neither sterilizes valuable city ground, nor demands a type of building in the central business area for which there is economically no other justification.

A special variant of this conception could be embodied on traditional lines if the space and part of the structure of a bridge were utilized. Here the question is one of structural economics only. A project of this type is illustrated in Fig. 10 designed around the existing Blackfriars Bridge, London. A similar situation appears to exist in using the area above a central railway station. However, when discussing desirable future trends in city planning the retention of present-day surface railway stations is

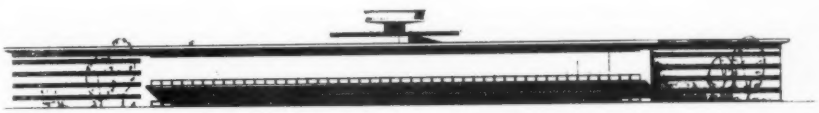
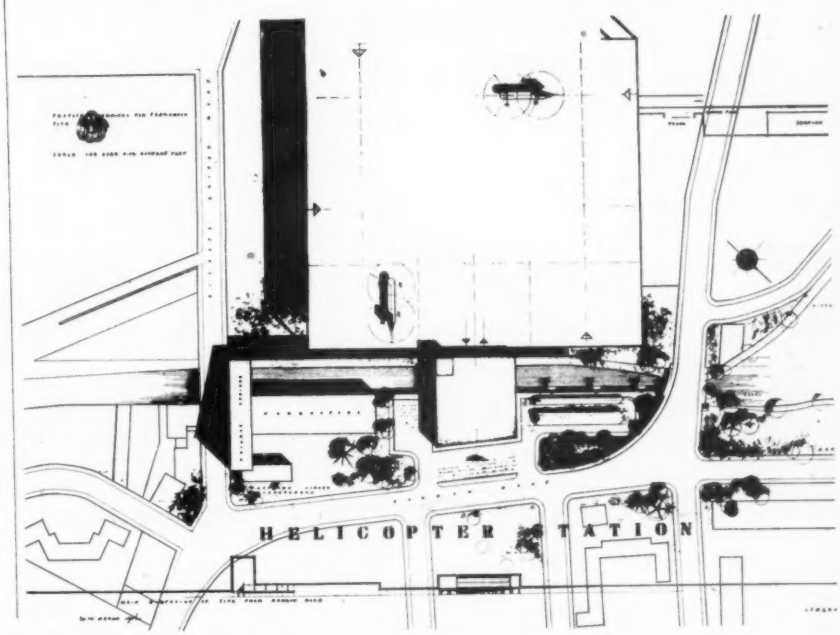


Fig. 9. A proposal for a roof station near Paddington on a multi-storey parking garage, designed by I. J. Weatherhead as a fifth-year student at the Bartlett School of Architecture.



untenable. In both cases, moreover, the freedom of choice in locating the site is partly lost.

It is seen that the single turn-round facility roof station for transport helicopters proposed here is an exceptionally well-integrated conception within the compass of established engineering possibilities in helicopter design, in the development of signalling, and in the construction of civil structures. This conception can be challenged only by profound changes in building methods and signalling devices which are not within the scope of engineering prediction today.

Perhaps the greatest challenge to ingenuity will be the demand to scale-down systems of equipment envisaged here for the operation of large helicopters and to ensure a reduction in weight and a simplification appropriate to the operation of small privately-owned or taxi helicopters in a crowded air space. It is believed that these possibilities are near at hand and we may see engineering solutions without new discoveries or novel techniques. This task of actually making use of three-dimensions, of really enjoying the freedom of the air safely, even at points where crowding is possible, is too great to remain unanswered in the foreseeable future.

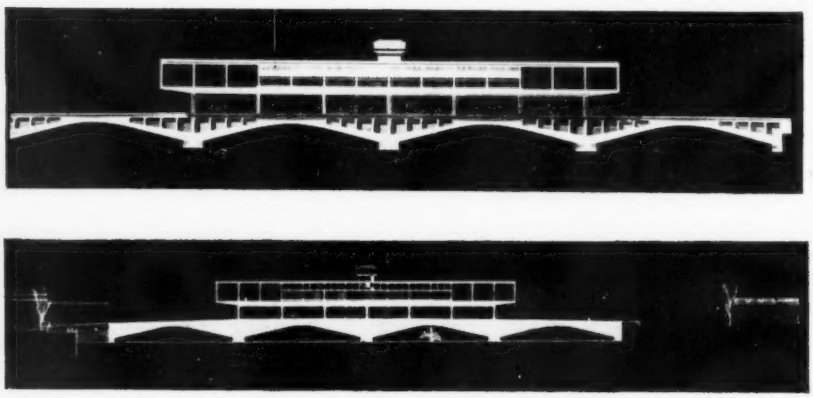


Fig. 10. An alternative method of dealing with low-level helicopter stations by placing them in an unbuilt-up area—in this case over Blackfriars Bridge, London. A project by D. V. Hewitt, as a fifth-year student of the Bartlett school.

Concluding remarks

Many readers may enjoy, others will deplore, but none will deny that the argument here presented is in the class of forward-thinking, imaginative planning. We cannot be sure that all parts of the proposed pattern will retain their proportions, but we can be sure that the trend so begun is in keeping with modern conceptions of technical facilities in all branches of civil engineering. We postulate helicopters of superior flying qualities and methods of guidance based on electronic techniques of high precision and reliability. By these means, we are able to foresee operations of vertical lift machines, whose terminal amenities require no separate allocation of ground area and cost almost nothing. To build vast expanses of concrete costing millions of pounds, because a few thousands have been spared when the need arose to develop flying equipment and guidance apparatus, is a policy which may have been forgivable in the nineteenth century, but not in the twentieth.

Some readers may ask whether the future may out-pace the optimists, and, by the time we are ready with our all-weather traffic control and precision approach apparatus, we shall be talking not of helicopters, but of something not yet perceived in a dream. We have little reason to believe that; but, even if it were true, the one aspect of the pattern of communications which would hardly be altered is that discussed in this article. The better our flying machines, the more refined our instruments, the easier it will be to operate them from small roof stations and the sooner large and expensive special structures will become obsolete.

Turning back to a more realistic future, the extent of investment needed to make the picture painted here come true is surprisingly small. We visualize something like £100 million in flying stock, perhaps £10 million in equipment and control apparatus, and perhaps £20 million in the construction of 200 roof stations. Alongside the railway modernization programme costing £1,200 million, the programme so outlined cannot be ignored by countries seeking to improve their efficiency with the least outlay of capital.

Summarizing, the proposals contained in this article show an integrated picture of a great improvement of communications between city centres at reasonable cost. In this they differ from other proposals in helicopter transport which are based on the assumption of a luxury service. The future will show which avenue we shall choose.

This week D. Rigby Childs and Jack Whittle put forward a basis for future policy for slum clearance and urban redevelopment. They preface their suggestions with a brief retrospect on their previous articles in this short series. The series opened with a factual survey of the present problem, including reference to the relevant legislation and subsidies, and a historical review (article 1, published in the issue of the JOURNAL *for September 20); a case study of post-war residential redevelopment in an intense urban area of blitz and blight, West Ham (article 2, published in the issue of the* JOURNAL *for September 27); and followed with the results of a questionnair on the cause and cure of slums (see October 4). This week's article concludes the authors' contributions to one of the most important building and planning issues of our time. As explained in the leading article to this issue, the field is now open to the* JOURNAL'S *readers to contribute with suggestions and criticisms on this theme. We are anxious to publish informed comment.*

SLUM CLEARANCE AND URBAN REDEVELOPMENT: 4

A BASIS FOR FUTURE POLICY

By D. Rigby Childs and Jack Whittle

We began this series by posing the challenge which faces Britain in 1956: "the challenge of clearing away and replacing the remaining first constructive attempts of earlier generations to provide standard housing to meet the sudden growth of population." A challenge which we described as "fundamentally new in the history of urban man."

In the interim, we have attempted to present in perspective the implications of slums and their clearance, the carrying out of which must now take first place in the whole housing field. We have indicated the size of the national problem and, with the co-operation of the many experts who replied to our questionnaire, we have tried to show that the removal of slums is not merely a clearance operation: it is the opening phase of a great national programme of urban renewal in terms of physical, economic and social planning which, in its local application, will vary between de-slumming (by improvements) a single farm cottage to vast redevelopment schemes.

The intricacies of these operations at the local authority stage have been made clear by the previously mentioned experts. In this, our concluding article, it is not our intention to enlarge on the theme of these intricacies. In one form or another, they are always likely to be a characteristic feature of the local authorities' programmes. As experience is gained, it is almost certain that ways will be found for making improvements, speeding up and generally easing the local planning and social work.

Such local improvements, however, will count for little if the main structure is at fault. This main structure, we would describe, as a system of legislation and finance designed and created by central government in *ad hoc* fashion over many years. We firmly believe that this main structure is at fault.

If this structure is simplified and strengthened, then much that is at present difficult and unduly complicated, if not impossible, would become manageable. The challenge is to produce bold measures to ensure quality for the Britain of the future. To this end, we hope, the suggestions which follow will be of value. As a preface to our proposals for a basis for a future policy, we summarize below our previous articles in the form of a brief retrospect, and present also a short assessment of present policy for slum clearance.

A RETROSPECT

Slums defined

We gave the legal definitions of slums and slum areas. Experts whom we approached also defined a dual slum problem:

the problem of property
the problem of people.

The cause of slums

Our statistics emphasized as the main causes of slums:

bad structural condition
bad layout
neglected building maintenance
bad physical environment.

The experts' comments gave many additional diverse causes:

changing social structure
changing sense of values
bad landlords
bad tenants.

The national slum survey

Our analysis of the Government's Blue Book showed that about half the present slums occur in our defined National Clearance Area, and that over the whole of England and Wales about 62 per cent. of the slums are concentrated in about 100 towns.

The question which emerged is whether present house building capacity can overtake the rate of slum growth.

Slum problems

Our statistics showed finance as the major problem. The experts' comments added to this many problems, including:

shortage of technical staff
overspill problems
the absence of a pool of housing available to absorb ex-slum dwellers
social and human problems.

Elements necessary for success

Our statistical analysis showed that the following were necessary elements for successful redevelopment:

careful internal design of dwellings
good layout
good surrounding environment
good housing management
rents people can afford.

The experts' comments added:

the social care of tenants during transition and in their location
the need to complete schemes.

Finance

Our statistics suggested that, so far, the revised central Government financial assistance arrangements have had little effect on local authority programmes.

The experts were apprehensive about the future, especially on the prospects of comprehensive redevelopment.

On rents, experts described:

lack of appreciation of real cost of good housing
problem of adjustment by tenants of expenditure on moving from a slum to a new house or flat, including the cost of equipping new dwellings which leads to reduced standards in other ways
need for low-rent accommodation.

The experts thought that, generally speaking, costs could not be further reduced within present standards by design means only.

Law

The law as it stands is not designed to meet the present situation: it is complicated and difficult. The current procedural amendments only slightly simplify. The law treats the subject of clearance and the provision of new dwellings as the main objectives, but not the redevelopment of sites.

The experts plead for the consolidation of the law.

Social

Without question, the experts' opinions showed that when tenants leave slums for new housing, health and cleanliness improve. The change has an effect especially on young families. There is a majority of opinion among experts that social behaviour in new housing schemes is influenced by external factors. One encouragement of the abuse of new schemes is their incompletion.

Redevelopment

The present policy encourages the conception that slums can be cleared independently of comprehensive redevelopment. The case study of West Ham demonstrated how redevelopment requires different planning and building techniques compared to the development of virgin sites. The case-study of West Ham suggested a method for comparing redevelopment housing schemes and illustrated the basic influence of density.

An assessment of the present policy for Slum Clearance

The present policy for slum clearance appears to be an extension of the post-war emergency housing policy of building dwellings at the maximum speed. It must be said of this housing policy that the standard of the individual dwelling in this post-war phase was good and provided accommodation to a higher standard than anywhere in Europe; and mainly under the Housing Ministry's guidance, the layout of towns in many places reached a standard not hitherto found in local authority work. But so far there has been little attempt to guide local authorities in the art of urban renewal.

The emphasis in the post-war phase was necessarily on numbers; perhaps, as a consequence, housing has been regarded, particularly in the political field, as a public utility service.

Slum clearance philosophy appears to follow the same line. The emphasis is on the clearance of slums. There is a general lack of the conception of the consequences of slum clearance. It is not realized that unless linked with the broader issues of the urban renewal and the redevelopment of obsolete towns and not merely with the problems of overspill, slum clearance will result in dereliction and not in re-creation.

Slums occur haphazardly; hence the application of slum clearance which is based on present policy must be haphazard; and although it will lead to improved housing layouts and dwellings, it will not necessarily result in improved towns. But whatever policies are pursued, the redevelopment tasks ahead are enormous. The present policy of economy by savings in design does little to reduce the relative cost of a dwelling. This is because the increased cost of wages and materials have not been matched by increased productivity. The increased interest rates have also rendered the initial cost of building a subsidiary factor in the overall cost of housing. This obscures the fact that productivity is the most important element in the attack on slums.

We believe that with the scale of the slum clearance and redevelopment which faces this country, there are two pre-requisites; one is quantity, obtained through the high productivity of building; the second is quality, acquired through the re-shaping of our towns for civilized life.

It is by these standards that the present policy must be judged: we think that it will fail.

A BASIS FOR FUTURE POLICY

We are convinced a new policy is essential. Unless one is adopted there is no hope for achieving an urban Britain. Although in deail the problem is complicated, in essence it is simple. To arrive at a new policy may take time, but the objective of such a policy, we believe, is clear. This is to achieve and maintain an organic momentum of urban redevelopment. The public interest, both professional and layman, must be stimulated and kept continuously alive. To do this, there must be full-scale examples of what urban renewal means in practice. Such examples must not merely be examples of good design and building, but be inhabited by people whose needs have been met. As previously said, the two pre-requisites of this policy are: quantity, through productivity of building; and quality, through the re-shaping of our towns for civilized life.

The greatest urban problems

The table below shows the location of the towns with the greatest urban problems outside London, and relates their post-war housing achievements with their assessment of their slum problem as shown in the Government's Blue Book.

On the basis of this table, it will be seen that these towns have taken 11 years collectively to build almost 140,000 dwellings*. Their programme for clearance is just over 310,000 dwellings; which probably means providing for some 500,000 families. If they maintain their programme and allocate all their resources to the rehousing of slum dwellers, it will take about 40 years for this task alone. In the meantime further dwellings will have become slums.

This estimate ignores private house building; but, on the other hand, assumes a full allocation of local authority houses for slum clearance.

A policy must therefore be developed to meet the requirements we have outlined and also to take cognizance of the concentration of slum areas in certain

TABLE 1. HOUSING PROGRESS IN RELATION TO SLUM CLEARANCE PROGRAMMES IN TOWNS WITH GREATEST URBAN PROBLEMS OUTSIDE LONDON. POSITION AS AT JUNE 30, 1956

	Clearance programme	*New Houses*			*Houses in clearance areas and unfit houses elsewhere*	
		Local Authority & Housing Association completed since 1.4.45	*Under construction*	*Tenders approved but not started*	*Included in confirmed order*	*Demolished or closed between* 1.1.55 *and* 30.6.56
Liverpool	88,233	20,161	2,785	922	2,135	952
Manchester	68,000	18,385	1,666	487	768	1,313
Birmingham	50,250	26,140	3,244	991	99	1,355
Leeds	22,500	12,687	2,406	1,068	2,428	993
Kingston-upon-Hull	14,768	7,260	756	24	—	60
Sheffield	13,500	13,963	1,683	601	2	189
Salford	12,026	2,035	174	15	326	191
Stoke-on-Trent	12,000	13,304	1,816	486	592	647
Oldham	11,169	2,497	484	109	—	88
Bradford	11,148	6,294	869	913	435	217
Bristol	10,000	17,219	1,564	373	246	181
	313,594 Total of slum dwellings.	139,945 Total of post-war dwellings up-to-date				

*The Minister of Housing and Local Government, when recently touring slum clearance areas in Liverpool, has been reported as saying:

"Last year in England and Wales some 75,000 people were moved out of slums into new homes. This year the number is likely to be over 100,000, and may be even as much as 120,000. The Government's target is to rehouse people from slums at a rate of 200,000 a year. The increasing flow of slum clearance orders, which are coming to me for approval, shows that the tempo of the campaign is being progressively stepped up; and if this continues it should not be so very long before we reach our target."

(*The Surveyor and Municipal and County Engineer*, June 10, 1956.)

At first sight the Minister's figures look encouraging. They are, however, in terms of people. For comparison with our statistics, the figures, if interpreted in terms of new dwellings or slums demolished, look less good, e.g.: 1956: 120,000 slum dwellers rehoused means the provision of about 35,000 new dwellings (about one-fifth of total local authority building) and the demolition, allowing for overcrowding of say 27,000 unfit dwellings *Target:* 200,000 slum dwellers to be rehoused each year, i.e., this will entail about 57,000 new dwellings and the demolition of about 42,000 slums. This gives under 200,000 slums demolished in five years compared with the Local Authorities' combined estimate of 375,000 approximately set out in the Government's Blue Book.

On this basis, it will take 20 years to complete the present programme. Our first article (September 20) showed, however, how unequal is the distribution and the table above is a reminder of this

It would be revealing if the Minister would amplify his statement by giving the figures to show how many of the 100,000-120,000 people to be rehoused this year are to be housed in redevelopment schemes compared with being housed in estates in peripheral areas or even in overspill areas. But our criticism is not primarily concerned with present targets: it is with the *method* adopted.

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centres, and of the related problems of redevelopment and overspill.

The legal machinery is out of date. We suggest that it should be amended as follows:

First: The existing slum clearance law needs to be re-drafted and co-ordinated with other housing legislation, and secondly, special provisions should be introduced to apply to towns having complex problems of clearance and redevelopment.

The provisions of the present Housing Act for slum clearance are satisfactory for small areas, but their various limitations make them incapable of dealing satisfactorily with the full-blooded redevelopment needed in most large urban centres.

The Housing Acts therefore need to be amended to simplify and restrict their application to cases where the area is an "*ad hoc*" area—that is where the land is small in extent and can be used by itself after clearance for some purpose which will tie-in with adjoining development.

We suggest that this could be done as follows:

(*a*) *Repeal the present definition of slums:* the onus of proving a slum, prior to slum clearance, now weighs very heavily on Local Authorities. Slums are difficult to define, but relatively easy to indicate. The collection of evidence to prove that a property complies with the conditions of Section 9 of the Housing Repairs and Rents Act is an arduous and lengthy job and, moreover, the present definition excludes from the definition of slums those properties which according to modern standards are by no means fit for habitation. The Minister should be satisfied that a Medical Officer of Health is capable of judging that a house is no longer fit to live in and a Certificate of Unfitness issued by a Medical Officer of Health should be sufficient to indicate a slum, either as a single house or as a small slum area of, say, up to 25-50 dwellings.

(*b*) *Repeal the site-value basis for compensation:* under existing law the difference between compensation based on the investment value of slum property and compensation based on site-value (*i.e.* on properties declared unfit or in a Clearance Area) is, in general, so slight that the extensive work involved in condemning property is not worthwhile—apart from the attraction of the higher subsidy.

In view of the shortage of technical staff and the often unjustified objections to compulsory purchase orders which originate solely through the fear of the site-value basis of compensation, there is a strong case for placing compensation for the compulsory purchase of slums on the basis of market values at the time of acquisition.

(*c*) *Repeal the Clearance Order procedure:* "Pink land," "Grey Land," and "Hatched-yellow land" are anachronisms. If, as we suggest, slum clearance under the Housing Acts is limited in scope, the process of condemning dwellings and the basis of compensation amended, Clearance Order Procedure becomes superfluous. Given this, there appears to be no justifiable reason why the individual slum and small slum areas should not be acquired, cleared and the land redeveloped under Part V of the Housing Act 1936, incorporating the provisions for rehousing of slum tenants from Part III of the Act.

For the redevelopment of the large slum areas we suggest new legislation, based on the provisions for Areas of Comprehensive Development under Section 5 of the Town & Country Planning Act 1947. This section says:

". . . a development plan may define as an area of comprehensive development any area which in the opinion of the local planning authority should be developed or redeveloped as a whole, for any one or more of the following purposes, that is to say for the purpose of dealing satisfactorily with extensive war damage or conditions of bad lay-out or obsolete development, or for the purpose of providing for the relocation of population or industry or the replacement of open space in the course of the development or redevelopment of any other area, or for any other purpose specified in the plan. . . ."

Here, surely, is the legal foundation for urban renewal. This part of the Town & Country Planning Act could form the basis for what one of the replies to our Questionnaire called the "Phoenix Towns Act," as follows:

"For the large areas I am convinced that the only way to solve it is by extending the meaning of the New Towns Act, you might call it, or, if you will, the Phoenix Towns Act; since the towns concerned will not be new towns, but simply replacements. There would be some interesting parallels. The New Towns are worried about creating a community, the Phoenix Towns would have to worry about how to get a community to work together for the common good, on the land which they know." (Martyn Webb—Geographer.)

This new legislation should be applicable only to certain urban authorities and include:

(*a*) Special financial provisions *for these areas,* designed to encourage clearance and redevelopment of all kinds, and to take into account the high costs involved in this type of work. Dwellings required to rehouse people displaced by demolition should all be equally subsidized irrespective of the unfitness of the demolished property.

(*b*) Authorities should be enabled to define Areas of Comprehensive Improvement; that is, areas in decline, but where properties are reasonably substantial. In such areas the whole environment can be improved by removing troublesome uses and by selective demolition to provide open space and other residential amenities. In addition, improvement to dwellings within these areas should be facilitated.

(*c*) Obligation on Authorities to make three-yearly returns of undeveloped land within their built-up area, with firm programmes for its redevelopment. Idle land would be penalized after five years by a central government fine on the Authority, unless there were sound reasons for leaving it undeveloped.

(*d*) The application of the special financial provisions would depend upon:

(i) The appointment by the Authority of a fully qualified Architect/Planner, 50 per cent. of whose salary should be paid by Central Government.

(ii) The operation by the Authority of an approved Housing Management Organization.

Second : A national programme of research, sponsored and directed by Central Government, in collaboration with industry and the professions.

Building Research is haphazard and unco-ordinated: there is urgent need for a centralized body for building research, both in terms of the construction and the use of buildings.

The MOHLG have for the past three years been collaborating with selected Local Authorities in designing and erecting dwellings with certain structural techniques in an attempt to investigate savings in housing costs, and since 1952, economy in floor area, without reducing living space, has been the subject of much thought. The results, however, have not materially affected the cost of housing.

An expansion of this work must have first priority. Much more real experimenting should be done, ignoring accepted standards and methods of construction and space provision. School design has been transformed post-war because of its release from bye-law control and because of the flexibility of ideas on the accommodation to be provided. So must housing be tackled. The Government must make adequate finances available as a long-term economy, and establish a central research body on housing development. It is a poor reflection upon our research facilities to realize that it took BRS some twelve years to determine that the difference in sound transmission between 11 in. cavity party walls and 9 in. solid party walls was negligible.

Parallel with this, and of no less importance, there must be improved production in the building industry. This can be achieved by an intense drive to re-orientate the contractor's view on mechanization and site organization and by imaginative leadership in the industry and by architects.

Unless buildings can be produced in greater quantities and at reduced cost the slum clearance programme is doomed.

Third : A re-assessment of objectives for urban renewal

A radical view of planning technique, in terms of the application of density and land-use control, is urgently required, particularly in view of the economic implications of urban redevelopment.

On land-use control, and use-zoning, ideas have not developed with the change of techniques during the past twenty-five years. The relationship between housing and industry need re-thinking, bearing in mind transport, journey-to-work and human problems.

The social impact of redevelopment needs controlled and intensive investigation. The idea of comprehensive development or redevelopment needs to be distinguished from a "scorched earth" policy; the view of urban renewal as a continuous process, incorporating the retention of sound buildings and environment with the grafting on of new development, should be explored.

We are supported on this latter point by:

"One aspect in the questionnaire which seems to be omitted in the question on clearance and redevelopment, is the availability of land for housing purposes, the relative costs of inner and outer areas for re-housing, and present and future values of the different parts of the city. Although not directly connected with your questionnaire, these factors can, I believe, exert some influence on both the social and financial chances of successful implementation of slum clearance schemes. They may therefore require to be considered as an inseparable part of the whole problem." (D. H. Crompton—Liverpool University Research Fellow.)

"It is very important that each scheme should be carefully designed so as to create a new centre of interest in the area to assist in the re-invigoration of the decaying parts of the town." (F. G. Southgate—Walthamstow Borough Architect, Engineer and Surveyor.)

Density, as a means of building and population control, is, in its present form, embryonic and crude. With research into the maximum efficiency in the production of dwellings needs to go an investigation into the reconciliation of this with the creation of a virile town environment. The reduction in the cost, and the increase in production, of standard units of accommodation must be matched with development in the art and science of economic and imaginative town design. This latter is in turn influenced by variable densities and a controlled mixture of uses.

We would quote further comments by experts:

"May I add that I think a much more profitable investigation, with the possibility of ascertainable knowledge, would be into the question of the kind of houses people now want, and how far they value privacy and are able and prepared to pay for it, and the extent to which travel time, and cost, is likely to limit town expansion, or the extent to which people prefer a more communal, close, association to the recent suburban spread." (Henry Foster—City Engineer and Surveyor and Town Planning Officer, Sheffield.)

"It is obviously easier for both Local Authorities and tenants if slum-makers are housed in low-density cottages. It is not so hard to conform to the new way of life, and it is an obvious step up in the social scale. If put into flats, the flats should be far removed from tenements. Sound insulation and the cleaning of communal areas should be of a high standard. Flats should be high towers to distinguish from tenements and to give maximum open space and sun penetration. A great deal should be done in the form of planting and prettifying. At all cost, backyard slums should be removed. Stores, or garages, or workshops, all rentable, should be easily available to avoid backyard building, or alternatively, frustration leading to *evil pursuits!*" (A Critic.)

CONCLUSION

As we come to the conclusion of our present study on slum clearance and urban redevelopment, we pause to reflect that Britain in the 1800's led the world in many fields of endeavour; Britain in the 1950's also has many achievements to her credit; her philosophy and practice of urban renewal should, we hope, be one more. There is no reason why our practice in this field should not rival in stature this country's recent

advances in harnessing atomic energy for peaceful use.

The means towards urban renewal must be diverse; as follows: a consolidated research programme on the nature of slums and housing;

a widespread publicity campaign on the real social value and cost of housing today;

a clear and consistent central government policy over a number of years; increased building productivity;

teamwork between allied professions;

and supporting these, planning, finance and legislation.

Each one of these is in its own way, vital to success. Yet if one other element is missing, later generations will not look proudly on these achievements. This element is *leadership with a design sense*, with the power to infuse unity over aims and means and to create new environments at less real cost to the community than a series of slap-dash and haphazard piecemeal replacements of slums.

In sending his comments on the questionnaire to us, Lionel Brett touched upon this theme:

"many so-called slums, particularly in country towns and villages, are a lot nicer than Council housing, and only need a little love and money, and of course some sensibility. When love and sensibility are lacking, money is simply spent on wholesale destruction and third-rate rebuilding. Somehow this must be prevented."

One of the main functions of such leadership must be to determine the standards of housing density. Today we know better, we believe, than to create the conditions of 100 years ago caused by congested building. Then, the worst areas of slums were the result, in many cases, not so much of high density over the individual acre as the stark repetition over large areas of high density without break. It was the latter element which was chiefly the cause, we suggest, of the terrible sense of inhumanity which hangs over the worst slum areas. Today, however much we may build to hygienic standards in terms of providing adequate living space, adequate ventilation, light and access, in, around and up to the dwelling, and however well we arrange the dwellings over the individual acre, according to the standard of net density, the opportunity for a good environment will be created or lost by the way this density is applied over hundreds of acres. The issue is often thought of as sprawl or compactness. This is not enough; in either case, the art of the use of density in redevelopment will be to gauge at what point will repetition, both of layout, and of one type of housing, become monotonous. Article 2 in this series described some aspects of density and posed the question, "do we yet recognise what is a reasonable density for urban man to live at?"

Our survey on slums has also, we hope, been a reminder that slums, bad housing conditions, and relative density are inseparable. In a subsequent series we shall try to show what the different densities mean in practice, in terms of living conditions, both in a narrow and broad sense.

On the issue of slum clearance and urban renewal immediate action is necessary.

This action must be to start without delay a study group, preferably on the scale of a Royal Commission, on how our proposals should be implemented. We recognize that to launch slum clearance and urban redevelopment in this newly conceived and co-ordinated framework could take two to three years.

In the meantime the programme is gaining momentum. Even at the Minister's modest targets, over half a million slum dwellers may have been rehoused in that time. We believe that in time our proposals in one form or another will be accepted as inevitable. Therefore why not adopt them now? The Minister of Housing and Local Government in his recent announcements on his proposals for tackling the allied problem of rent reform has shown political courage; this is a big step in the right direction, but only a step. We have shown him where to step next.

An example of slum clearance and redevelopment in an inner London area. Although there is variety in the use of net densities, the gross density is too high, leading to unsatisfactory living conditions.

working detail

WINDOWS: FLATS IN CHICAGO

Pace Associates, architects

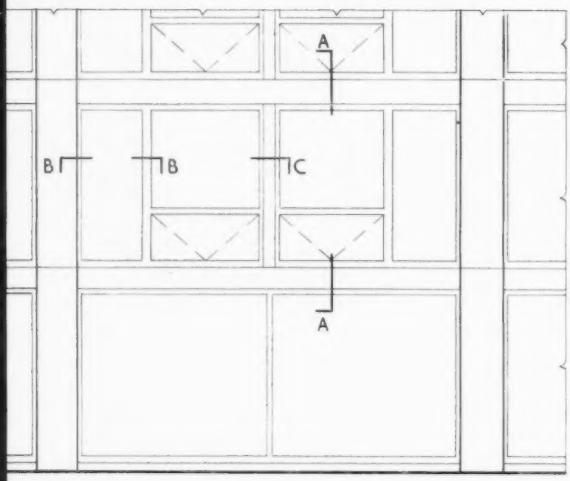
Photograph: Hedrich-Blessing

The fascias between the windows are of aluminium backed with non-absorbing insulation. The central mullion in each case is stiffened with a steel channel.

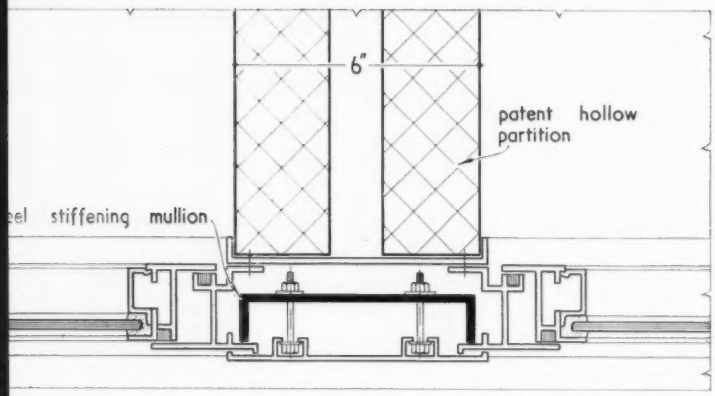
working detail

INDOWS: FLATS IN CHICAGO

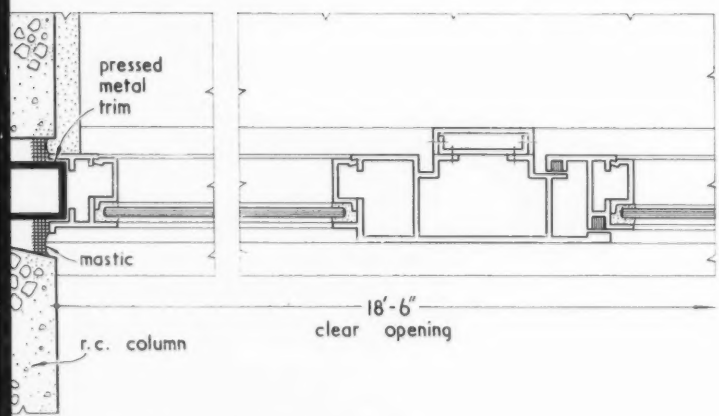
ace Associates, architects



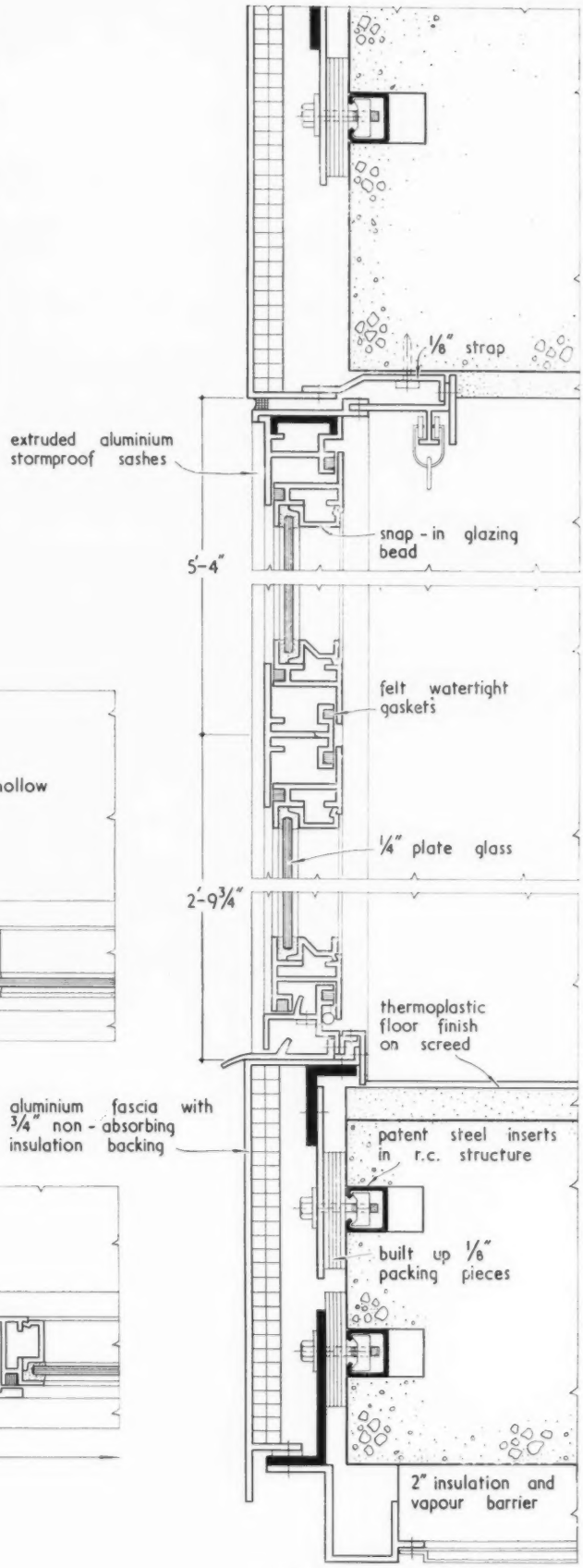
EVATION. scale 1/8" = 1'-0"



ETAIL AT C. scale 1/4 full size



ETAIL AT B-B. scale 1/4 full size



SECTION A-A. scale 1/4 full size

working detail

WINDOWS: SCHOOL IN LONDON, S.W.5

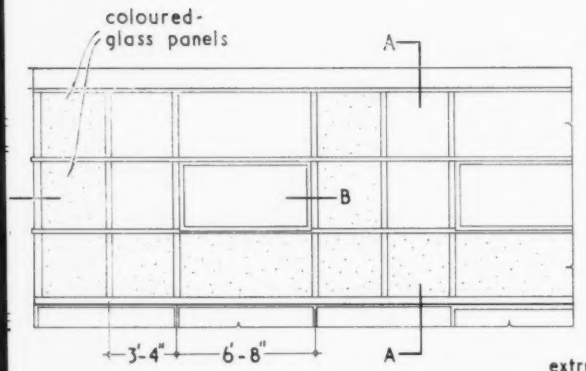
Chamberlin, Powell and Bon, architects

The coloured glass panels beneath the windows are dark blue, the vertical ones between the windows, yellow and each panel at the point of intersection, green. The soffit is lined with a continuation of the boarded ceiling of the entrance hall, painted lime green.

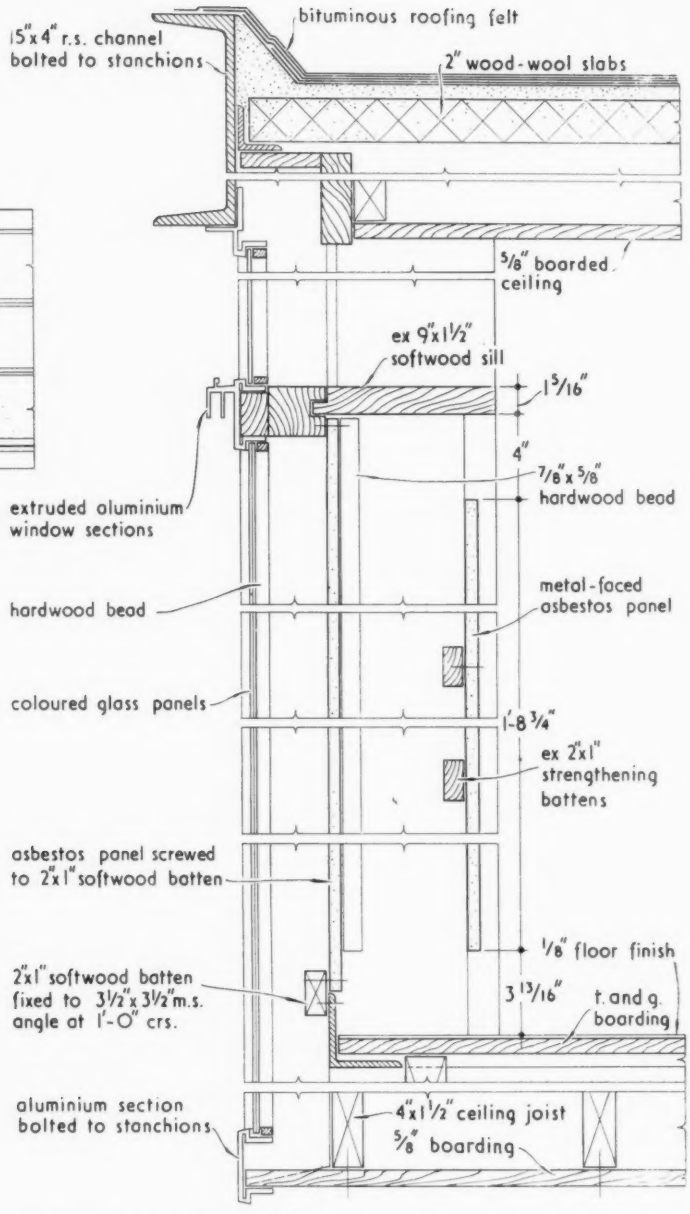
working detail

WINDOWS: SCHOOL IN LONDON, S.W.5

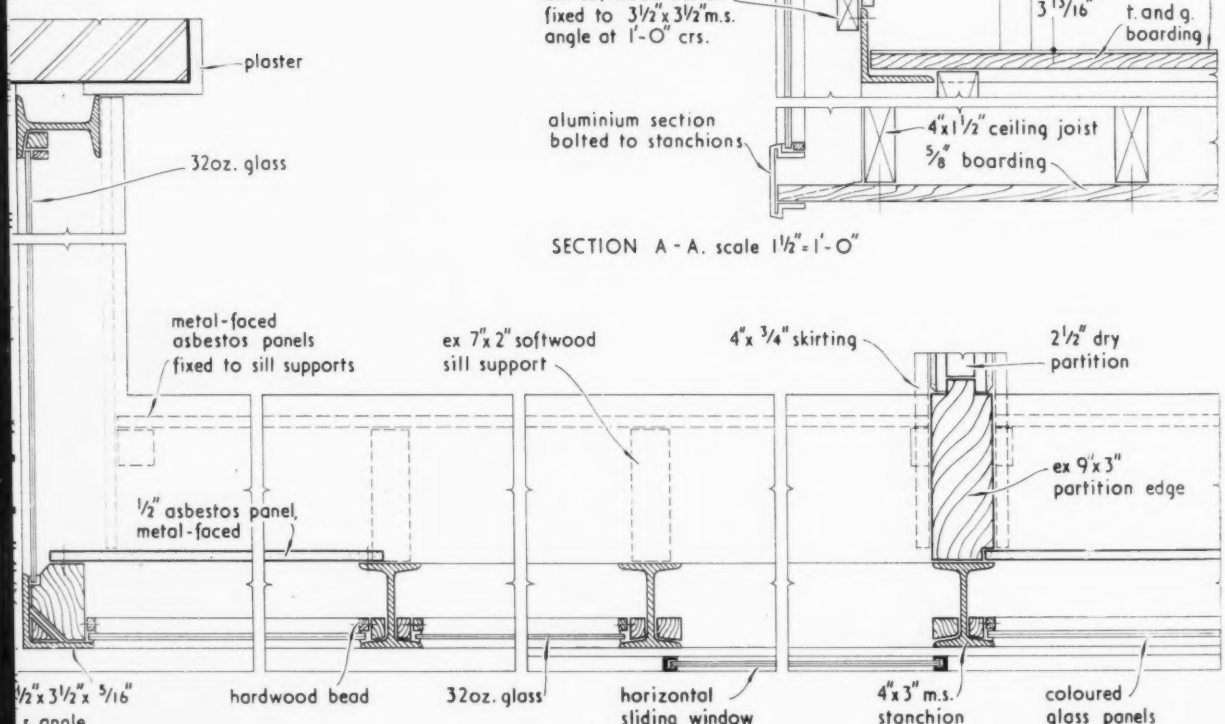
Chamberlin, Powell and Bon, architects



EY ELEVATION. scale 1/8"=1'-O"



SECTION A - A. scale 1½"=1'-O"



ECTION B - B. scale 1½"=1'-O"

S

SALTIRE SOCIETY'S AWARD TO TWO NEW TOWNS

This year the Saltire Society, which usually makes part of its annual design award for houses and part for flats, is making its award for flats only. The schemes selected are at Brouster Place, East Kilbride (top); Quebec Drive, East Kilbride (extreme left), and Alexander Road, Auchmuty, Glenrothes (left). The architects in charge of these schemes, which were completed in 1955, are F. C. Scott, chief architect to East Kilbride, and Peter Tinto, chief architect to Glenrothes.

Announcements

PROFESSIONAL

K. C. Evans, D.P.ARCH.(BIRM.), A.R.I.B.A., has recently left the Hertfordshire County Council, where he was chief assistant architect, to become county architect to the Isle of Ely Council. His new address is County Hall, March, Cambs.

G. W. Banfield, F.R.I.B.A., has taken Peter J. Booth, A.R.I.B.A., into partnership. The practice will continue as Ernest W. Banfield & Son at 28, Mortimer Street, London, W.1, telephone Museum 0175.

Denis A. Birchett, A.R.I.B.A., has begun private practice at 131, High Street, Brentwood, Essex, having relinquished the position of Company Architect to Shell-Mex and B.P. Ltd. He has been appointed Consultant to Shell-Mex and B.P. Ltd. He will be pleased to receive trade catalogues, etc.

MacLeod Wallace, A.R.I.B.A., has taken into partnership John Barron Morton, A.R.I.B.A., and opened a branch office at 31, Carfax, Horsham, telephone Horsham 3444. Mr. Morton will be pleased to receive trade catalogues, etc.

Ian Mair, A.R.I.B.A., A.A.DIPL., has left the Gold Coast and is practising from the following address: E. C. Farara & Sons (1st Floor), Long Street, St. John's, Antigua, B.W.I., where he will be pleased to receive trade catalogues, etc.

Walter W. Fisk, F.R.I.B.A., A.A./DIPL., and Sidney H. Fisk, L.R.I.B.A., have moved from 24, Buckingham Street, W.C.2, to 6a, Bedford Square, W.C.1, telephone Langham 3108-9.

TRADE

The Expanded Metal Co. Ltd. announce that Col. Arthur Hodge, D.S.O., M.C., is retiring after 34 years as a sales representative. His services are, however, being retained as a consultant.

Remington Rand Business Equipment Centres have recently opened two new branches, one in Leeds and the other in Newcastle. These are modelled on the London and Glasgow Business Equipment Centres

Herbert C. Ridge has taken up his appointment as Sales Manager of Factron Products Ltd., the industrial specialists subsidiary of Tretol Ltd. He is a member of the Royal Sanitary Institute. Mr. Ridge can be contacted at the Head Office of Factron Products Ltd., Tretol House, The Hyde, London, N.W. 9., telephone Colindale 7220.

Ashdown Ltd., St. Helens, announce that the prices of Undulite, a translucent corrugated plastic sheeting, are to be reduced. The reductions vary according to the size of sheet and the particular profile required, but they average at somewhere between five and ten per cent. The new prices will take effect immediately.

British Insulated Callender's Cables Ltd. announce that the telephone number for their Luton depot is now Luton 7603-4.

Chloride Batteries Ltd. have recently transferred their Midland headquarters to West Bromwich, Staffs. from Dale End, Birmingham after 34 years. This is the most modern battery supply and service Depot in Britain.

Gaskell & Chambers Ltd. announce with regret the death of C. Royston Chambers, chairman and managing director. He joined the Company 42 years ago, and on the death of his father, Sir Cornelius Chambers in 1941, succeeded to the chairmanship.

Corrections

Moir & Bateman, F/A.R.I.B.A., of Prudential Buildings, South Parade, Rochdale, have taken over Messrs. Butterworth & Duncan of Rochdale. It was incorrectly stated in the AJ, October 4, that "Mon & Bateman" had taken over this firm.

On page 411 of the technical section "Domestic Oil Heating" (AJ September 20, 1956) the storage tank sizes should read: 7 ft. × 4 ft. 6 in. × 3 ft. 6 in. = 650 gallons; 6 ft. × 4 ft. × 4 ft. = 600 gallons; 6 ft. × 4 ft. × 4 ft. 6 in. = 650 gallons. On page 413, under "Oil" (Column 1) the hourly consumption should be 0·38, not 3·23 gallons. The daily consumption for 14 hours at 60 per cent load factor is 3·23 gallons. This was omitted in error.

The advertisement for the Linoleum Manufacturers' Association in the AJ of October 4 stated that the floor was laid by the London Tile Co. Ltd. which should have read the Lino. Tile Co. Ltd.

CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

25s. per inch; each additional line, 2s.

AIR MINISTRY Works Designs Branch requires in London and Provinces ARCHITECTURAL ASSISTANTS, experienced in planning/preparation of working drawings and details for permanent and semi-permanent buildings.

Salaries in London up to £926 p.a. (men) and £831 (women). Lower in Provinces. Starting pay depending on age, quals. and experience. Long-term possibilities, with promotion and pensionable prospects. 5-day week. 3 weeks, 3 days' leave a year. Liability for overseas service. Normally natural born British subjects. Write, stating age, quals., employment details., incl. type of work done, to any Employment Exchange, quoting Order No. Borough 1000. 3029

GOVERNMENT OF NORTHERN IRELAND
ASSISTANT ARCHITECT

Applications are invited for the unestablished post of Assistant Architect Class II in the Works Directorate, Ministry of Finance.

Salary scale, which attracts pay supplement of amounts between £91 and £160 per annum, is £675 × £25 — £750 × £30 — £960 × £40 — £1,000. Minimum of scale is linked to entry at age 26 plus or minus one increment for each year above or below that age. Maximum entry point £900 plus pay supplement of £118. This scale is under review.

Candidates must be Registered Architects by examination ,and must have had at least two years' experience in an Architect's Office in the preparation of working drawings for new buildings.

Preference will be given to a suitably qualified candidate who served in H.M. Forces during the 1914-18 or 1939-45 wars, provided the Ministry is satisfied that such a candidate is, or within a reasonable time will be, able to discharge the duties of the post efficiently.

Application forms may be obtained from the Director of Establishments, Ministry of Finance, Stormont, Belfast, to whom they must be returned, together with copies of two recent testimonials. 4131
F21/5/25/5/56.

LINDSEY COUNTY COUNCIL
PLANNING DEPARTMENT—AMENDED ADVERTISEMENT

Applications are invited for the following appointments:—

(*a*) SENIOR ASSISTANT (Architectural), A.P.T., Grade V (£795—£970).

(*b*) JUNIOR ASSISTANT, A.P.T., Grade I (£530—£610).

Above salaries subject to 2½ per cent. increase recently awarded to be applied as may be recommended by N.J.C.

Both appointments at Headquarters, Lincoln.

Candidates for (*a*) should be A.R.I.B.A., and have some experience in dealing with redevelopment schemes, housing layouts and architectural control. Post requires officer to provide own car for official journeys, for which an allowance will be paid at essential user's rate for car not exceeding 10 h.p. or 1,199 c.c. Candidates for (*b*) must have trained in planning, architect's or surveyor's office, and be good draughtsmen, with experience in field surveys.

Superannuation and N.J.C. conditions of service as approved by the County Council. Canvassing will disqualify. Relationship to any member or senior officer of the Council to be disclosed in writing by applicants.

Applications, with particulars of age, training, experience, and names of two referees, to County Planning Officer, The Castle, Lincoln not later than 1st November, 1956. 4198

COUNTY BOROUGH OF CARLISLE

Applications are invited for the following posts in the City Surveyor's Department:—

(*a*) CHIEF QUANTITY SURVEYOR, A.P.T. Grade V (£795 × £35—£970).

Applicants must be Chartered Quantity Surveyors, and should be able to take charge of a section responsible for preparation of estimates, Bills of Quantities, and the regular measurement of and settling of Final Accounts for Schools, Housing and Municipal Buildings.

(*b*) SENIOR QUANTITY SURVEYOR, A.P.T. Grade IV (£710 × £35—£885).

Applicants should have passed the Final Examination of the Institute of Chartered Surveyors, and be experienced in such work as is enumerated above.

Housing accommodation will be made available if required.

Forms from the City Surveyor, 18, Fisher Street, Carlisle, returnable not later than 10th November, 1956.

H. D. A. ROBERTSON,
Town Clerk.
4238

COUNTY BOROUGH OF BARNSLEY
BOROUGH ENGINEER AND SURVEYOR AND PLANNING OFFICER'S DEPARTMENT

Applications are invited for the following appointments:—

(*a*) PLANNING ASSISTANT (Special Classes) APT. I (£530—£610) — II (£595—£675 — Special Grade (£690—£840), subject to 2½ per cent. increase. The commencing salary will be on the grade appropriate to the qualifications and experience of the successful candidate as provided for in the N.J.C. conditions relating to the grading of Special Classes of Officers. The point of entry within any grade may be fixed above the minimum.

(*b*) JUNIOR ARCHITECTURAL ASSISTANT (TEMPORARY), Grade APT.I (£530—£610), subject to 2½ per cent. increase. The point of entry in this grade may be fixed above the minimum.

Applicants for appointment (*a*) should have had previous experience in town planning and in the control of development.

Appointment (*b*) is suitable for a young man in his early architectural training and offers a good opportunity for gaining further experience.

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

The appointments will be subject to (i) the Scheme of Conditions of Service for A.P.T.C. Staff; (ii) any other general conditions of employment in operation within the Corporation from time to time; and (iii) to one month's notice on either side.

Appointment (*a*) will also be subject to the Local Government Superannuation Acts for which purpose the successful candidate will be required to pass a medical examination.

Applications, stating age, present and previous appointments, qualifications, experience, etc., together with the names of two persons for reference, should reach the Borough Engineer, Town Hall, Barnsley, by Wednesday, 7th November, 1956.

Canvassing will disqualify.

A. E. GILFILLAN,
Town Clerk.

Town Hall,
Barnsley.
October, 1956. 4203

BOROUGH OF ASHTON-UNDER-LYNE

Applications are invited for the following appointments in the Borough Engineer and Surveyor's Department within the respective grades according to experience.

(A) SENIOR ASSISTANT (QUANTITIES). Grade IV (£710—£885). Qualifications: A.R.I.C.S. or equivalent.

(B) SENIOR ARCHITECTURAL ASSISTANT. Special Grade (£690—£840). Qualifications: Registered Architect with good experience in the design and construction of Municipal houses, flats and public buildings.

There is a full and varied programme of building work and both positions offer opportunities for taking responsibility and supervising work in progress.

Housing accommodation will be provided if required.

Application forms may be obtained from the Borough Surveyor, Municipal Offices, Ashton-under-Lyne, and should be returned to the undersigned by 19th November, 1956.

G. A. MALONE,
Town Clerk.

Town Hall,
Ashton-under-Lyne.
10th October, 1956. 4204

NATIONAL COAL BOARD
WEST MIDLANDS DIVISION

Applications are invited for the posts of JUNIOR ARCHITECTURAL ASSISTANTS in the Divisional Chief Architect's Department at Himley Hall, nr. Dudley, Worcs. Preference will be given to applicants studying for Intermediate R.I.B.A. Salary will be according to age, 55/- (age 15) to 175/- per week (age 25 and over).

The office is engaged on a large programme of varied and interesting work of industrial and welfare nature and offers scope for applicants with a progressional outlook.

Write for application forms to Divisional Chief Staff Officer, Himley Hall, nr. Dudley, Worcs. These must be completed and returned within 14 days of appearance of advertisement. 4269

METROPOLITAN BOROUGH OF FULHAM
BOROUGH ARCHITECT'S AND HOUSING DEPARTMENT

(*a*) SENIOR ASSISTANT QUANTITY SURVEYOR, A.P.T. V (£825—£1,000 p.a.), including £30 p.a. London weighting.

(*b*) TWO ASSISTANT ARCHITECTS, A.P.T. III or IV (£670—£795 or £740—£915 p.a.), including £30 p.a. London weighting, according to qualifications and experience.

(*c*) TWO ARCHITECTURAL ASSISTANTS, A.P.T. I or II (£530—£610 or £595—£675 p.a.), plus London weighting of £20 or £30 p.a., according to age.

Qualifications required for (*a*) A.R.I.C.S. (Quantities) or equivalent. Experience in preparation of bills of quantities and handling large contracts for multi-storey dwellings. (*b*) Preference will be given to A.R.I.B.A. or equivalent, and experience in the design and construction of multi-storey dwellings. (*c*) R.I.B.A. Intermediate standard and at least two years' office experience.

Application forms from Town Clerk, Town Hall, S.W.6. Closing date: 31st October. 4246

KAMPALA MUNICIPAL COUNCIL, UGANDA

Appointments of:—

(*a*) ARCHITECTURAL ASSISTANT,

(*b*) SENIOR ASSISTANT ENGINEER, and

(*c*) ASSISTANT SURVEYOR (BUILDING).

Applications are invited for the following vacancies in the Town Engineer and Surveyor's Department on the scales set out below:—

(*a*) Architectural Assistant, Scale I (£1,194 to £1,863), including inducement pay by increments of approximately £50 p.a.

(*b*) Senior Assistant Engineer, Scale I (£1,194 to £1,863), including inducement pay by increments of approximately £50 p.a.

(*c*) Assistant Surveyor (Building), Scale II (£1,122 to £1,566), including inducement pay by increments of approximately £40 p.a.

Applicants for post (*a*) must be Associate Members of the Royal Institution of British Architects or hold equivalent qualifications; for post (*b*) must be Associate Members of the Institute of Civil Engineers or hold the Testamur of the Municipal Engineers or be professional Associates of the Royal Institute of Chartered Surveyors or hold equivalent qualifications; for post (*c*) must be a professional Associate of the Royal Institute of Chartered Surveyors (Building Section) or hold equivalent qualifications.

The duties of post (*a*) will include preparation of plans and designs of all Council's building projects and taking charge of the Planning and Building Section of the Department. Applicants should have experience in the inspection of plans submitted by the public and the enforcement of Town Planning and Building Rules.

The duties of post (*b*) will include taking charge of the maintenance of Council's roads, sewers, street cleaning, street lighting and general engineering maintenance in the Municipality, and in addition the successful applicant must be prepared to carry out capital works such as the construction of roads, foul and storm water sewers, etc.

The duties of post (*c*) will be primarily to take charge of the maintenance of Council's public buildings, Depots, staff housing and housing schemes. In addition the successful applicant will be required to carry out building inspections in connection with the enforcement of Building Rules. He should have experience in checking reinforced concrete calculations as and when submitted to Council for approval.

The commencing salary of each post will depend upon the qualifications and experience of the successful applicant. Housing will be provided and rent will be deducted from salary.

The appointment is to Council's permanent establishment under Part I of Council's Staff Regulations and Terms of Service, which includes home leave and passage privileges for expatriate officers, also medical and dental benefits.

The successful applicant will be required to submit to a medical examination, and, if under 50 years of age, will be required to contribute to Council's superannuation scheme at the rate of 7½ per cent. of salary. The successful applicant if over 50 years of age will be required to join Council's provident fund.

The appointment will be subject to a probationary period of at least six months.

Canvassing of members of the Council, directly or indirectly, in connection with this appointment will disqualify.

Applications giving full particulars, including age, date of birth, marital status, qualifications and previous experience, together with copies of three recent testimonials and/or the names and addresses of three referees, must be received by me not later than 30th November, 1956.

K. EVANS,
Town Clerk.

Municipal Offices, P.O. Box 120,
Kampala, Uganda.
10th October, 1956. 4240

GOVERNMENT OF SIERRA LEONE
SENIOR ARCHITECT—PUBLIC WORKS DEPARTMENT

To prepare plans and specifications for buildings of all types, and to take charge of the Architectural, Quantity Surveying and Town Planning Sections of the Public Works Department.

Contract appointment for two tours of 18-24 months in first instance. Salary £1,857 p.a., plus gratuity £37 10s. for each 3 months' service.

Free passages for officer, wife and two children, or £75 allowance for each of two children maintained outside Sierra Leone.

Seven days' leave for each month of resident service. Quarters, if available, at low rental.

Candidates must be A.R.I.B.A., with not less than 10 years' experience since election and, preferably, A.M.T.P.I. in addition. Write Director of Recruitment, Colonial Office, London, S.W.1, giving age, qualifications and experience, quoting BCD.112/15/014. 4220

BUCKS COUNTY COUNCIL

Applications are invited for the appointment of an ASSISTANT COUNTY ARCHITECT in the County Architect's Department, salary J.N.C. Scale "B" £1,185—£1,405 p.a.

The appointment is superannuable and subject to medical examination.

A weekly allowance of 25s. and return fare home once every two months may be paid for six months to newly appointed married officers of the Council unable to find accommodation.

Applications, on prescribed forms, must be returned by 6th November, 1956.

F. B. POOLEY,
County Architect.

County Offices,
Aylesbury. 4199

GOLD COAST HOUSING CORPORATION

Applications are invited for the post of SENIOR TECHNICAL OFFICER in the Gold Coast Housing Corporation, with headquarters in Accra.

Conditions: The appointment is on contract terms for two tours of 18-24 months, with a possible extension of contract by mutual agreement. The consolidated salary scale is £1,600×£60—£2,140. Point of entry will be determined according to qualifications and experience. A gratuity of £37 10s. for each satisfactory three months' period of service will be paid on completion of contract. Furnished quarters will be provided on rental for candidates recruited from overseas, and an outfit allowance of £30 will be paid. Earned leave will be at the rate of 7 days for each completed month of residential service. First-class passages will be provided for the officer, wife, and up to three children under the age of 13 years.

Qualifications: Candidates should have reached their 35th birthday; must be in possession of a good Civil Engineering Degree or recognised Diploma (preference being given to those possessing A.M.I.C.E.); alternatively, Associates of the Royal Institute of British Architects are eligible to apply; must have had at least 7 years' practical experience and must have served in a senior position in a large house-building organisation such as a New Town Development Corporation, a local authority or a private enterprise house-building firm handling large contracts. The selected candidate will be expected to supervise and direct the work of the Corporation's engineering and architectural branches, and will be directly responsible to the Managing Director for their efficient running. Experience on site development and building construction in the tropics will be an advantage, and a thorough knowledge of works and costing is essential.

Candidates should apply at an early date to the Secretary for Recruitment, Gold Coast Office, 13, Belgrave Square, London, S.W.1, for a form of application. 4237

COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE
OFFICE OF THE COUNTY ARCHITECT

Applications are invited for appointments in the grades shown below, the salary ranges of which are:—

A.P.T. II (£595—£675).
Special Grade (£690—£840).
A.P.T. IV (£710—£885).
A.P.T. VI (£880—£1,080).

(*a*) SENIOR ASSISTANT ARCHITECT, Grade A.P.T. VI.

This post is at the Divisional Office at Harrogate, and applicants must be Registered Architects and Associate Members of the R.I.B.A. The successful candidate will be required to deal with maintenance works and alterations and adaptations, and must have extensive experience in connection therewith. He will also be required to take charge of the Divisional Office in the absence of the Divisional Architect.

(*b*) ASSISTANT ARCHITECTS, Special Grade and Grade A.P.T. IV.

Applicants should be Registered Architects and have had good training in the design and construction of modern buildings. Opportunities available for taking responsibility and supervising works in progress, in connection with extensive and interesting programmes of first-class architectural work.

(*c*) ASSISTANT SURVEYORS (SITES). (i) Grade A.P.T. II, and (ii) Special Grade.

(i) Applicants should have had good experience in surveying, levelling and plotting sites, and should be neat draughtsmen. Experience in surveying of buildings would be an advantage.

(ii) Applicants should have had extensive experience in surveying, levelling and plotting sites, be neat draughtsmen, and capable of taking charge of a survey team. Preference will be given to Associate Members of the Royal Institution of Chartered Surveyors.

(*d*) ASSISTANT ELECTRICAL ENGINEER, Grade A.P.T. II.

Applicants should hold the Higher National Certificate in Electrical Engineering and be capable of preparing schemes, specifications and estimates.

The appointments are subject to the provisions of the local Government Superannuation Acts and to the successful candidates passing a medical examination.

Applications, on forms obtainable at this office, must be delivered not later than the first post on Monday, 12th November, 1956.

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

Bishopgarth, Westfield Road, Wakefield. 4217

WEST SUSSEX COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointment:—

ASSISTANT ARCHITECT, Grade III A.P.T. Division (£690-£840 if Associates R.I.B.A. and £640-£765 if not Associates). These scales are subject to 2½ per cent. increase recently awarded. *Commencing salary according to experience.*

Further particulars should be obtained from the County Architect, County Hall, Chichester, to whom all detailed applications must be submitted not later than 20th November, 1956.

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

County Hall,
Chichester.
17th October, 1956. 4263

URBAN DISTRICT COUNCIL OF CORBY

Appointment of

(*a*) SENIOR ARCHITECTURAL ASSISTANT.
(*b*) ARCHITECTURAL ASSISTANT.

Applications are invited for the following appointments in the department of the Engineer and Surveyor:—

(*a*) SENIOR ARCHITECTURAL ASSISTANT, Grade A.P.T. IV, £710 to £885 (plus 2½ per cent), commencing at minimum of grade.
(*b*) ARCHITECTURAL ASSISTANT, Grade A.P.T. III, £640 to £765 (plus 2½ per cent.), commencing at minimum of grade.

Applicants for appointment (*a*) must be Registered Architects, and should have considerable experience in design, construction and contract administration as applied to contracts for Public Buildings and local authority housing.

Applicants for appointment (*b*) must have passed the R.I.B.A. Intermediate Examination or its equivalent at a recognised School of Architecture, and have had at least two years' experience in an Architect's office (exclusive of pupilage). Preference will be given to applicants who have reached an advanced stage in preparing for the Final Examination and who have had Testimonies of study accepted. A contemporary outlook and all-round general experience is desirable.

The provisions of the Local Government Superannuation Acts, 1937-1953, will apply to these appointments. Housing accommodation will be made available to the successful candidates, if married.

Forms of application may be obtained from the undersigned, to whom they should be returned not later than the first post on Saturday, the 10th November, 1956.

Testimonials will be required only from applicants selected for interview.

G. B. BLACKALL,
Clerk of the Council.

Council Offices, Corby, Northants.
16th October, 1956. 4249

NATIONAL COAL BOARD—EAST MIDLANDS DIVISION
ARCHITECTS' DEPARTMENT, NOTTINGHAM

National Coal Board, East Midlands Division, invite applications for the following in their Architects' Department in Nottingham:—

QUANTITY SURVEYORS:

S.V. 646/B. Grade I. Salary £1,000×£35—£1,300. Candidates should be Corporate Members of the R.I.C.S., with considerable experience in all aspects of the work of a Quantity Surveyor's office.

S.V. 647/B. Grade II. Salary £700×£30—£1,000. Candidates should be Corporate Members of the R.I.C.S., with varied practical experience.

S.V. 648/B. Grade I Assistant. Salary £625×£25—£750 (exceptionally to £900).

Preference will be given to candidates who have passed the Intermediate Examination of the R.I.C.S.

ARCHITECTURAL ASSISTANTS:

S.V. 649/B. Grade I. Salary £625×£25—£750 (exceptionally to £900).

Candidates should be of R.I.B.A. Intermediate standard and have had not less than 3 years' subsequent practical experience.

S.V. 650/B. Grade II. Salary £520×£20—£615.

Candidates should have passed or be studying for the Intermediate Examination of the R.I.B.A.

Facilities are granted in certain circumstances to Assistants for part-time study at the Nottingham School of Architecture.

The point of entry into the salary scales of the respective grades will depend on the qualifications and experience of the applicant. Superannuation rights under Local Authority and certain other schemes are transferable.

The architectural work of the Department covers the design of Colliery Surface Buildings of all types required in the Division, including Workshops, Stores, Power Plants, Offices, Pithead Baths, Canteens, Medical Centres, Institutes and Recreation Buildings.

Applications, stating age, education, qualifications, present appointment and salary, should be submitted within 14 days to:—

THE STAFF DIRECTOR.
National Coal Board,
East Midlands Division,
Sherwood Lodge, Arnold, Notts.

Envelopes and applications should be marked with the appropriate "S.V." reference number. Original testimonials should *not* be sent. 4248

COUNTY BOROUGH OF BURTON UPON TRENT
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the appointment of ASSISTANT QUANTITY SURVEYOR Grade A.P.T. IV (£710—£885) at a commencing salary in accordance with qualifications and experience. Appointment subject to the provisions of the Local Government Superannuation Acts 1937-1953; to the passing of a medical examination, and to determination by one month's written notice on either side.

Housing accommodation, at a rent, will be provided for the successful candidate if required.

Applications giving age, qualifications, full details of experience and names of two referees, to the Borough Architect, Town Hall, Burton upon Trent, by 9th November, 1956.

H. T. MEADES,
Town Clerk.

Town Hall,
Burton upon Trent.
23rd October, 1956. 4281

BOROUGH OF WALTHAMSTOW
BOROUGH ARCHITECT, ENGINEER AND SURVEYOR'S DEPARTMENT

Applications are invited for the appointment of SENIOR ASSISTANT ARCHITECT in the Department (F. G. Southgate, A.R.I.B.A., M.I.Mun.E., A.M.T.P.I., Borough Architect, Engineer and Surveyor).

The appointment is in connection with the development of sites for housing at Billericay and Wickford, comprising approximately 750 houses. The scheme will give scope for interesting and imaginative layouts.

The salary for the post will be in accordance with A.P.T. Grade V (£825—£1,000, inclusive of London weighting), with commencing salary according to experience.

Applicants must be qualified Members of the R.I.B.A.

Applications, with the names of two persons for reference, should be received by the undersigned not later than noon on Saturday, 3rd November, 1956, endorsed "Senior Assistant Architect."

G. A. BLAKELEY,
Town Clerk.

Town Hall, Walthamstow, E.17.
12th October, 1956. 4225

BOROUGH OF BARNES

Applications are invited for the appointment of Temporary ARCHITECTURAL ASSISTANT, Grade III (£670×£25—£795) per annum.

Candidates should have passed the Intermediate Examination of the R.I.B.A. and have had experience in the preparation of plans and details for general architectural work.

Applications, giving the names of two persons to whom reference can be made, should be sent to the undersigned, not later than Saturday, 10th November, 1956.

W. R. SHEPHERD, A.M.I.C.E., F.R.I.C.S.,
Borough Engineer and Surveyor.

Municipal Offices, Sheen Lane, S.W.14. 4227

NATIONAL COAL BOARD—NORTH EASTERN DIVISION

Applications are invited for the following appointments in the Office of the Divisional Chief Architect at Conisborough, near Doncaster.

ARCHITECT, Grade II.
(Salary scale: £700×£30—£1,000 per annum).
Qualifications: A.R.I.B.A.

ARCHITECTURAL ASSISTANT, Grade I.
(Salary scale: £625×£25—£750, and up to £900 per annum in certain circumstances.)
Qualifications: Preferably Intermediate R.I.B.A. or considerable practical experience.

ARCHITECTURAL ASSISTANTS, Grade II.
(Salary scale: £520×£20—£615 per annum.)
Qualifications: Preferably Intermediate R.I.B.A. or studying for such examination.

JUNIOR ARCHITECTURAL ASSISTANTS.
(Salary scale according to age: £4 5s. per week at 18 to £8 15s. per week at 25.)
Qualifications: G.C.E. in 5 subjects, including English, Mathematics and Art.

QUANTITY SURVEYOR, Grade II.
(Salary scale: £700×£30—£1,000 per annum.)
Qualifications: A.R.I.C.S.

QUANTITY SURVEYING ASSISTANT, Grade II.
(Salary scale: £520×£20—£615 per annum.)
Qualifications: Preferably Intermediate R.I.C.S. or studying for such examination.

Full details and application forms obtainable from Hugh Smith, F.R.I.B.A., Divisional Chief Architect, P.O. Box 4, Denaby, near Doncaster. 4239

THE CORPORATION OF GLASGOW
ARCHITECTURAL AND PLANNING DEPARTMENT
ASSISTANT ARCHITECTS
PLANNING ASSISTANTS
ASSISTANT QUANTITY SURVEYORS

Vacancies exist for a number of assistants. Minimum qualification, Intermediate Examination of the appropriate professional body. Salary scale £580—£1,100 per annum, with placing according to age, experience and qualifications.

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

A. G. JURY,
City Architect and Planning Officer. 4164

CITY OF CARDIFF
APPOINTMENT OF ARCHITECTURAL ASSISTANT (Education)

Applications are invited for the following appointment in the City Surveyor's Department.

Architectural Assistant (Education), A.P.T. Grade 4 (£710—£885 per annum).

Candidates should possess the minimum qualifications and experience prescribed by the National Joint Council for Local Authorities' Administrative, Professional, Technical and Clerical Services for posts in the above mentioned Grade.

General Conditions of Appointment may be obtained from the undersigned.

Applications, accompanied by the names and addresses of three referees and endorsed "Architectural Assistant (Education), A.P.T. Grade 4," must be delivered to me not later than the 12th November, 1956

S. TAPPER-JONES,
Town Clerk

City Hall,
Cardiff.
October, 1956. 4270

BENTLEY-WITH-ARKSEY URBAN DISTRICT COUNCIL
APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of an Architectural Assistant in the Department of the Engineer and Surveyor at a salary in accordance with A.P.T. Grade IV (£710—£885 per annum).

Applicants should have considerable experience of Municipal Housing and hold a recognised qualification.

Applications, stating age, qualifications and experience, particulars of present and previous appointments, together with copies of three recent testimonials, and endorsed "Architectural Assistant," must be delivered to the undersigned not later than Saturday, 10th November, 1956.

The successful candidate will be provided, if necessary, with housing accommodation.

The appointment will be subject to (1) the provisions of the Local Government Superannuation Acts, 1937-53; (2) the National Scheme of Conditions of Service; (3) the satisfactory passing of a medical examination; and (4) termination by one month's notice on either side.

W. H. CARLILE,
Clerk to the Council.

Council Offices,
Cooke Street,
Bentley,
Nr. Doncaster. 4268

SOUTH CAMBRIDGESHIRE RURAL DISTRICT COUNCIL
APPOINTMENT OF ASSISTANT ARCHITECT

Applications are invited for the appointment of Assistant Architect in the department of the Council's Architect. Salary within the range of A.P.T. III (£640—£765) or the Special Grade (£690—£840) according to qualifications and experience.

The appointment will be subject to the provisions of the Local Government Superannuation Acts, the National Scheme of Conditions of Service, to a satisfactory medical examination and one month's notice in writing on either side.

Forms of application can be obtained from the undersigned, to whom they must be returned not later than first post on Monday, the 12th November, 1956.

Housing accommodation in the Rural District may be provided for the successful candidate if required.

Canvassing, directly or indirectly, will disqualify.

B. G. CRAFT,
Clerk to the Council.

County Hall,
Hobson Street,
Cambridge.
18th October, 1956. 4267

BRAINTREE RURAL DISTRICT COUNCIL
ARCHITECTURAL ASSISTANT

Applications are invited from persons with sound experience in the preparation of surveys, plans, details of construction and design of housing schemes. Preference will be given to applicants with R.I.B.A. Intermediate or equivalent, N.J.C. service conditions; salary A.P.T. Grade II, £595—£679 p.a. Write, giving age, experience, qualifications and two references, to me not later than 3rd November, 1956. No forms. Canvassing disqualifies.

W. HUMPHREY,
Clerk of the Council.

Council Offices,
St. Peter's Close,
Bocking, Braintree, Essex. 4271

GOVERNMENT OF EASTERN NIGERIA
SENIOR ARCHITECT
PUBLIC WORKS DEPARTMENT

To take charge of the architectural branch of the Public Works Department.

Contract appointment. Salary £2,448 p.a. Gratuity of £37 10s. for each completed three months' service. Quarters, if available, at low rent. Low income tax. Generous leave. Free passages for officer and wife. Free passages for 2 children under 18 up to maximum of £75 each or allowance in lieu for maintenance outside Nigeria.

Candidates must be A.R.I.B.A. of at least ten years standing. Experience in design of hospitals and public buildings is desirable. Write Director of Recruitment, Colonial Office, London, S.W.1, giving age, qualifications and experience, quoting BCD 112/411/013. 4274

CHURCH COMMISSIONERS require ARCHITECTURAL ASSISTANTS. Candidates should be up to Inter. R.I.B.A. standard. Salary according to experience within scale of £750×£30—£990. Apply in writing to the Establishment Officer, Church Commissioners, No. 1, Millbank, Westminster, S.W.1, not later than 31st October next. 4251

EASTERN ELECTRICITY BOARD
NORTHMET SUB-AREA HEADQUARTERS
THREE ENGINEERING DRAUGHTSMEN—BUILDING AND CIVIL ENGINEERING DEPT.

Candidates should have had a good technical training and experience in the preparation of plans and detailed drawings of Building and Civil Engineering work, including substations, Service Centres, Workshops, Offices, etc.

Salary: N.J.B. Schedule D, Grade VI (£560—£680), plus London allowance.

Apply by letter within 10 days to C. C. Hill, B.Sc.(Eng.), M.I.E.E., M.I.Mech.E., Manager, Northmet Sub-Area, Eastern Electricity Board, Northmet House, Southgate, London, N.14. 4247

GOVERNMENT OF EASTERN NIGERIA
ARCHITECTS,
PUBLIC WORKS DEPARTMENT

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

Contract appointment. Salary range £1,032 to £1,956 p.a. Gratuity of £37.10.0 for each completed three months of resident service. Generous home leave. Low income tax. Free passages for officer and wife. Free passages for 2 children under 18 up to maximum of £75 each or allowance in lieu for maintenance outside Nigeria. Candidates must be A.R.I.B.A. with general experience.

Write Director of Recruitment, Colonial Office, London, S.W.1, giving age, qualifications and experience, quoting BCD 112/411/08. 4273

CITY AND COUNTY OF BRISTOL
CITY ARCHITECT'S DEPARTMENT

Applications are invited for :—

(*a*) SENIOR ASSISTANT ARCHITECT, A.P.T. VI (£880 × £40—£1,080 p.a.).
(*b*) SENIOR ASSISTANT ARCHITECTS, A.P.T. III (£640 × £25—£765 p.a.).
or Special Scale (£690 × £30—£840 p.a.).
(*c*) ASSISTANT ARCHITECTS, A.P.T. II (£595 × £20—£675 p.a.).
(*d*) ASSISTANT ARCHITECTS, A.P.T. I (£530 × £20—£610 p.a.).

Starting grade appropriate to professional experience and qualifications, but for post (*a*) candidates must be Associate Members of the R.I.B.A., and have had considerable experience in design, construction, and contract administration, preferably with large Local Authority.

Housing accommodation available, if necessary, at an economic rent.

Applicants must state post for which they apply. Details and application forms from me, returnable by 5th November.

J. NELSON MEREDITH, F.R.I.B.A.,
City Architect.

The Council House,
College Green,
Bristol, 1. 4275

METROPOLITAN BOROUGH OF BATTERSEA
Appointment of ARCHITECTURAL ASSISTANT, A.P.T. IV (£710×£35 to £885 per annum, plus London weighting—£30 per annum at age 26 or over).

Applications are invited for the above-mentioned permanent appointment. Applicants should have had several years' office experience, preferably in housing and other buildings undertaken by a local authority.

Application forms from the Borough Engineer and Surveyor, Town Hall, S.W.11. Closing date: 12th November. 4245

COUNTY BOROUGH OF DERBY
BOROUGH ARCHITECT'S DEPARTMENT
ARCHITECTURAL STAFF:

(*a*) A.P.T. Grade IV (£710—£885 per annum).
QUANTITY SURVEYING STAFF:
(*b*) A.P.T. Grade V/VI (£795—£1,080 per annum).

Commencing salary will be according to qualifications and experience.

Permanent superannuable appointments, subject to one month's notice and to medical examination. National Conditions of Service.

Application forms obtainable from and to be returned to the Borough Architect, The Council House, Corporation Street, Derby, not later than Monday, 5th November, 1956.

G. H. EMLYN JONES,
Town Clerk.

13th October, 1956. 4242

CITY OF PORTSMOUTH
CITY ARCHITECT'S DEPARTMENT

There is a vacancy on the permanent staff in the Special Grade (£690—£840 plus the recent award of 2½%), for an ASSISTANT ARCHITECT who has passed the Final Examination of the R.I.B.A., commencing salary according to experience.

Applications, setting out in tabular form, name, age, qualifications, present post and salary, previous posts with dates, details of experience, with names of two referees, must be delivered to the undersigned not later than 12 noon, Monday, 12th November, 1956.

Canvassing will disqualify.

V. BLANCHARD,
Town Clerk.

City Council Chambers,
1, Clarence Parade,
Portsmouth. 4280

CITY OF STOKE-ON-TRENT
CITY ARCHITECT'S DEPARTMENT

Applications are invited for the following appointment :—

ASSISTANT QUANTITY SURVEYOR—Grade A.P.T. IV (£710-£885).

Previous Local Government service is not essential but experience in taking off for Schools and/or Housing is required.

Housing accommodation can be made available to suitable applicants.

Applications, stating date of birth, details of qualifications, training and experience, present post and salary to J. R. Piggott, T.D., F.R.I.B.A., City Architect, Kingsway, Stoke-on-Trent, by Friday, 9th November, 1956.

HARRY TAYLOR,
Town Clerk.
4262

CAERNARVONSHIRE COUNTY COUNCIL

Applications invited for appointment of ASSISTANT ARCHITECT, in the County Architect's Department, A.P.T. III/V (£640—£970), commencing salary according to experience.

Further particulars and forms of application from the Clerk of the County Council, Caernarvon. Closing date: 5th November. 4224

COUNTY BOROUGH OF NEWPORT

Applications are invited for the permanent appointment of an ASSISTANT ARCHITECT, salary Grade IV (£710 to £885 per annum). Housing accommodation will be provided. Forms of application obtainable from the Borough Architect, Civic Centre, Newport, Mon., to whom they should be returned not later than Monday, 5th November, 1956. 4223

KING'S COLLEGE HOSPITAL, DENMARK HILL, S.E.5

Applications are invited for the post of ARCHITECTURAL DRAUGHTSMAN in the Building Surveyor's Department at a salary of £560×£20—£620 per annum.

Applicants should be experienced in the preparation of plans of existing buildings and working drawings for alterations and improvements. Preference will be given to applicants who have passed the Intermediate Examination of the R.I.C.S. (Building Sub-division).

Applications, stating age, experience, training and qualifications, should be sent to undersigned by 8th November.

S. W. BARNES,
House Governor.
4215

UNIVERSITY OF NOTTINGHAM
BUILDINGS DEPARTMENT

ARCHITECTURAL ASSISTANT required. Candidates must have reached Intermediate R.I.B.A. standard. Commencing salary £650 to £700 per annum. Pension scheme. Form of application and conditions of appointment from the Registrar, Mr. H. Pickbourne. 4232

NORTHAMPTON
BOROUGH ARCHITECT'S DEPARTMENT
SENIOR ASSISTANT ARCHITECT
(EDUCATION & GENERAL SECTION)
A.P.T. V

Registered Architects may obtain full details and application forms (returnable by 5th November) from Borough Architect, Guildhall, Northampton.

C. E. VIVIAN ROWE, *Town Clerk.*
4279

CITY ARCHITECT'S DEPARTMENT
MANCHESTER

Applications invited for the following appointments on the Temporary Staff for a period of not less than two years:—

SENIOR ASSISTANT ARCHITECT—Salary A.P.T. Grade V, £795/£970 per annum. Applicants must be A.R.I.B.A. with several years' office experience.

SENIOR ASSISTANT ARCHITECT—Salary A.P.T. Grade IV, £710/£885 per annum. Applicants must be A.R.I.B.A.

Particulars and form from City Architect, P.O. Box 488, Town Hall, Manchester, 2. Closing date 5th November. 4265

UNIVERSITY OF OXFORD

Applications are invited for the following appointment :—

ARCHITECTURAL ASSISTANTS of about Intermediate standard with some knowledge of modern building construction. Salary £530—£560. Varied and interesting work. Generous leave. Apply for further particulars, stating age, experience and training, to the Surveyor to the University, 5, South Parks Road, Oxford. 4187

Architectural Appointments Vacant

4 lines or under, 7s. 6d.; each additional line, 2s.

GEORGE WIMPEY & CO., LTD.
have vacancies in
BIRMINGHAM, NEWCASTLE & NOTTINGHAM
for Senior and Intermediate
ARCHITECTURAL STAFF
who are enthusiastic to apply their knowledge to new construction techniques, covering Houses, Multi-Storey Flats, Offices, Schools and Industrial Buildings for contracts in these areas.
Permanent appointments; salaries commensurate with qualifications and experience.
Written applications, giving brief particulars of experience and qualifications to
E. V. COLLINS, A.R.I.B.A.,
Chief Architect,
27, Hammersmith Grove, London, W.6.
Ref. R.121A. 4073

CROYDON.—ARCHITECTURAL ASSISTANT required immediately for interesting and varied work. Inter./Final standard; capable of running small contracts.—Write age, experience, and salary required, to George Lowe & Partner, 4, High Street, Croydon, Surrey. 1951

POST-INTERMEDIATE ASSISTANT required, in large London Office with widely varied practice. Lewis Solomon, Son & Joseph, 21, Bloomsbury Way, London, W.C.1. Telephone HOLborn 7082. 3152

CO-OPERATIVE WHOLESALE SOCIETY LTD. ARCHITECT'S DEPARTMENT, MANCHESTER SHOPFITTING DRAUGHTSMAN required, experienced in shop equipment and modernisation of interiors.

The position calls for the preparation of layouts and perspectives with a modern approach to store fitting problems.

The post is pensionable, subject to medical examination and there is a five-day week in operation.

Applications giving age, details of previous experience and salary required to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester 4. 3056

ARCHITECTURAL ASSISTANT required for interesting and remunerative work on housing and commercial contracts with established company in Manchester area. Intermediate or Final standard. Permanent position, pension fund, good working conditions. Salary £700/£780. Apply, giving details of experience, age and present salary, Box 4112.

WEST END Architects require ASSISTANT for preparation of working drawings. Some office experience essential, together with a sound knowledge of building construction. State salary required.—Box 4049.

RONALD WARD & PARTNERS require an ARCHITECTURAL ASSISTANT, with contemporary outlook and willing to use own initiative. Salary range £500 to £800. Interesting and varied work, home and abroad. Congenial working conditions.—Apply 29, Chesham Place, Belgrave Square, S.W.1. Tel. Belgravia 3361. 4032

ARCHITECT'S ASSISTANT required, Intermediate standard, for work on contemporary commercial buildings. 5-day week and pension scheme.—Applications, stating age, experience, and salary required, to A. B. Smith, A.R.I.B.A., 22, South Audley Street, London, W.1. 4154

YOUNG qualified ARCHITECTURAL ASSISTANTS wanted for growing Northern Rhodesian practice. Ecclesiastical experience will be a recommendation. Salary approximately £90 per month, depending on experience.—Principal will be in London from 7th to 25th November, and applicants should apply to Box No. 4145, or Chancery 4117, to arrange an interview.

ARCHITECT'S ASSISTANTS required, London. Salaries £500—£750. Box 4266.

VINCENT BURR & PARTNERS urgently require ARCHITECTURAL ASSISTANT of approximately Intermediate standard. Great scope for future promotion. Large and varied practice. Salary according to experience. Telephone MUSeum 2301 for appointment. 4106

ARCHITECTURAL ASSISTANT required, with at least three years' office experience, and passed Intermediate. Mainly School work. Salary according to ability and experience. Telephone CHAncery 3526. 4181

APPLICATIONS are invited for the following appointments:—

Young qualified ASSISTANT ARCHITECT, with office experience, required, to take charge of building schemes throughout the country. Excellent opportunity for capable designer. Interest in shopfitting and detailing an advantage.

ARCHITECTURAL ASSISTANT, of Intermediate standard, with office experience. Capable of preparing working drawings and details. Must be good draughtsman.

Good salaries for suitable applicants.—Applications, stating age, qualifications and experience, to D. Greenwood, B.Arch., A.R.I.B.A., Staff Architect, Prices, Tailors, Ltd., Cardigan Crescent, Leeds, 4. 4194

ARCHITECTURAL ASSISTANTS, male or female, required in busy West End office. Some assistants required now, others in November. Applicants must be competent draughtsmen and office experience is desirable. Excellent opportunities for gaining all-round experience. Good salaries and bonus. Overtime paid at 50 per cent. over basic rates.—Welch & Lander, 38, Gloucester Place, W.1. Welbeck 6551. 4162

JUNIOR ARCHITECT, R.I.B.A. Intermediate standard, required at Guildford. Varied work, mainly factory. 5-day week. Salary by arrangement.—Box 4178.

ARCHITECTURAL ASSISTANT required, age 22-26 years, for London office. Should be R.I.B.A. Probationer working for Intermediate examination, with experience in an Architect's office. Salary scale according to age.—Application in writing should be made to Box 4172.

F. W. WOOLWORTH & CO. LTD. Architect's Department, Kensington District Office. Applications are invited for the following appointment:—

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

The appointment is permanent and pensionable, 5-day week. Dining room facilities. Application stating age, experience, qualifications and salary to District Architect, F. W. Woolworth & Co., Ltd., 26/40, Kensington High Street, London, W.8. 4272

ARCHITECTURAL ASSISTANTS required. State salary, age, experience, etc. Harvey & Scott, 2, Lynedoch Place, Glasgow, C.3. 4278

BRITISH RAILWAYS—EASTERN REGION MODERNISATION PLAN

RESIDENT ARCHITECT required for the office of the Architect, Eastern Region, KING'S CROSS STATION, to supervise contract work in the Peterborough Area. Applicants should preferably be qualified and have experience of site supervision and be prepared to reside in Peterborough. Salary range £770/£835. Five-day week, concessionary rail travel and permanency after probationary period. Apply in writing, giving full particulars as to age, experience and qualifications to Chief Civil Engineer, British Railways, Eastern Region King's Cross Station, London, N.1. 4258

BRITISH RAILWAYS—EASTERN REGION MODERNISATION PLAN

JUNIOR ARCHITECTURAL ASSISTANTS required in the office of the Architect, Eastern Region, KING'S CROSS STATION. Applicants should be Probationers or Students of the R.I.B.A. taking an approved part-time course in architecture. Salary range £224 per annum at age 17 rising to £492 at age 25. Five-day week, concessionary rail travel and permanency after probationary period. Apply in writing to Chief Civil Engineer, British Railways, Eastern Region, King's Cross Station, London, N.1. 4259

BASIL SPENCE & PARTNERS require two SENIOR ARCHITECTURAL ASSISTANTS for their Edinburgh office. Salary dependent on experience. 40, Moray Place, Edinburgh, 3. 4244

MAJOR Petroleum Company requires, for its London Office, an ARCHITECTURAL DRAUGHTSMAN for work on various commercial projects. Applicants should be quick and accurate draughtsmen and should have a sound knowledge of building construction. Salary according to experience. Position will be permanent and pensionable. Excellent working conditions, staff restaurant, sports club, etc. Apply in writing giving full details of age, qualifications and experience to Box 4255. Replies can only be sent to those selected for interview.

ARCHITECTURAL ASSISTANT required with good general training and experience. Interesting work including schools, light industrial work, and housing. R.I.A.S. Pension Scheme. Apply with full particulars and salary required to Fairbrother, Hall & Hedges, A/A.R.I.B.A., 27, Rutland Square, Edinburgh, 1. Fountainbridge: 1251/2. 4256

OLIVER LAW & PARTNERS (Chartered Architects), 36, Ebury Street, Westminster, require two or three additional ARCHITECTURAL ASSISTANTS (Draughtsmen). Architectural School or Office experience essential. Salaries £600 to £800 per annum, according to experience. Box 4253.

ARCHITECTS
POST OF DEPUTY ARCHITECT

VACANCY occurs for the above post, with Chartered Architect (Belfast Office), currently engaged in valuable and good quality works. The post also offers opportunity to engage an associated architect. Remuneration by agreement.

Applications for particulars, and information about local attractions and housing facilities should be accompanied by credentials and names of referees; particulars of education; qualifications and experience; age and present salary. Confidential. Box 4234.

ARCHITECTS

ARCHITECT, Chartered, has vacancies, Belfast office, for SENIOR and INTERMEDIATE ASSISTANTS seeking experience and advancement on big and good quality works. Good salary.

Applications for particulars, and information about local attractions and housing facilities should be accompanied by credentials and names of referees; particulars of education; qualifications and experience; age and present salary. Confidential. Box 4235.

ARCHITECTURAL ASSISTANT required. Probationer to Intermediate Standard. Apply in writing stating age, experience and salary required to Johnston & Wright, Chartered Architects, 13, Castle Street, Carlisle. 4230

MANCHESTER practice requires ASSISTANT, Intermediate or Final standard, interested in carrying jobs through from working drawings to completion. Mainly contemporary school and church work. Congenial atmosphere, and every encouragement given to really keen man. Please reply to Box 4233.

ARCHITECTURAL ASSISTANT required, about Intermediate standard with office experience, capable working drawings, busy practice, Berkeley Square, W.1. Box 4213.

REQUIRED in small office, Westminster, ARCHITECT'S ASSISTANT with Intermediate R.I.B.A. Able to do working drawings to all scales. Salary by arrangement. Box 4212.

SOUTH WEST Office requires ARCHITECTURAL ASSISTANT, Junior/Intermediate grade. Progressive position; medium size, varied practice with scope for initiative and taking responsibility; pleasant working conditions; car allowance; pension scheme. Salary up to £600 p.a., according to experience. Apply Box 4211.

QUALIFIED ARCHITECTURAL ASSISTANT required. Apply G. Langley-Taylor & Partners, 9, Kings Bench Walk, Temple, E.C.4. Telephone CENtral 4774. 4210

ARCHITECTURAL ASSISTANT required, Intermediate standard, with sound knowledge of working drawings and details for private practice in St. Albans. Salary £450. Apply in writing giving experience, etc., to Taylor Son & Bracken, 20, London Road, St. Albans. 4209

NORMAN & DAWBARN invite applications from ASSISTANTS or ASSISTANT ARCHITECTS of Intermediate or higher standard with at least 3 years' office experience. Interesting and varied programme of U.K. and overseas work. Apply in writing to 7, Portland Place, London, W.1. 4208

QUALIFIED ARCHITECTURAL ASSISTANT, preferably with experience of City Architecture and first class finishes required in Kensington office. Salary £800 plus per annum. Box 4214.

ASSISTANT ARCHITECTS required—capable of preparing working drawings and details from preliminary sketches. Applications stating age, experience, qualifications and salary required to Mr. R. C. Steel, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society Ltd., 90, Westmorland Road, Newcastle upon Tyne. 4216

ARCHITECTURAL ASSISTANT, Intermediate standard, required immediately for busy general practice. Write stating age, experience and salary required to Deacon & Laing, 9, St. Paul's Square, Bedford. 4221

ARCHITECTURAL ASSISTANTS (Intermediate and Final standard) required in Bristol and Chippenham offices. Please apply stating age, qualifications, experience and salary required to: George Brown & Partners, A.A.R.I.B.A./F.I.A.S., Brunel House, College Green, Bristol, 1. 4226

N.W KENT. A vacancy exists in the Architect's Department of an industrial company for an ARCHITECTURAL DRAUGHTSMAN with at least three years' office experience, able to prepare working drawings from sketch plans under supervision. Five-day week, good working conditions. Applicants should state age, experience and salary. Box 4222.

CAPABLE ASSISTANT wanted for small office, able to take responsibility and keen to help build up practice. Contemporary outlook and practical ability. Intermediate to Final standard. Write: John Radford, Chartered Architect, 25, Sidwell Street, Exeter. 4243

PATRICK GWYNNE requires an ASSISTANT to work with him personally at his house near Esher, on detailing of new houses, interiors and furniture. Previous office experience essential. The Homewood, Esher, Surrey. ESHer 3310. 4277

Architectural Appointments Wanted

4 lines or under, 7s. 6d.; each additional line, 2s.

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